Nome Public Schools
Board of Education Meeting Agenda

April 22, 2025 - 5:30 PM
Work Session, NES Library
1057 E 5th Ave
Nome, Alaska 99762

PO Box 131
Nome, AK 99762

We inspire and empower students to be culturally grounded responsible citizens who are deeply connected to our community and world.

SCHOOL BOARD MEMBERS
Mrs. Darlene Trigg, President
Ms. Marjorie Tahbone, Vice President/Clerk
Mr. Jon Gregg, Treasurer
Mrs. Nancy Mendenhall
Ms. Sigvanna Tapqaq

AGENDA

A. **Call to Order**
B. **Items for Discussion**
1. Curriculum Status Overview and Plans 2
2. Title VI Certification Letter Discussion 397
C. **Upcoming Events:**
• Tuesday, April 29, Special Meeting 5:30 pm, NES Library/Zoom
• Tuesday, May 13, Regular Meeting, 5:30 pm, NES Library/Zoom
• Tuesday, May 27, Work Session, 5:30 pm, NES Library
• Tuesday, June 10, Regular Meeting, 5:30 pm, NES Library/Zoom
D. **Adjournment**

BB 9320 Meetings: "Though great importance is given to the physical presence of School Board members at meetings, the attendance and participation of members by teleconference is authorized whenever physical presence is not practicable."

BP 0520 SCHOOL ACCOUNTABILITY/SCHOOL IMPROVEMENT

Note: *The following policy reflects the Alaska Accountability System which measures both school performance and school progress and results in a school designation of Priority, Focus, or Reward. The school rating may result in required interventions as well as specific supports.*

The School Board is committed to the successful performance of the district and its schools. Successful performance is indicated through student academic achievement, student progress over prior year performance, strong attendance and graduation rates, and participation and achievement in college and career readiness exams. The Superintendent shall implement requirements for school and district accountability as determined by the Department of Education and Early Development.

Note: *The Alaska School Performance Index measures schools by a combination of data: student achievement on SBAs in reading, writing and math; growth in the school's student body in those assessments from the prior year; and attendance. Schools with high school students are also measured by graduation rates; and student performance on college-readiness assessments, including SAT, ACT, and WorkKeys. ASPI points will result in a Star Rating for a school from 1-5 stars, the higher number representing stronger school performance*

If any district school receives a star rating of one, two, or three stars, the Superintendent or designee shall develop and implement a school improvement plan in accordance with state law. School improvement plans shall be presented to the Board for approval. If the plan is for a school that receives one or two stars, the plan will be submitted to the Department. If the school has been designated as a priority or focus school, the plan will be prepared in consultation with the Department and subject to Department approval.

The Superintendent or designee shall develop and implement a school improvement plan for schools receiving a four or five star rating when necessitated due to failure to meet annual measurable objectives, a decline in the school's growth and proficiency, a decline in graduation rate, or insufficient participation in standards-based assessments.

The Superintendent or designee shall develop and implement a district improvement plan when required due to the number of one- or two-star schools; the number of students who attend one- or two-star schools; deficiencies in curriculum, assessment practices, instruction, learning environment, professional development, or leadership; or lack of progress by a subgroup towards annual measurable objectives. The District improvement plan shall be approved by the School Board and submitted to the Department.

School Interventions

The Superintendent or designee shall implement comprehensive interventions for any school identified as a priority school by the Department. The comprehensive

interventions will use turnaround principles that accomplish the following: provide strong leadership; ensure effective teachers; redesign the school calendar to include additional time for student learning and teacher collaboration; improve the instructional program; use student data to inform instruction; establish a school environment that improves safety and discipline; and provide mechanisms for family and community involvement.

Targeted interventions will be implemented to meet the specific needs of schools identified by the Department as focus schools. A plan and timeline to implement the targeted interventions shall be created by the Superintendent or designee. Interventions should consider each of the turnaround principles for priority schools, some or all of which may be appropriate for the school or targeted subgroups. Decisions should be data-driven.

The district will utilize state provided supports in implementing comprehensive or targeted interventions.

School Success

The Board believes that all of its schools can be high performing and high progress schools. The district will annually recognize those schools identified as reward schools by the Department.

Parent Notification

The Superintendent or designee shall communicate with the parents of children attending schools designated as one- or two-star schools. The information should be in an understandable and uniform format, and, to the extent practicable, in a language the parents can understand. Parents should be promptly advised of:

1. What the star designation means, and how the school compares in terms of academic achievement to other schools in the district and state;
2. The reasons for the designation;
3. Information about how the parents can become involved in addressing the academic issues that led to the designation; and
4. Any action taken to address the problems that led to the designation, including: an explanation of what the school is doing to address low achievement; an explanation of what the district and Department are doing to help; and a description of interventions being taken by the district.

The information in item 4 above shall also be disseminated to the public. Information provided to parents will be sent through direct means such as mail or email. Communications must respect the privacy of students and their families.

Legal Reference:

<u>ALASKA STATUTE</u>

14.03.123 School and District Accountability

ALASKA ADMINISTRATIVE CODE

4 AAC 06.800 - .899 School and District Accountability

UNITED STATES CODE

Elementary and Secondary Education Act, 20 U.S.C. §§ 6301, et. seq., as amended by the Every Student Succeeds Act (P.L. 114-95, December 10, 2015)

Revised 04/2022

Revised 03/2016

Nome Public Schools

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NOME PUBLIC SCHOOLS

CURRICULUM DEVELOPMENT and IMPLEMENTATION

SCIENCE

CULTURE

Karen Dixon, Director of Federal Programs,
Curriculum, Assessments
March 2025

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Key Components of Alaska Standards:

The Alaska Science Standards are designed to ensure that students across the state develop the skills and knowledge necessary for success in college, careers, and life. Here are the key components:

1. Mathematics Standards

a. Cover concepts such as numbers and operations, algebra, geometry, and statistics.
b. Emphasize problem-solving, reasoning, and real-world application of mathematical skills.
c. Develop a deep understanding of mathematical concepts for long-term retention.

Alaska Cultural Standards

d. Highlight the importance of Alaska Native heritage, language, and traditions.
e. Support culturally responsive teaching and learning.
f. Encourage respect for and inclusion of Alaska's Indigenous knowledge and values in the curriculum.

Alaska Employability Standards

g. Focus on preparing students with skills for the workforce, such as collaboration, responsibility, and adaptability.
h. Include practical skills like using technology effectively and working in diverse teams.

Key Science Areas:

The key areas of science are typically divided into three primary branches, with numerous subfields within each. Here's an overview:

1. Physical Sciences

These focus on non-living systems and the fundamental laws of nature:

- **Physics:** Explores matter, energy, forces, and the laws of motion. Topics include mechanics, electricity, magnetism, and quantum physics.
- **Chemistry:** Studies the composition, properties, and interactions of matter. Topics range from the periodic table to chemical reactions and organic chemistry.
- **Astronomy:** Investigates celestial objects and phenomena, such as stars, planets, galaxies, and the universe's origin.

2. Life Sciences

These study living organisms and their interactions with each other and their environments:

- **Biology:** Examines living organisms, including their structures, functions, growth, evolution, and ecosystems.
- **Ecology:** Focuses on relationships between organisms and their environments, emphasizing sustainability and biodiversity.
- **Genetics:** Investigates heredity and DNA, including how traits are passed from one generation to the next.

3. Earth and Space Sciences

These deal with the Earth, its processes, and its place in the universe:

- **Geology:** Studies the Earth's structure, rocks, and the processes that shape its surface, like plate tectonics.
- **Meteorology:** Explores weather patterns and atmospheric phenomena.
- **Oceanography:** Investigates the physical and biological aspects of oceans.
- **Environmental Science:** Focuses on human impacts on the environment and solutions for sustainability.

4. Interdisciplinary and Applied Sciences

These draw from multiple areas to solve real-world problems:

- **Engineering:** Applies scientific principles to design and build technologies and structures.
- **Medicine:** Uses biology and chemistry to study human health and disease prevention.

- **Environmental Science:** Combines earth science, biology, and chemistry to address environmental challenges.

Deeper dive into any specific field or explore how these areas connect with Alaska's unique environment:

Let's dive into **Earth and Space Sciences** and explore how they uniquely connect with Alaska's incredible environment. This field offers fascinating opportunities to study the natural processes shaping one of the most ecologically diverse regions in the United States.

Geology and Plate Tectonics

Alaska is home to fascinating geological features, including mountain ranges like the Alaska Range and Denali, as well as active volcanoes in the Aleutian Islands. Activities might include:

- **Studying Earthquakes:** Alaska experiences frequent seismic activity due to the movement of the Pacific and North American tectonic plates. Students can learn about the mechanics of earthquakes and use seismographs to measure tremors.
- **Glaciology:** Alaska's glaciers provide insight into climate change. Students can investigate glacier formation, movement, and melting processes.

Meteorology and Climate Science

Alaska's diverse climate zones range from temperate rainforests in Southeast Alaska to arctic tundra in the North. Activities could include:

- **Weather Observation:** Students can track temperature, wind speed, and precipitation using local data to study weather patterns.
- **Climate Change Impact:** Analyze the effects of warming temperatures on permafrost, sea ice, and wildlife populations.

Oceanography

With over 6,640 miles of coastline, Alaska provides a unique setting for oceanographic studies. Activities might include:

- **Studying Marine Ecosystems:** Investigate the rich biodiversity of Alaska's waters, including salmon migration and the habitats of whales, seals, and seabirds.
- **Tide Analysis:** Students can analyze the impact of tides on coastal areas, incorporating cultural knowledge of subsistence fishing.

Environmental Science

Alaska's ecosystems are deeply intertwined with local cultures and traditions. Activities might include:

- **Biodiversity Surveys:** Explore the flora and fauna of specific regions, learning to identify plants and animals critical to subsistence living.
- **Conservation Projects:** Study efforts to protect endangered species like the polar bear, and develop strategies for sustainable resource use.

Astronomy and Space Science

With its long, dark winters, Alaska is perfect for stargazing and studying celestial phenomena. Activities might include:

- **Aurora Borealis Research:** Learn the science behind the Northern Lights and their connection to solar wind and Earth's magnetic field.
- **Seasonal Changes:** Explore how Alaska's unique tilt and position on the globe create extreme variations in daylight throughout the year.

Place-Based Learning in Earth and Space Sciences

To make science resonate with students, connect lessons to local Alaska contexts:

- Partner with Alaska Native communities to incorporate traditional ecological knowledge, like navigation by stars or understanding of natural cycles.
- Encourage outdoor explorations, such as tracking wildlife movements, observing glacier retreat, or measuring water quality in nearby rivers.

Curriculum implementation

Implementing a K-12 curriculum aligned with Alaska Standards

is a meaningful and significant task. Here's a tailored action plan to help you ensure a smooth rollout:

1. **Understand the Alaska Standards**
   a. Familiarize yourself with the Alaska State Standards, particularly focusing on areas like:
      i. Mathematics
      ii. Alaska Native Knowledge and Culture Standards
   b. Break them down by grade level to see how each standard progresses.

2. **Align Curriculum Content**
   a. Define Objectives
   b. Clearly outline what you want students to achieve. Are you focusing on academic excellence, skill development, or creativity?
   c. Make the objectives measurable so progress can be tracked.
   d. Map out your current curriculum and identify where it already meets Alaska Standards.
   e. Fill in gaps by integrating additional resources, such as culturally relevant materials (e.g., lessons that include Alaska Native traditions and perspectives).
   f. Incorporate experiential learning to reflect Alaska's unique environment—like lessons tied to subsistence hunting, fishing, and local ecosystems.

3. **Professional Development for Educators**
   a. Host training sessions for teachers to help them understand and integrate the Alaska Standards into their lesson plans.
   b. Focus on topics like differentiated instruction, place-based learning, and culturally responsive teaching.

4. **Community and Parent Engagement**
   a. Involve families and communities by sharing your vision and plan. This could include:
      i. Meetings to explain how the curriculum supports student growth.
      ii. Gathering input from Alaska Native elders to include Indigenous knowledge.

5. **Create a Timeline**
   a. Set milestones to roll out different parts of the curriculum. This ensures that the implementation is gradual and organized.

6. **Develop Localized Teaching Strategies**
   a. Utilize place-based education: bring real-world Alaska context into learning (e.g., incorporating local geography, wildlife, or climate studies).
   b. Create interdisciplinary lessons that tie ELA, science, and social studies into real-life Alaskan scenarios.

7. **Resources for Success**
   a. Ensure access to technology, books, and hands-on learning tools that match the standards.
   b. Evaluate what additional resources are needed, such as professional development for teachers or technological upgrades.
   c. Seek grants or partnerships to fund resource procurement, particularly in remote or underserved areas.

8. **Develop Assessment Methods**
   a. Design tests, projects, and evaluations to measure students' progress.
   b. Include feedback mechanisms for teachers and students to share their experiences.

9. **Monitor and Adjust**
   a. Regularly review how the curriculum is being received and its effectiveness.
   b. Design assessments that measure alignment to the standards and track student progress.
   c. Create opportunities for teacher and student feedback to refine curriculum strategies.
   d. Be open to revising sections based on feedback or challenges encountered.

Engaging Science

Activities across various fields, tailored to spark curiosity and hands-on learning for students of all ages:

1. Exploring Earth Science

- **Make Your Own Erosion Model:** Using sand, water, and rocks, demonstrate how rivers carve landscapes. Students can observe how water flow changes the "land" over time.
- **Permafrost Experiment:** Simulate permafrost using frozen soil and observe how melting impacts structures. This ties well to climate science, especially in Alaska.
- **DIY Volcano:** Create a baking soda and vinegar volcano to demonstrate chemical reactions and learn about Alaska's real volcanic activity.

2. Investigating Life Science

- **Build a Food Web:** Use string and pictures of animals, plants, and the sun to create an interactive food web. Discuss Alaska's ecosystems, like tundra or marine systems.
- **Biology Scavenger Hunt:** Take students outside to find examples of living organisms, such as lichens, mosses, or birds. Connect these observations to local biodiversity.
- **Plant Growth Experiment:** Compare how plants grow under different conditions (e.g., light levels, soil types), encouraging observation and data collection.

3. Diving into Physical Science

- **Construct Simple Machines:** Build levers, pulleys, or inclined planes using everyday items to explore forces and motion.
- **Ice Melting Challenge:** Test different materials (e.g., sand, salt, or sugar) to see which melts ice fastest and learn about freezing-point depression.
- **Rocket Launch:** Create simple rockets using straws or balloons to study Newton's laws of motion.

4. Stargazing and Space Science

- **Northern Lights Simulation:** Use oil, water, and food coloring to create swirled patterns that mimic the aurora borealis, teaching students about solar wind and Earth's magnetic field.
- **Phases of the Moon:** Use Oreos to demonstrate the lunar cycle—students can eat their "work" afterward!
- **DIY Constellations:** Create a star map using black construction paper and pinholes to observe constellations in a dark room or flashlight.

5. Environmental and Climate Science

- **Wildlife Observation Journal:** Have students track local wildlife sightings and analyze how seasons influence animal behavior.

- **Water Filtration Project:** Build a water filter using layers of sand, charcoal, and gravel to demonstrate how filtration works in nature and human systems.
- **Carbon Footprint Challenge:** Calculate individual carbon footprints and brainstorm ways to reduce them as a class.

6. Engineering Challenges

- **Bridge Building:** Use craft sticks or straws to design and test bridges, applying concepts of weight distribution and material strength.
- **Wind Turbine Model:** Build a small wind turbine using paper and experiment with blade shapes to generate energy.
- **Earthquake-Resistant Structures:** Design and test small structures on a shake table to explore engineering resilience.

These activities are not only engaging but can also be adapted for Alaska's unique landscapes, wildlife, and cultural context.

More detailed instruction for any of these activities:

Here are step-by-step instructions for a few selected engaging science activities:

1. DIY Volcano (Physical Science)

Objective: Demonstrate chemical reactions and learn about volcanic eruptions.

- **Materials Needed:** Baking soda, vinegar, dish soap, food coloring, clay or a plastic bottle, and a tray.
- **Steps:**
    1. Build a volcano structure using clay or place a plastic bottle in the center of a tray.
    2. Add 2-3 tablespoons of baking soda into the "volcano."
    3. Add a few drops of food coloring and dish soap for dramatic effect.
    4. Slowly pour vinegar into the bottle and watch the "lava" flow out as a result of the reaction.
- **Extension:** Discuss real-life volcanoes in Alaska, like those in the Aleutian Islands, and explore how eruptions impact the environment.

2. Plant Growth Experiment (Life Science)

Objective: Explore how plants grow under different conditions.

- **Materials Needed:** Seeds (beans or radish work well), soil, small pots, water, light source, and a journal.
- **Steps:**
    1. Plant seeds in pots with the same amount of soil.
    2. Place pots under different conditions (e.g., sunlight, shade, or artificial light).

3. Water the plants equally and observe their growth daily for 1-2 weeks.
4. Record observations (e.g., height, number of leaves) in a journal.

- **Extension:** Discuss how Alaska's unique light cycles (long summer days, short winter days) affect plant growth.

3. Northern Lights Simulation (Space Science)

Objective: Learn about the aurora borealis.

- **Materials Needed:** Clear glass bowl, water, vegetable oil, food coloring, and a flashlight.
- **Steps:**
  1. Fill a clear bowl halfway with water and add a few drops of food coloring (green works best for a realistic aurora).
  2. Slowly pour vegetable oil on top of the water to create two layers.
  3. Shine a flashlight at an angle through the bowl and watch how the colors swirl and reflect.
  4. Discuss how charged solar particles interact with Earth's magnetic field to produce the aurora.
- **Extension:** Study auroras' significance in Alaska Native cultures and their role in navigation.

4. Wildlife Observation Journal (Environmental Science)

Objective: Observe and document local biodiversity.

- **Materials Needed:** Notebook, pen/pencil, binoculars (optional), and field guides (for identification).
- **Steps:**
  1. Take students outside to a nearby natural area or even the schoolyard.
  2. Instruct them to observe and record animals, plants, or other natural elements they see (e.g., bird species or tree types).
  3. Note the date, time, weather conditions, and location for each observation.
  4. Have students sketch the organisms or take notes on their behavior and habitat.
- **Extension:** Compare observations across seasons and discuss how animals adapt to Alaska's changing environment.

5. Earthquake-Resistant Structures (Engineering Challenge)

Objective: Learn about structural engineering and seismic activity.

- **Materials Needed:** Marshmallows, toothpicks, a shake table (can be a sturdy tray and foam to simulate shaking), and weights.
- **Steps:**
  1. Give students materials to build a structure using marshmallows and toothpicks.
  2. Test each structure's stability by placing it on the shake table and gently shaking it.
  3. Add weights (e.g., coins) to see how much stress the structures can handle.

4. Discuss why some structures withstood shaking better than others.
- **Extension:** Relate this activity to Alaska's seismic activity and discuss how engineers design earthquake-resistant buildings.

These detailed instructions provide hands-on opportunities for students to connect science concepts with Alaska's unique context.

Here's how the previously detailed activities can be modified and tailored to specific grade levels:

1. DIY Volcano (Physical Science)

- **Early Grades (K-2):**
  - Simplify the activity by focusing on observation. Ask questions like, "What color is the lava?" and "How does it move?"
  - Use smaller setups to ensure safe handling of materials.
- **Upper Grades (3-5):**
  - Introduce the concept of chemical reactions. Explain how baking soda (base) reacts with vinegar (acid) to produce carbon dioxide.
  - Encourage students to measure ingredients and repeat the reaction with varying amounts to observe differences.
- **Middle/High School (6-12):**
  - Explore the real-world applications by discussing specific Alaskan volcanoes. Have students research types of eruptions (e.g., explosive vs. effusive) and compare their models to actual events.

2. Plant Growth Experiment (Life Science)

- **Early Grades (K-2):**
  - Focus on simple observations: "What color are the leaves? How tall is the plant today?"
  - Introduce basic vocabulary like "root," "stem," and "leaf."
- **Upper Grades (3-5):**
  - Have students track and graph plant growth over time, integrating math skills like measuring height and plotting data points.
  - Discuss environmental factors affecting plants, such as light and water.
- **Middle/High School (6-12):**
  - Add complexity by exploring photosynthesis and cellular respiration. Assign groups to study soil types or light wavelengths for deeper scientific inquiry.

3. Northern Lights Simulation (Space Science)

- **Early Grades (K-2):**

    - Simplify by focusing on observation. Encourage students to describe what they see and compare patterns to pictures of auroras.
    - Use art to create representations of the Northern Lights with crayons or paints.
- **Upper Grades (3-5):**
    - Explain the science behind auroras, such as solar wind and Earth's magnetic field, using age-appropriate terms.
    - Have students experiment with different materials (e.g., oil thickness or food coloring types) to see how patterns change.
- **Middle/High School (6-12):**
    - Explore the electromagnetic spectrum and how charged particles interact with magnetic fields. Connect this to Alaska's geographic position and the prevalence of auroras.

4. Wildlife Observation Journal (Environmental Science)

- **Early Grades (K-2):**
    - Use simple categories for observations: "What animals did you see?" "What color are they?" "How do they move?"
    - Encourage drawings to document findings.
- **Upper Grades (3-5):**
    - Introduce journaling techniques, such as noting weather conditions and animal behaviors. Teach students how to identify animals using field guides.
    - Discuss how wildlife changes with the seasons in Alaska.
- **Middle/High School (6-12):**
    - Incorporate research on biodiversity. Assign students to analyze the impacts of climate change on specific species in Alaska.
    - Encourage data collection and presentation of findings using graphs or reports.

5. Earthquake-Resistant Structures (Engineering Challenge)

- **Early Grades (K-2):**
    - Focus on simple designs using large building blocks or marshmallows. Discuss basic concepts like "What makes the structure strong?"
    - Keep the "shake test" light and fun.
- **Upper Grades (3-5):**
    - Introduce structural engineering concepts like "base" and "balance." Have students brainstorm ways to reinforce their buildings (e.g., using more marshmallows at key points).
- **Middle/High School (6-12):**
    - Dive into engineering principles, such as load distribution and materials science. Have students research real-world earthquake-resistant technologies, like flexible foundations used in buildings.

Interdisciplinary Extensions:

For all grade levels, encourage cross-curricular connections:

- **Early Grades:** Connect activities to stories, songs, or art.
- **Upper Grades:** Tie activities to local Alaskan history or science, such as Indigenous knowledge of natural phenomena.
- **High School:** Integrate advanced concepts from math, science, and engineering to make activities rigorous and aligned with standards.

Tailoring science

activities involves adjusting complexity, engagement levels, and depth to match students' developmental stages, interests, and real-world applications. Here's a framework for how science activities can be tailored for diverse grade levels:

1. Inquiry-Based Learning

Tailor activities to students' curiosity and encourage exploration:

- **Early Grades:** Provide guided questions and simple tools, like magnifying glasses, to explore phenomena (e.g., "What happens to water when it freezes?").
- **Upper Grades:** Allow students to hypothesize, test, and observe more independently, such as tracking plant growth under different light sources.
- **High School:** Encourage research-based projects with experimental design, such as measuring the effects of temperature changes on glacier ice samples.

2. Incorporating Local Context

Use Alaska's unique environment to make science activities relevant:

- **Early Grades:** Focus on observable phenomena, like identifying local animals and plants.
- **Upper Grades:** Explore environmental connections, such as the impact of permafrost melting or salmon migration patterns.
- **High School:** Dive into real-world applications, like designing sustainable fishing practices or studying climate data for policy recommendations.

3. Gradual Complexity

Adapt activities to build foundational skills before advancing:

- **Early Grades:** Focus on hands-on, sensory activities (e.g., mixing sand and water to model erosion).
- **Upper Grades:** Introduce basic measurements and calculations (e.g., measuring weather conditions and graphing trends).
- **High School:** Integrate advanced tools and concepts, like digital sensors or data analysis software.

4. Collaboration and Independence

Adjust teamwork and individual responsibility:

- **Early Grades:** Work in groups for activities like creating models of the solar system with crafts.
- **Upper Grades:** Pair students for collaborative problem-solving, such as building small earthquake-resistant structures.
- **High School:** Encourage independent research projects that culminate in presentations or papers.

5. Creativity and Multidisciplinary Connections

Link science to other subjects for a well-rounded approach:

- **Early Grades:** Integrate art (e.g., drawing constellations or crafting volcanoes).
- **Upper Grades:** Connect to history and geography by studying Alaskan natural landmarks and historical climate trends.
- **High School:** Include math and engineering principles by calculating tide forces or designing wind turbines.

Overview of key Alaska Cultural Standards:

The Alaska Cultural Standards focus on integrating local cultures and traditions into education, ensuring that students gain a deep appreciation for Alaska's diverse heritage. These standards guide educators in creating culturally responsive practices and fostering a connection to the state's unique Indigenous knowledge.

Key Components of Alaska Cultural Standards

1. **Culturally Knowledgeable Students**:
    - Students should learn about and respect local traditions, values, and languages.
    - Develop awareness of Alaska Native cultures alongside global perspectives.
2. **Culturally Responsive Educators**:
    - Teachers are encouraged to incorporate place-based learning, making local geography, ecosystems, and cultural practices a core part of the curriculum.
    - Build relationships with community members, including Alaska Native elders, for knowledge-sharing.
3. **Cultural Integrity in Curriculum**:
    - Use teaching materials that reflect Alaska's cultural diversity, such as Indigenous stories, art, and historical accounts.
    - Ensure curriculum promotes critical thinking about the interaction between traditional knowledge and Western concepts.
4. **Community Engagement**:
    - Actively involve families, elders, and local organizations in the educational process.
    - Provide students with opportunities to participate in cultural events and ceremonies.
5. **Ecological and Environmental Awareness**:
    - Teach students to recognize the importance of sustainability and subsistence practices that are integral to Alaska Native traditions.

Practical Applications

- **Classroom Lessons**:
    - Design units around Alaska Native languages and oral storytelling traditions.
    - Incorporate local environmental studies, like salmon migration or tundra ecosystems, into science and social studies lessons.
- **Professional Development**:
    - Provide training for teachers on cultural sensitivity and methods to integrate Indigenous knowledge into lesson plans.
- **Extracurricular Activities**:
    - Organize community service projects and events that connect students with local cultural practices, such as traditional fishing or art workshops.

Engaging Culture Activities:

Detailed examples of lesson plans and activities that align with the **Alaska Cultural Standards**, fostering cultural respect, environmental awareness, and community engagement:

1. Storytelling and Oral Traditions (ELA, Cultural Studies)

Grade Level: K-12 (adaptable)

- **Objective:** Students will explore the art of oral storytelling and its importance in Alaska Native cultures.
- **Activity Steps:**
    1. Invite an Alaska Native elder or community member to share traditional stories with the class.
    2. Discuss themes, values, and lessons embedded in the stories (e.g., respect for nature, community, or resilience).
    3. Have students create their own oral stories inspired by local landscapes, animals, or personal experiences.
    4. Present the stories to peers, emphasizing tone, expression, and memorization.
- **Extension:** Compare oral traditions to written storytelling and examine how traditional knowledge has been passed down through generations.

2. Salmon Migration and Ecosystem Role (Science, Environmental Studies)

Grade Level: 4-8

- **Objective:** Investigate salmon life cycles, their cultural significance, and their role in Alaska's ecosystems.
- **Activity Steps:**
    1. Research the stages of salmon migration and their environmental impact.
    2. Discuss the importance of salmon in Alaska Native cultures, including subsistence and storytelling.
    3. Conduct a hands-on project: Create a model of a watershed and simulate salmon migration while highlighting environmental challenges like damming or pollution.
    4. Conclude with a discussion on conservation efforts to preserve salmon populations.
- **Extension:** Write a reflection on how maintaining healthy salmon populations supports both cultural traditions and ecosystems.

3. Traditional Navigation Using Stars (Astronomy, Geography, Cultural Studies)

Grade Level: 6-12

- **Objective:** Learn about traditional navigation techniques using stars, integrating Alaska Native knowledge with astronomy.
- **Activity Steps:**

1. Research how Indigenous communities historically used the stars, moon, and landforms for navigation.
2. Take students outside to identify constellations visible in Alaska's night sky, such as the Big Dipper.
3. Create star charts and practice navigating simple "routes" using star positions.
4. Compare traditional methods with modern GPS technologies.

- **Extension:** Discuss how incorporating traditional knowledge can enhance modern environmental navigation and respect for Indigenous wisdom.

4. Building a Seasonal Subsistence Calendar (Cultural Studies, Environmental Science)

Grade Level: 5-12

- **Objective:** Understand the seasonal cycles and their connection to Alaska Native subsistence practices.
- **Activity Steps:**
    1. Research traditional hunting, fishing, and gathering activities and how they align with Alaska's seasons.
    2. Have students interview elders or local community members to gather insights into traditional subsistence practices.
    3. Create a visual calendar showing key activities, such as berry harvesting, salmon runs, and caribou migration, tied to each season.
    4. Reflect on the importance of sustainability and how climate change is impacting these cycles.
- **Extension:** Integrate art by having students illustrate key elements of their subsistence calendar with traditional symbols.

5. Tundra Ecosystem Study and Fieldwork (Science, Ecology)

Grade Level: 7-12

- **Objective:** Explore the tundra biome, its plant and animal life, and its importance to local communities.
- **Activity Steps:**
    1. Research tundra ecosystems, focusing on plants like mosses and lichen and animals such as caribou and foxes.
    2. Organize a field trip to a local tundra area or simulate tundra conditions in the classroom with soil, moss, and small plants.
    3. Have students collect data (e.g., plant types, soil conditions) and compare it to online or historical records.
    4. Discuss the role of the tundra in Alaska Native traditions and how environmental changes are affecting its ecosystem.
- **Extension:** Write a report on how preserving tundra ecosystems supports both cultural heritage and biodiversity.

6. Alaska Native Art and Culture Workshop (Art, Social Studies)

Grade Level: K-12 (adaptable)

- **Objective:** Explore Alaska Native art forms and their cultural significance.
- **Activity Steps:**
    1. Teach students about traditional art forms like beadwork, carving, or mask-making, and their roles in cultural storytelling.
    2. Provide materials for students to create their own artworks inspired by traditional designs or stories.
    3. Host an "art exhibit" where students display their creations and explain their cultural significance.
    4. Invite community artists to share their expertise and techniques.
- **Extension:** Research how contemporary Alaska Native artists are blending traditional and modern elements in their work.

7. Place-Based Science and Mapping (Geography, Science, Cultural Studies)

Grade Level: 3-12 (adaptable)

- **Objective:** Combine geographic skills and cultural knowledge to map local landforms and their significance.
- **Activity Steps:**
    1. Introduce mapping basics, including reading topographic maps and compass use.
    2. Research the cultural significance of local landmarks, such as mountains, rivers, or forests.
    3. Have students create maps of their community, integrating both geographical features and cultural stories.
    4. Present findings to peers or local community members.
- **Extension:** Use GPS tools to compare traditional and modern mapping techniques.

How These Align with Alaska Cultural Standards

These lesson plans:

- Engage students with culturally relevant topics and practices.
- Foster relationships with Alaska Native communities and elders.
- Encourage respect for traditional ecological knowledge and sustainability.
- Combine rigorous academic standards with hands-on, place-based learning.

Activities and explore assessment strategies!

Focus on **Salmon Migration and Ecosystem Role**, as it integrates environmental science, biology, and cultural studies.

Expanded Activity Plan: Salmon Migration and Ecosystem Role

Grade Level: 4-8

Objective:

Students will understand:

1. The salmon life cycle and its role in the ecosystem.
2. The cultural and economic importance of salmon to Alaska Native communities.
3. The impact of environmental changes on salmon populations.

Detailed Steps:

1. **Introduction:**
    - Show a video or images illustrating salmon migration and spawning. Discuss key stages of the life cycle: egg, fry, smolt, adult, and spawner.
    - Highlight the interconnected role of salmon in ecosystems as a food source for bears, eagles, and aquatic species.
2. **Hands-On Activity: Create a Watershed Model**
    - Build a simple watershed using a plastic tray or large container. Use materials like sand, soil, and small rocks to simulate terrain.
    - Students pour water (representing a river) through the model to simulate how salmon travel from streams to the ocean.
    - Add obstacles like pebbles or branches to mimic natural and human-made challenges, such as dams or pollution.
3. **Cultural Integration:**
    - Invite an Alaska Native elder to share stories about salmon's significance in subsistence fishing and cultural traditions.
    - Discuss how traditional knowledge informs sustainable fishing practices.
4. **Conservation Discussion:**
    - Have students research threats to salmon populations, such as climate change, overfishing, and habitat destruction.
    - Brainstorm and present solutions, like habitat restoration or policies to protect salmon ecosystems.
5. **Wrap-Up:**

- Students work in groups to create posters, digital presentations, or short videos summarizing what they learned about salmon and their significance.

Assessment Strategies:

1. **Formative Assessments:**
   - Observe students during the hands-on watershed activity. Use guiding questions like:
     - *Why are salmon important to both ecosystems and people?*
     - *What challenges do salmon face during migration?*
   - Check students' understanding through group discussions or quick journal entries.
2. **Summative Assessments:**
   - **Poster or Presentation Rubric:** Evaluate creativity, scientific accuracy, clarity of communication, and integration of cultural knowledge.
   - **Reflection Essay:** Ask students to write about one way they can personally contribute to protecting salmon or their habitats.
   - **Quiz:** Design a short quiz on the salmon life cycle, ecosystem connections, and cultural significance.
3. **Project-Based Assessment:**
   - Students propose a conservation project in teams (e.g., designing a campaign to raise awareness about salmon preservation).
4. **Peer and Self-Assessment:**
   - Incorporate peer reviews for posters or group projects, asking students to give constructive feedback.
   - Include a self-assessment rubric so students can reflect on their learning process.

Extensions:

- Older students can analyze salmon population data over time to identify trends and make predictions.
- Younger students could focus on drawing or labeling the life cycle of a salmon.

Here's a rubric tailored for assessing the **Salmon Migration and Ecosystem Role** project. It can be adapted based on grade level or specific learning objectives.

Rubric: Salmon Migration and Ecosystem Role

Project Components: Poster or Presentation, Reflection Essay, and Group Collaboration.

Criteria	Excellent (4)	Proficient (3)	Needs Improvement (2)	Unsatisfactory (1)
Scientific Accuracy	Content demonstrates a thorough understanding of salmon life cycles,	Content is mostly accurate, with minor	Content has several	Content is incorrect or unrelated to

Criteria	Excellent (4)	Proficient (3)	Needs Improvement (2)	Unsatisfactory (1)
	ecosystems, and environmental impacts, with no factual errors.	errors or missing details.	inaccuracies or lacks depth.	salmon migration and ecosystems.
Integration of Cultural Knowledge	Includes rich, detailed examples of salmon's importance to Alaska Native cultures and traditions, supported by research or stories.	Includes some examples of cultural significance, but lacks detail or depth.	Mentions cultural relevance briefly, with little connection to traditions.	Does not address the cultural significance of salmon.
Creativity and Presentation	Visuals (poster or digital elements) are highly engaging, organized, and creative, with clear explanations.	Presentation is organized and engaging but lacks some creativity or clarity.	Presentation is somewhat disorganized or difficult to understand.	Presentation is unclear, disorganized, or incomplete.
Reflection Essay	Essay demonstrates deep insight and connects learning to personal action or environmental impact, with well-supported arguments.	Essay shows understanding but lacks depth or personal connection.	Essay is brief, with limited insight or connection to the topic.	Essay is incomplete or unrelated to the objectives.
Collaboration	Group works effectively, sharing tasks equally and communicating well.	Group collaborates well, with minor issues in task division or communication.	Group has difficulty collaborating, with uneven participation.	Group does not collaborate effectively or complete the project.

Assessment Notes:

- Use this rubric to provide both qualitative and quantitative feedback.
- Add a self-assessment column for students to reflect on their performance.
- Consider weighting categories if certain aspects (e.g., scientific accuracy) are more critical than others.

Grade 6 Science

Grade(s): 6 **Length:** two semesters	**Course Overview**: Sixth grade science focuses on Earth's systems, astronomy, and gravity. In Earth's systems, students will explore the history of our changing planet through impacts of water, rock, and soil cycles on Earth's surface processes, and construct weather and climate observations to explain influences on Earth's surface. In astronomy, the students will model the solar system to observe, describe, and predict the motion of various bodies in our solar system. In gravity, students will investigate Newton's Third Law of Motion in relation to planetary motion. Throughout the year, interwoven into the curriculum content, students will design and conduct repeatable scientific investigations to continue to develop an awareness that different ways of thinking, curiosity, and the exploration of multiple paths are involved in scientific inquiry. **Adopted Textbook:** *Into Science: Earth & Space Sciences.* HMH, 2022 Volumes: *Circulation of the Earth's Air and Water, Weather and Climate, The Dynamic Earth, Earth's Natural Hazards, Resources in Earth Systems, Human Impacts on Earth Systems, Patterns in the Solar System, The Solar System and Universe.*

Units (Recommended Order)	
Semester 1	**Semester 2**
• Circulation of Earth's Air and Water • Weather and Climate • The Dynamic Earth • Earth's Natural Hazards • Resources in Earth's Systems	• Human Impacts on Earth's Systems • Patterns in the Solar System • The Solar System and Universe • Performance Expectations*

Notes:

- The *Earth and Space Science* Unit 4 "Earth through Time" book was intentionally skipped, as it is utilized by grade 7.
- *Science process skills are best taught in context. Therefore, the performance expectations will be incorporated into the units below. Not all of these performance expectations will be incorporated into every activity; however, the opportunities to learn these skills will be provided throughout the course.

UNIT 1: CIRCULATION OF EARTH'S AIR & WATER

Timing: Semester 1, Quarter 1
Teaching Time Required: All estimated teaching times are based on a 45 minute period.
Textbook: *Into Science* book 1: *Circulation of Earth's Air and Water*

Topic	# Days	Objectives	Key Vocabulary	Resources & Materials
Circulation in the Earth's Atmosphere	5 days	• Identify and analyze movements of air masses from regions of high to low pressure (convection currents) and the effects on weather.	• Convection • Coriolis Effect • Air Pressure • Atmosphere • Circulation • Density • Energy System	• Unit 1 (Book 1, p. 3A) Lesson 1: Circulation in the Earth's Atmosphere
Circulation in the Earth's Oceans	5 days	• Describe the effects of the ocean on Earth's weather.	• Ocean Current • Density • Salinity • Temperature	• Unit 1 (Book 1, 11A) Lesson 2: Circulation in Earth's Oceans
The Water Cycle	5.5 days	• Describe and illustrate the water cycle, and the forces that drive it (gravity and sunlight).	• Evaporation • Condensation • Transpiration • Crystallization • Precipitation • Runoff • Groundwater Flow	• Unit 1 (Book 1, 19A) Lesson 3: The Water Cycle
Unit Test/ Labs	2 days			•
Standards List:	**MS ESS2-4, MS ESS2-6**			

NOME PUBLIC SCHOOLS

TEXTBOOK ADOPTION PROCESS
AND
RECOMMENDATIONS

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Alaska Textbook Adoption Guidelines

In Alaska, textbook adoption is primarily managed at the local level, meaning individual school districts have the authority to select instructional materials that align with the state's educational standards. The Alaska Department of Education & Early Development (DEED) provides overarching guidelines to ensure that materials support the Alaska Content Standards and are culturally responsive, particularly for Alaska Native students.

Textbook Adoption:

Introduction States use one of two methods to select the textbooks used in their schools. Thirty states allow local agencies or schools to choose the textbooks they will use. A total of 20 states – known as textbook adoption states – choose at the state level what textbooks can be used by all districts.

State	State-level Textbook Adoption	Local Education Agency-Level Textbook Adoption	Free Textbooks Provision	Some Rental Fees Allowable by Lae
Alaska		X	X	

Textbook Adoption: District boards select textbooks used in Alaska's public schools and statewide correspondence study programs. Correspondence study students, or the parents or guardians of correspondence students, may privately obtain or use textbooks or curriculum material not provided by the school district (ALASKA STAT. § 14.07.050). Free Textbooks: School districts provide students with textbooks (ALASKA STAT. § 14.07.050). Minority Representation: Discrimination in textbooks and instructional materials prohibited (ALASKA STAT. § 14.18.060).

Factors should be considered in textbook selection:

Selecting textbooks requires careful consideration to ensure they meet the needs of students, teachers, and the curriculum. Here are some key factors to keep in mind:

1. Alignment with Standards: Textbooks should align with the Alaska Content Standards or other relevant educational benchmarks to ensure they meet learning objectives.
2. Cultural Responsiveness: Materials should reflect the diversity of students, particularly incorporating and respecting Alaska Native cultures, histories, and ways of knowing. They should avoid stereotypes or cultural insensitivity.
3. Age Appropriateness: Content and language should be suitable for the grade level and developmental stage of the students.

4. Accuracy and Currency: Information should be accurate, up-to-date, and free from errors. For subjects like science or technology, this is particularly crucial.
5. Engagement and Readability: The material should engage students with clear, accessible language, visuals, and activities that encourage active learning and critical thinking.
6. Support for Teachers: Textbooks should provide resources like lesson plans, assessments, and teaching strategies that align with the material.
7. Cost and Accessibility: The cost of the textbooks, as well as their availability in different formats (print, digital, or accessible for students with disabilities), should be evaluated.
8. Feedback from Stakeholders: Teachers, students, and parents should have the opportunity to review and provide input on proposed materials.
9. Durability and Usability: Physical and digital materials should be durable, user-friendly, and designed to last or remain relevant for multiple years.

Cultural Responsiveness:

Cultural responsiveness in education is about creating an environment where all students feel valued, respected, and understood. It's especially important in diverse settings, such as Alaska, where recognizing and honoring Alaska Native cultures and ways of knowing plays a vital role in student success. Here's a deeper look at what it entails:

1. Valuing Diversity: Teachers and educational materials must acknowledge and celebrate the diverse cultural backgrounds of students, seeing them as assets rather than challenges.
2. Incorporating Local Knowledge: In Alaska, this might mean integrating Indigenous knowledge, histories, and perspectives into the curriculum. For example, teaching science through traditional ecological knowledge or including Alaska Native storytelling in language arts.
3. Reflecting Students' Lives: Culturally responsive materials and teaching methods reflect the daily realities, experiences, and heritage of the students, so they see themselves represented and valued in their education.
4. Challenging Stereotypes: It's about ensuring that educational content avoids reinforcing biases or stereotypes, instead promoting critical thinking about cultural assumptions.
5. Equity in Access: Culturally responsive practices aim to provide equitable learning opportunities for all students, recognizing systemic barriers that might disadvantage some groups.
6. Fostering Respect and Understanding: This includes encouraging students to respect and understand other cultures while being proud of their own heritage.

For NPS, aligning the curriculum with Alaska Standards and culturally responsive teaching, is likely means emphasizing place-based learning—integrating the local community, environment, and traditions into educational practices. This approach not only meets academic goals but also builds strong connections between students and their cultural identities.

Sample Evaluation Rubric for Textbook Selection

Criteria	Description	Scoring Range
Alignment with Standards	Evaluate how well the textbook aligns with Alaska Content Standards and grade-level benchmarks.	1-5
Cultural Responsiveness	Assess the inclusion of Alaska Native cultures, histories, and ways of knowing, as well as avoidance of stereotypes.	1-5
Age Appropriateness	Review if the content and language are suitable for the intended grade level.	1-5
Engagement	Examine how engaging and readable the material is for students, including visuals and activities.	1-5
Accuracy and Currency	Check for factual correctness and if the content reflects the latest developments in the subject area.	1-5
Teacher Support	Determine the quality of supplemental resources provided, such as lesson plans, assessments, and teaching aids.	1-5
Cost and Accessibility	Evaluate the affordability and availability of the textbook in various formats, including options for students with disabilities.	1-5

Additional considerations for textbook rubric:

1. Place-Based Learning Potential: Assess how well the textbook supports learning that connects with students' local environment, community, and cultural heritage—important for Alaska's unique educational context.
2. Student Engagement Activities: Evaluate the quality and variety of activities or exercises provided. Look for hands-on or project-based learning opportunities that engage students actively.
3. Differentiated Instruction: Determine whether the textbook includes strategies or resources to meet the needs of diverse learners, such as English language learners, students with disabilities, or advanced learners.
4. Integration of Technology: Check whether the textbook offers digital resources, interactive tools, or links to online platforms that enhance learning.
5. Critical Thinking Emphasis: Analyze how well the material encourages higher-order thinking skills, such as analysis, synthesis, and evaluation.
6. Assessment Resources: Look at the inclusion of formative and summative assessments, such as quizzes, tests, rubrics, or self-assessment tools.
7. Teacher and Professional Development Links: Examine whether the textbook connects to professional development resources to help teachers use the materials effectively.
8. Multidisciplinary Integration: Consider whether the textbook incorporates cross-curricular connections, such as linking science with math or social studies with language arts.

9. Environmental Sustainability Focus: Evaluate if the materials discuss environmental issues relevant to Alaska or include practices promoting sustainability.
10. Adaptability for Local Needs: Check whether the textbook allows flexibility for teachers to adapt materials to the specific needs of their students or school community.
11. Comprehensive Textbook Evaluation Rubric Template

Criteria	Description	Scoring Range
Alignment with Standards	Evaluate how well the textbook meets Alaska Content Standards and grade-level benchmarks.	1-5
Cultural Responsiveness	Assess the inclusion of Alaska Native cultures, histories, and ways of knowing, with attention to avoiding stereotypes.	1-5
Place-Based Learning Potential	Determine how effectively the textbook integrates local environmental, cultural, and community elements.	1-5
Age Appropriateness	Review whether the content and language suit the developmental stage of the intended grade level.	1-5
Engagement and Activities	Examine the quality and variety of activities, exercises, and visuals to engage students actively.	1-5
Accuracy and Currency	Verify the accuracy and timeliness of information, particularly for rapidly evolving subjects.	1-5
Critical Thinking Emphasis	Analyze how well the material encourages higher-order thinking skills, such as analysis and synthesis.	1-5
Differentiated Instruction	Evaluate whether the textbook supports diverse learners, including English language learners and students with special needs.	1-5
Technology Integration	Examine the inclusion of digital resources, interactive tools, or online platform connections.	1-5
Teacher Support	Review the quality of supplemental resources provided, including lesson plans and assessment tools.	1-5
Assessment Resources	Determine whether the textbook includes effective formative and summative assessments.	1-5
Environmental Sustainability Focus	Assess whether the materials discuss or promote environmentally sustainable practices.	1-5
Multidisciplinary Integration	Evaluate the incorporation of cross-curricular connections across subjects.	1-5
Cost and Accessibility	Consider affordability and availability in multiple formats, such as digital and print, and for students with disabilities.	1-5
Adaptability for Local Needs	Review how flexible the materials are for customization to meet district-specific or student-specific needs.	1-5

ELA Textbook Recommendations:

For English Language Arts (ELA), there are several highly recommended textbooks and resources that align with modern teaching practices and standards. Here are a few notable ones:

1. "Collections" by Houghton Mifflin Harcourt (HMH): This series is widely used for middle and high school ELA. It focuses on critical thinking, close reading, and writing skills, with a variety of texts, including fiction, nonfiction, and poetry.
2. "My Perspectives" by Savvas Learning Company: This program emphasizes student-centered learning and integrates reading, writing, speaking, and listening skills. It includes diverse texts and multimedia resources.
3. "Into Literature" by HMH: Designed for grades 6–12, this series offers a blend of classic and contemporary literature, along with tools for developing analytical and writing skills.
4. "Wonders" by McGraw Hill: Aimed at elementary grades, this program supports foundational literacy skills and includes a strong focus on vocabulary and comprehension.
5. "Units of Study" by Lucy Calkins: This resource is popular for its workshop approach to teaching reading and writing, fostering student independence and creativity.

And,

Finding textbooks that align with Alaska's standards and emphasize culturally responsive teaching is crucial for meaningful education. Here are a few options and ideas that could work well:

1. "Paths to Discovery: Alaska Native Ways of Knowing":
    - This resource focuses on integrating traditional ecological knowledge and Alaska Native cultural perspectives into various subjects.
    - It’s a valuable supplement for promoting cultural responsiveness across grade levels.
2. "Wonders" by McGraw Hill (Elementary):
    - While nationally recognized, many districts customize its use to include culturally relevant texts and stories. Teachers can complement it with local literature or Alaska Native oral traditions to meet standards.
3. Teacher-Created Resources Using Alaska Standards:
    - Many districts encourage teacher teams to curate or create resources that align with the Alaska Cultural Standards for Educators. This might include locally sourced content, Native-authored literature, or units emphasizing place-based learning.
4. Local or Regional Texts:
    - Consider collaborating with organizations like the Alaska Native Knowledge Network (ANKN), which offers resources specifically tailored to Alaska Native heritage, languages, and cultural context.

Math textbook recommendations:

Here are some highly recommended math textbooks for K-12 education:

1. "enVision Mathematics" by Savvas Learning Company:
    - Covers K-12 with a focus on problem-solving and conceptual understanding.
    - Includes digital resources and interactive tools for students and teachers.
2. "Go Math!" by Houghton Mifflin Harcourt (HMH):
    - Designed for K-8, this series emphasizes critical thinking and real-world applications.
    - Offers resources for differentiated instruction.
3. "Big Ideas Math" by Big Ideas Learning:
    - Suitable for middle and high school, this program integrates technology and promotes inquiry-based learning.
4. "Illustrative Mathematics" by Kendall Hunt:
    - A free, open-source curriculum for grades 6-12, focusing on student-centered learning and deep conceptual understanding.
5. "Math in Focus" (Singapore Math):
    - Based on the Singapore Math approach, this series is excellent for building strong foundational skills in K-8.
6. "Reveal Math" by McGraw Hill:
    - A modern program for K-12 that emphasizes exploration and discovery in mathematics.

Science textbook recommendations:

Here are some excellent science textbooks and resources for K-12 education:

1. "A Framework for K-12 Science Education":
    - Focuses on practices, crosscutting concepts, and core ideas in science education.
    - Provides a foundation for developing science standards and curriculum.
2. "Successful K-12 STEM Education":
    - Highlights effective approaches in science, technology, engineering, and mathematics.
    - Offers insights into integrating STEM disciplines into K-12 education.
3. National Science Teaching Association (NSTA) Resources:
    - The NSTA publishes lists of outstanding science trade books and STEM books for K-12 students. These books emphasize real-world applications, critical thinking, and interdisciplinary learning4.

Updating Textbook Timeline:

The timeline for updating textbooks typically depends on factors like subject area, curriculum changes, and budget availability. Here's a general recommendation for K-12 textbook updates:

1. Core Subjects (Math, ELA, Science, and Social Studies):
    - Update every 5-7 years to ensure alignment with updated standards, reflect new educational research, and incorporate recent discoveries or advancements (especially in Science).
2. Specialized or Elective Subjects:
    - Update every 7-10 years unless there are significant curriculum changes or new standards introduced for these subjects.
3. Technological or Digital Resources:
    - Review and refresh annually or every 2-3 years, as digital tools and platforms tend to evolve faster than traditional textbooks.
4. Cultural Responsiveness and Relevance:
    - Conduct periodic reviews (e.g., every 2-3 years) to ensure materials remain culturally relevant and inclusive, particularly for local contexts like Alaska.
5. Budget and Planning Considerations:
    - If the budget doesn't allow for all updates simultaneously, rotate subjects over a multi-year cycle (e.g., Math in Year 1, ELA in Year 2) to stay on track without overwhelming resources.

Long-Term Textbook Update Plan

1. Conduct an Annual Needs Assessment

- Timeline: Early spring (e.g., March–April) to prepare for the next school year.
- What to Do:
    - Survey teachers, students, and administrators about current textbooks' effectiveness.
    - Assess textbooks for alignment with the Alaska Content Standards and cultural relevance.
    - Identify subject areas in need of urgent updates.

2. Prioritize Updates

- Rotate updates by subject over a multi-year cycle:
    - Year 1: Math and Science
    - Year 2: ELA and Social Studies
    - Year 3: Electives, specialized materials, and technology-related content.

3. Budget and Planning

- Work with the district's finance team to allocate funds for updates.
- Factor in costs for physical textbooks, digital resources, and teacher training.

4. Textbook Review and Selection

- Timeline: Late spring to summer (e.g., May–June).
- What to Do:
    - Use an evaluation rubric (like the one we discussed) to assess potential materials.
    - Involve teachers and community members in the review process, ensuring a variety of perspectives.

5. Purchase and Implementation

- Timeline: Late summer (e.g., July–August) for the upcoming school year.
- What to Do:
    - Procure the selected textbooks or resources.
    - Offer professional development sessions to help teachers integrate the new materials.

6. Periodic Interim Reviews

- Every 2-3 years, review textbooks for continued relevance, especially for cultural responsiveness and alignment with evolving standards.

7. Documentation and Communication

- Maintain clear records of textbook reviews, updates, and future plans.
- Communicate the update plan to stakeholders to build transparency and support.

Needs Assessment Process:

Step 1: Define Objectives

Clearly outline what you aim to achieve through the assessment. For textbook updates, your objectives might include:

- Evaluating alignment with Alaska Standards.
- Identifying strengths and gaps in current textbooks.
- Gathering stakeholder input on cultural responsiveness and usability.

Step 2: Identify Stakeholders

Engage key stakeholders, such as:

- Teachers: Their insights into how well textbooks support instruction.
- Students: Their feedback on engagement and understanding.
- Parents: Their perspectives on cultural representation and appropriateness.
- Administrators: Their input on logistical aspects like cost and accessibility.

Step 3: Create Surveys

Develop tailored surveys for each stakeholder group. Example survey questions:

For Teachers:

- "How well does the textbook align with the Alaska Standards for your subject area?"
- "What challenges have you faced using the current textbook?"
- "Rate the supplemental teacher resources (lesson plans, assessments)."

For Students:

- "Do you find the textbook engaging and easy to understand?"
- "What features of the textbook (visuals, activities) help you learn better?"

For Parents:

- "Does the textbook represent diverse cultural perspectives, including Alaska Native cultures?"
- "Do you think the content is age-appropriate for your child?"

Detailed Survey Questions:

Survey Questions

For Teachers:

- On a scale of 1–5, how well does the current textbook align with the Alaska Standards for your subject and grade level?
- What specific strengths or gaps have you noticed in the current textbook?
- How effective are the supplemental materials (e.g., lesson plans, assessments) provided with the textbook?
- Does the textbook include culturally responsive content, particularly relevant to Alaska Native cultures? If not, what's missing?
- How often do you supplement or replace textbook materials with other resources? Why?

For Students (age-appropriate language for younger learners):

- Do you find the textbook interesting and easy to follow? (Yes/No, with a space for examples)
- Are the examples or stories in the textbook relatable to you or your community? Why or why not?
- What parts of the textbook (images, activities, text) help you learn the most? What could be improved?

For Parents:

- Do you feel the textbook is age-appropriate and helps your child understand the subject?
- Does the textbook represent diverse cultural perspectives, including Alaska Native cultures?
- Are there any features of the textbook that you feel support or hinder your child's learning?

For Administrators:

- Does the textbook meet district goals for curriculum alignment and student outcomes?
- What feedback have you received from staff or parents about the textbook?
- Are there logistical challenges (e.g., cost, availability) associated with using the textbook?

Observation Rubrics

1. Classroom Interaction:

Criteria	Yes/No/Notes
Textbook content actively engages students.	
The material supports group and individual activities effectively.	
Students are able to follow along and understand key concepts.	

2. Teacher Use:

Criteria	Scale (1–5)
Ease of incorporating textbook into lesson plans.	
Quality of teacher support materials (e.g., guides, assessments).	

3. Cultural Responsiveness:

Criteria	Scale (1–5)
Representation of Alaska Native cultures and perspectives.	

Criteria	Scale (1–5)
Absence of cultural stereotypes or biases.	

Understanding Visible Learning
Curriculum Incorporation
March 2025

Introduction:

John Hattie's "Visible Learning" is a groundbreaking educational research synthesis that analyzes over 800 meta-studies involving more than 80 million students. It identifies the most effective strategies for improving student achievement, emphasizing the importance of evidence-based teaching practices.

Visible Learnings is an evidence-based approach to teaching.
At its core, the idea is simple: learning should be visible—not just to teachers, but to students themselves.

The concept encourages teachers to view learning through the eyes of their students and adapt their methods to maximize impact. It also highlights the significance of feedback, goal-setting, and differentiated instruction

Why are so many or our teachers and schools so successful? John Hattie

https://www.youtube.com/watch?v=rzwJXUieD0U

Visible Learning: A Teacher's Guide

At its core, the idea is simple: learning should be visible—not just to teachers, but to students themselves. This means students must know **what they are learning**, **how to go about learning it**, and **how to measure their progress** along the way. Hattie's work shifts the focus from simply delivering content to **evaluating the impact** of teaching on student achievement.

Based on a meta-analysis of millions of students and thousands of studies, Hattie introduced the concept of **effect size**—a way to identify which teaching strategies have the greatest impact on learning. His findings offer a clear message: great teaching is not just about planning activities; it's about **seeing learning through the eyes of students and helping them become their own teachers**.

The Visible Learning model places strong emphasis on:

- Setting **clear learning intentions and success criteria**
- Using **feedback and assessment** to guide progress
- Encouraging learners to take **ownership of their learning journey** and laying the Foundation:

- Introduce the Thinking Framework – The Thinking Framework is a structured approach designed to enhance the learning process by integrating metacognition into every state of the educational journey. At its core, it serves as an instructional design toolkit that enables teachers to develop more effective learning experiences tailored to the needs of individual learners.

Teachers are not just facilitators—they are activators of learning who monitor progress, adapt instruction, and make teaching decisions based on real-time evidence of what's working.

Key Principles of Visible Learning:

- **Clarity and Goal-Setting** – Students must understand what they're learning and why it matters.
- **Feedback-Informed Practice** – Teachers continuously adjust instruction based on assessment evidence.
- **Student Ownership** – Learners are active participants who reflect on and take responsibility for their progress.

Visible Learning + Professional Learning Services

Put the research into practice with powerful professional learning:

Visible Learning + professional learning is not a one-day workshop or a one-size-fits-all solution to school success, the Visible Learning + School Impact Process is an evidence-based school-wide system improvement process:

1. Build a Foundation:
    a. Engage with high-impact practices from the Visible Learning research and learn how to collect evidence of the extent to which these practices are present in your classroom.
    b. Collect data from within your classroom for 60 days and create an action plan for your first impact cycle.
2. Enhance School Capability of High-Impact Practices
    a. Learn to develop assessment-capable visible learners
    b. Calculate their effect size
    c. Embed high-impact practices in the classroom
    d. Give and receive effective feedback
    e. Understand the mind frames that have a high impact on student learning
    f. Create effective assessments that help students understand their impact
3. Measure Growth:
    a. Learn to use various assessment tools to identify key areas of improvement
    b. Measure the actual and perceived extend to which high-impact practices are present in our classroom
    c. Use results to help identify the key elements to focus on for professional development action plan

4. Build School and System Capability
    a. Ensure that growth and effective changes are embedded in your school/classroom for long-term sustainability

What makes a "visible learning" teacher?

Visible learning is dependent upon the visible learning strategies i.e. actions and attitude of the teacher. To become a visible teacher, a teacher must be active, transparent, engaging, and passionate in their own learning and teaching students. Visible teachers:

1. Continually gain professional learning and **evaluate** their own performance;
2. Consider themselves as "**change agents**"; who are responsible for the change and improved learning process in students;
3. **Reflect** upon how their practices may affect student learning outcomes;
4. Regularly **take feedback** about themselves and their ways of teaching;
5. Use **assessments** as tools for the **development** of students to learn about their teaching practices;
6. **Challenge** their students regularly and do not frequently use the express "**do your**";
7. Ensure that their 80% of the class rime is spent in **classroom talk**;
8. Build **rapport** and **trust** in students so that the students would not hesitate to ask for **help** and feel free to take **risks** with their learning

Key Strategies that significantly improve student achievement:

1. **Feedback**: providing clear, specific, and timely feedback to students enhances learning.
2. **Teacher-Student Relationships:** Build strong, positive relationships fosters trust and engagement
3. **Clear Learning Goals**: Setting explicit objectives ensures students understand what they are expected to achieve, creating a sense of purpose an direction

4. **Formative Assessment:** Regularly assessing student's understanding during the learning process allows teachers to adjust their teaching strategies and address gaps
5. **Student Self-Assessment:** Encouraging students to reflect on their own learning helps develop metacognition and self-regulation skills
6. **Direct Instruction:** When used appropriately, direct teaching methods can be highly effective
7. **Collaborative Learning:** Students working together on tasks fosters critical thinking, communication, and problem-solving skills.

TASK	DATE TO BE	RESPONSIBLE	DATE COMPLETED	CONFIRMED BY MS. DIXON
Science teachers share curriculum work	03/26/25	Science teachers	3/26/25	Y
Developing Task Plan	04/18/25	Science teachers	4/18/25	Y
Teacher Share Work	4/18/25	Science PLC Team	4/18/25	Y
Reviewing "Into Science" HMH textbook-	ongoing	Berry		beginning
Crosswalked MS Curriculum with Fairbanks Curriculum: Provided ES example with 6th grade; Rightsizing curriculum (modifying pacing schedule)	04/18/25	Berry	4/12/25	Y
Assess MAP and AK STAR Data: Post in Shared Google Drive	04/23/25	Dixon		
Align rudimentary curriculum based off HS NGSS for Biology and ES NGSS standards for Foundations of Life Science with FNS curriculum	Ongoing	Liben		
Align curriculum for physical science classes with FNS curriculum that was adopted	ongoing	Deering		
Create curriculum for physical science classes: chemistry, physics, earth science	09/01/25	Deering	9/1/25	
Textbook and resources needed vs online tools (for MS and HS classes)	05/21/25	Science PLC Team		
Develop and provide test-taking skills seminar for students to take state assessments	05/21/25	Science PLC Team and Dixon		
Establish work days and time for MOA work (decided every wed for remainder of school year 4:30pm-6:30pm) First Wednesday meeting goals: Deering: work on aligning physical science current curriculum with FNS Berry: Continue rightsizing Liben: work on aligning life science curriculum with FNS	04/18/25	Science PLC Team and Dixon	4/18/25	Y
Create and distribute calendar schedule	04/18/25	Deering		
Add cultural standards with each unit once curriulum is aligned with FNS	ongoing	Science PLC Team		
Post Cultural standards in shared Google Drive	03/31/25	Dixon	3/31/25	Y
Meet/collaborate with elementary teachers to disucss the foundational skills needed by incoming 6th graders -- email to elementary by Dixon to set a meeting before the end of SY 24-25 Goal of meeting: Zone of proximal development; what NGSS related science skills and core ideas are elementary students entering into 6th grade? (math and reading foundational skills);	Email ASAP Set meeting for early May Follow-up meeting for early September	Berry/Dixon		
Present process of curriculum development to NPS staff	mid-May	Science PLC Team and Dixon		
Present process of curriculum development at a conference/convention and share new knowledge with NPS community	early SY25-26	Science PLC Team and Dixon		
AK small schools convention coordinated by NPS (FIRST EVER?!) -- present academic issues and possible solutions for small schools	SY25-26	All NPS		

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

District Name:	Nome Public Schools
Date:	April 18, 2025
Course Name:	Carpentry I
Course Number:	CTE 50
Middle School:	
Foundational Course	☒
Prerequisites *(If this course requires prerequisites, please name them)*	CTE 156
Number of HS Credits:	1
Sequence(s): *(These may be sequence or CTEPS titles - District must first have these entered into the Portal – titles must match)*	CTE 156
Source(s) of Technical Standards: *(Selection must match the Portal selection)*	NCCER
Names/Numbers of Technical Standards: *(Selection must match Portal selections)*	Core (C)
Course Description:	is designed to give the student an opportunity to gain knowledge and skills in the building trades. Emphasis will be placed on health and safety, measurement, math, blueprint reading, identification of materials, and construction site selection. *Course is a full year - 1.0 credit (0.5 credit/semester).*
Instructional Topic Headings:	Safety, Math, Tools and Materials, Carpentry Techniques
Recognized Postsecondary Credential (RPC): *(Replaces TSA - not all TSAs will qualify as an RPC, and RPC is not required for all courses)*	N/A
Employability Standards source: *(Name source of employability standards – must match Portal)*	State of Alaska Employability Skills
CTSO participation is included: *(Name of CTSO must match drop-down box selection in the Portal)*	SkillsUSA

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Current Dual Credit Agreement: *(Agreements should be reviewed and updated annually)*	☐ *(If checked, complete the Dual Credit section below.)*
Date:	
Postsecondary Institution Name:	
Postsecondary Course Name:	
Postsecondary Course Number:	
Postsecondary Course Credit:	

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Course developed by:	Douglas Coulter, Dr. Michael Akes
Course adapted from:	Mark Dobbs
Course is brokered through another institution or agency:	☐ *(if checked, name of institution/agency)*

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Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Student Performance Standards (Instructional Topic Headings)	Specific Technical Skills Standards	Alaska English / Language Arts Standards	Alaska Math Standards	Alaska Science Standards	Alaska Cultural Standards	Employability/ Career Readiness Standards	Assessment
Safety ● Students will commit to and function safely in a construction work environment. ● Explain and apply the safety rules of the shop and included equipment ● Demonstrate proper use of PPE ● Maintain clean and orderly work environment	00101-15: 1, 2, 3, 5, 6	CCRA R(1, 2, 7, 10), W(2, 4, 6, 7, 8, 9, 10), SL(1, 2, 4, 5, 6); RST.9-10 (1, 2, 4, 5, 7, 10)	MP1, MP6		A(1), B(3)	A(6)	Safety quiz prior to commencing shop work 52
Tools & Materials ● Demonstrate proper selection and use of carpentry tools and materials. ● Show proficient skills of handling materials and proper use of both hand and shop tools. ● Distinguish between different types of materials and consider their respective uses.	00109-15: 1, 2 00103-15: 1, 2, 3, 4; 00104-15: 1, 2,	CCRA R(4, 7, 10); RST.9-10 (2, 3, 4, 7, 10)	MP1, MP2, MP6	HS-PS1-5	A(1), B(1, 2, 3)	A(2, 6)	Mystery material identification, tool demonstrations, rubric criteria related to proper tool and material use

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Construction Math ● Understand how to read a tape measure and demonstrate accuracy in class ● Distinguish the overlap between industry math and classroom math ● Prepare project parts by squaring wood and sizing for thickness ● Draw parallel, perpendicular and angled lines and make cuts	00102-15: 1, 2, 3, 4, 5, 6	CCRA R(4, 7, 10); RST.9-10 (4, 7)	MP1, MP2, MP4, MP6, MP7, MP8; HSN Q.A(1, 2, 3); MODELING; HSG CO.A.1		D(5)	A(2)	Applied math worksheets and quizzes, rubric criteria for shop projects demonstrating applied math and measuring skills 53
Carpentry Techniques ● Differentiate between types of cuts (miter cuts, cross cuts, bevel cuts, etc) ● Construct small projects out of wood or other common materials using carpentry techniques and hand tools and shop equipment.	27105-13: 1-6 27111-13: 1-6 27112-13: 1-9 27109-13: 1-4 27110-13: 1-5	CCRA R(4, 7, 10); RST.9-10 (2, 3, 4, 7, 10)	MP1, MP6, MP7, MP8	HS-PS3-3	B(1, 2, 3)	A(2)	Technique demonstrations, variety of small construction projects with rubric criteria related to craftsmanship

(Add extra rows as necessary by using the Tab key)

List the major instructional resources used for this course: *(websites, textbooks, essential equipment, reference materials, supplies)*	NCCER Core Curriculum, Power Tools,

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

District Name:	Nome School District
Date:	April 18, 2025
Course Name:	Welding I
Course Number:	CTE 155
Middle School:	
Foundational Course	☐ This is a foundational CTE course (foundational courses are not technical)
Prerequisites *(If this course requires prerequisites, please name them)*	
Number of HS Credits:	1 credit
Sequence(s): *(These may be sequence or CTEPS titles - District must first have these entered into the Portal – titles must match)*	Welding I
Source(s) of Technical Standards: *(Selection must match the Portal selection)*	AWS
Names/Numbers of Technical Standards: *(Selection must match Portal selections)*	AWS EG2.0
Course Description:	Welding 1 covers the basic theory and techniques of welding. The basic operations of welding including safety and health, tools and equipment, oxygen-acetylene welding, oxygen-acetylene cutting, brazing, shielded metal arc welding, and very general techniques in gas metal arc welding. Post-secondary training and employability information are also covered. *Course is a full year - 1.0 credit (0.5 credit/semester).*

Course Description and Standards Crosswalk Form (#05-20-038)

Instructional Topic Headings:	• Identify hazards involved in welding and what precautions to take • Describe the basic theory of the OAW Oxy Acetylene welding process. Cutting, welding, brazing and heating • Understand the basic theory of the SMAG shielded metal arc welding process • Identify different rods and uses along with reading numbers on the rods • Understand and apply the theory of Plasma arc cutting • Identify the basic joint configurations and weld types • Demonstrate the proper use and set up and shut down of all welding processes listed above • Demonstrate a basic understanding of common welding mistakes and corrective measures • *Demonstrate an understanding of basic welding terminology • Demonstrate the proper use of consumables in the above welding processes and be able to make a sound weld with each of these processes on different thicknesses of metals • Demonstrate the techniques of flat, horizontal and Students will be able to reason mathematically using methods appropriate to the welding profession • Students will be able to communicate clearly and effectively within a workplace context • Students demonstrate teamwork and ethics
Recognized Postsecondary Credential (RPC): *(Replaces TSA - not all TSAs will qualify as an RPC, and RPC is not required for all courses)*	N/A
Employability Standards source: *(Name source of employability standards – must match Portal)*	Employability Standards (Source) State of Alaska Employability Standards
CTSO participation is included: *(Name of CTSO must match drop-down box selection in the Portal)*	Skills USA

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

Current Dual Credit Agreement: *(Agreements should be reviewed and updated annually)*	☒ *(If checked, complete the Dual Credit section below.)*
Date:	
Postsecondary Institution Name:	
Postsecondary Course Name:	
Postsecondary Course Number:	
Postsecondary Course Credit:	

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Course developed by:	Douglas Coulter, Dr. Michael Akes
Course adapted from:	
Course is brokered through another institution or agency:	☐ *(if checked, name of institution/agency)*

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Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Student Performance Standards **(Instructional Topic Headings)**	**Specific Technical Skills Standards**	**Alaska English / Language Arts Standards**	**Alaska Math Standards**	**Alaska Science Standards**	**Alaska Cultural Standards**	**Employability/ Career Readiness Standards**	**Assessment**
Students will be able to communicate clearly and effectively within a workplace context	AWS NCDG 2.06H, 3.09D CTCC 4	RST.11-12.1-3, 7, 9			E1, E 8	A1,2	Employability Rubric
Students will be able to reason mathematically using methods appropriate to the welding profession	CTCC 2		N Q1, 2, 3	MS-ETS1-3			Written test 59
Students demonstrate teamwork and ethics	CTCC 1, 9 , 12	W.11- 12.4, 5, 6 SL.9-10. 4- 5, L.11-12. 1- 3, 6			B 3, 4	A1, B1,2	Employability Rubric
*Identify hazards involved in welding and what precautions to take	AWS Ex 1.2.1	RI.11-12.1 - 4, RST.11-12.1-3; 7		MS-ETS1-3		A2	Written test

*Describe the basic theory of the OAW Oxy Acetylene welding process..Cutting, welding, brazing and heating *Understand the basic theory of the SMAG shielded metal arc welding process *Identify different rods and uses along with reading numbers on the rods *Understand and apply the theory of Plasma arc cutting *Understand and apply the theory of GTAW TIG welding process (aluminum and steel) *Understand and apply the theory of GMAW MIG welding process (aluminum, steel, and flux core wire)	AWS 1.4.1 AWS 1.3.7	RST.11-12.1-3, 7, 9		HS-PS1-3	B2, B4		Demonstration-Check off 60
*Demonstrate the proper use and set up and shut down of all welding processes listed *Demonstrate a basic understanding of common welding mistakes and corrective measures *Demonstrate an understanding of basic welding terminology *Demonstrate the proper use of consumables in the above welding processes and be able to make a sound weld with each of these processes on different thicknesses of metals *Demonstrate the techniques of flat, horizontal and vertical welding	AWS Ad18a AWS 1.3.7			HS-PS2-6 HS-PS1-3	B2, B4	A2	Demonstration-Check off

(Add extra rows as necessary by using the Tab key)

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

List the major instructional resources used for this course: *(websites, textbooks, essential equipment, reference materials, supplies)*	American Welding Society AWS D1.1 Structural Welding Code

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Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

District Name:	Nome School District
Date:	April 18, 2025
Course Name:	Woodworking 2
Course Number:	CTE 156a
Middle School:	
Foundational Course	
Prerequisites *(If this course requires prerequisites, please name them)*	
Number of HS Credits:	5 (one semester), 1.0 (full year)
Sequence(s): *(These may be sequence or CTEPS titles - District must first have these entered into the Portal – titles must match)*	Woodworking 1 Woodworking 2
Source(s) of Technical Standards: *(Selection must match the Portal selection)*	Common Career Technical Core
Names/Numbers of Technical Standards: *(Selection must match Portal selections)*	Skills USA
Course Description:	is a course designed to introduce the student to woods and wood industry. Emphasis is placed on identification of different types and kinds of woods, common woodworking hand tools, basic woodworking processes, wood finishing, hand power tools, and safety in the woodworking laboratory. *Course is a full year - 1.0 credit (0.5 credit/semester).*
Instructional Topic Headings:	Safety, Safe setup and operation of common wood shop equipment, Wood identification, Woodworking joints, Calculating board feet and application to a project, types of Joineries, Glueing and Assembly, Wood finishes
Recognized Postsecondary Credential (RPC): *(Replaces TSA - not all TSAs will qualify as an RPC, and RPC is not required for all courses)*	
Employability Standards source: *(Name source of employability standards – must match Portal)*	Alaska Employability Standards
CTSO participation is included:	

Career and Technical Education

Course Description and Standards Crosswalk Form (#05-20-038)

(Name of CTSO must match drop-down box selection in the Portal)	
Current Dual Credit Agreement: *(Agreements should be reviewed and updated annually)*	☒ *(If checked, complete the Dual Credit section below.)*
Date:	
Postsecondary Institution Name:	
Postsecondary Course Name:	
Postsecondary Course Number:	
Postsecondary Course Credit:	

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Course developed by:	Doug Coulter and Dr. Michael Akes
Course adapted from:	
Course is brokered through another institution or agency:	☐ *(if checked, name of institution/agency)*

Student Performance Standards (Instructional Topic Headings)	**Specific Technical Skills Standards**	**Alaska English / Language Arts Standards**	**Alaska Math Standards**	**Alaska Science Standards**	**Alaska Cultural Standards**	**Employability/ Career Readiness Standards**	**Assessment**
Students will learn basic shop and tools safety, operation and set up	AC-3	B1-3	S-IC.6 S-MD.6&7	PS1.A	A1, B2,3,4	A1-2, 6	Online Assessments/quizzes
Students will learn how to identify and describe the difference between commonly used hardwoods.		B1-3					Daily Observation and written exam
Students will learn how to plan, properly fill out, and calculate a bill of materials for their project.			A3	HS-ETS1-2 HS-ETS1-3 HS-ETS1-4	A6	A1,A6	Daily Observation and final project
Students will learn how to identify and work around common defects found in lumber		B2		HS-ETS1-3			Daily Observation
Students will use hand tools and power tools to machine the parts for their projects	AC1,2,6	RST 9-12.3.4; RST 9-10.5	A5, S-MD.6&7		B2,4	A2,5,6	Daily Observation

Career and Technical Education
Course Description and Standards Crosswalk Form (#05-20-038)

Students will learn how to identify and make different woodworking joints		B2	N-Q.1-3 AREI.1-4 G-CO.1-12 G		B2,4	A2,5	Written test
Students will learn how to properly sand a project to prepare for a high-quality finish						A1, A6-7	Teacher Observation
Students will learn how to use a variety of adhesives and fastening systems		B2		HS-ESS3-3	B2		Teacher Observation
Students will learn how to assemble their project by using different clamping techniques					D1	A1, A6-7	Teacher Observation 65
Students will learn how to apply a high-quality finish	AC1,2	B1-3, L 9-12.6; WHST 9-12.4.8	N-Q.1-3 AREI.1-4 G-CO.1-12 GGMD.1, 3&4 G-MG.1-3 S-ID.9	HS-ESS3-3	B2,4	A2,5	Teacher Observation and grading rubric

(Add extra rows as necessary by using the Tab key)

List the major instructional resources used for this course: *(websites, textbooks, essential equipment, reference materials, supplies)*	Modern Woodworking

NOME PUBIC SCHOOLS Science Curriculum Tasks March 2025

TASK	DATE TO BE	RESPONSIBLE	DATE COMPLETED	CONFIRMED BY MS. DIXON
Science teachers share curriculum work accomplished thus far	03/26/25	Science teachers	3/26/25	Y
Developing Task Plan	04/18/25	Science teachers	4/18/25	Y
Teacher Share Work	4/18/25	Science PLC Team	4/18/25	Y
Reviewing "Into Science" HMH textbook-	ongoing	Berry		beginning
Crosswalked MS Curriculum with Fairbanks Curriculum: Provided ES example with 6th grade; Rightsizing curriculum (modifying pacing schedule)	04/18/25	Berry	4/12/25	Y
Assess MAP and AK STAR Data: Post in Shared Google Drive	04/23/25	Dixon		
Align rudimentary curriculum based off HS NGSS for Biology and ES NGSS standards for Foundations of Life Science with FNS curriculum	Ongoing	Liben		
Align curriculum for physical science classes with FNS curriculum that was adopted	ongoing	Deering		
Create curriculum for physical science classes: chemistry, physics, earth science	09/01/25	Deering	9/1/25	
Textbook and resources needed vs online tools (for MS and HS classes)	05/21/25	Science PLC Team		
Develop and provide test-taking skills seminar for students to take state assessments	05/21/25	Science PLC Team and Dixon		

NOME PUBIC SCHOOLS Science Curriculum Tasks March 2025

Establish work days and time for MOA work (decided every wed for remainder of school year 4:30pm-6:30pm) First Wednesday meeting goals: Deering: work on aligning physical science current curriculum with FNS Berry: Continue rightsizing Liben: work on aligning life science curriculum with FNS	04/18/25	Science PLC Team and Dixon	4/18/25	Y
Create and distribute calendar schedule	04/18/25	Deering		
Add cultural standards with each unit once curriulum is aligned with FNS	ongoing	Science PLC Team		
Post Cultural standards in shared Google Drive	03/31/25	Dixon	3/31/25	Y
Meet/collaborate with elementary teachers to disucss the foundational skills needed by incoming 6th graders -- email to elementary by Dixon to set a meeting before the end of SY 24-25 Goal of meeting: Zone of proximal development; what NGSS related science skills and core ideas are elementary students entering into 6th grade? (math and reading foundational skills);	Email ASAP Set meeting for early May Follow-up meeting for early September	Berry/Dixon		
Present process of curriculum development to NPS staff	mid-May	Science PLC Team and Dixon		

Present process of curriculum development at a conference/convention and share new knowledge with NPS community	early SY25-26	Science PLC Team and Dixon		
AK small schools convention coordinated by NPS (FIRST EVER?!) -- present academic issues and possible solutions for small schools	SY25-26	All NPS		

Anvil City Science Standards Progression Tracking Sheet

In Motion(2024-2025), Ak Studies(2025-2026), Found Changes(2026-2027), World Around Us(2027-2028)

Use this document to track the science standards covered over the four year curriculum cycle. In each standard box please highlight the standard, one covered, in the appropriate color coding and also add the quarter and unit it was taught in.

Physical Science	Life Science	Earth Science
☐ Develop models to describe the atomic composition of simple molecules and extended structures.	☐ Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	☐ Develop and use a model to explain how the positions of the Earth-Sun-Moon in a system and the cyclic patterns of each cause lunar phases and eclipses of the sun and moon.
☐ Collect information that supports the idea that synthetic materials come from the use of natural resources, and analyze the positive and negative effects of use and development of synthetics on society.	☐ Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.	☐ Develop and use a model to explain how the seasons occur.
☐ Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	☐ Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	☐ Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
☐ Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	☐ Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	☐ Analyze data to determine scale properties of objects in the solar system.
☐ Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	☐ Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	☐ Construct and explain, using evidence from rock strata, how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
☐ Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	☐ Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [	☐ Construct and present an evidence-based explanation of how geoscience processes have changed Earth's surface at varying time and spatial scales.

Physical Science	Life Science	Earth Science
☐ Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	☐ Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	☐ Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
☐ Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	☐ Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	☐ Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
☐ Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	☐ Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	☐ Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
☐ Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	☐ Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	☐ Construct an evidence-based explanation for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
☐ Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	☐ Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	☐ Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
☐ Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	☐ Use an evidence-based argument to support an explanation for how characteristic behaviors and/or structures of organisms affect the probability of their successful reproduction.	☐ Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
☐ Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	☐ Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	☐ Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Physical Science	Life Science	Earth Science
☐ Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	☐ Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	☐ Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
☐ Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample	☐ Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	☐ Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
☐ Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	☐ Gather and synthesize information about technologies that have changed the way humans influence the inheritance of desired traits in organisms.	☐ Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
☐ Qualitatively and quantitatively describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	☐ Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	
☐ Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	☐ Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	
	☐ Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	

	☐ Construct and present an evidence-based explanation of how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	
	☐ Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	

Engineering Design
☐ Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. 72
☐ Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
☐ Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
☐ Develop a model to generate data for repetitive testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Math Standards Progression Tracking Sheet HERE

2024-2025 Physical Science (In Motion) - Richards

Grades: 5-8	Overview: Students are introduced to physical science, especially physics concepts involving motion, forces, energy, sound, and light.
Length: Two Semesters	
Prerequisites: None	

Year Outline

Main Units	Standards (NGSS)	Sub-Units	Notes & Resources
Introduction to Physical Science **Scientific Measurement (review as needed with B, C class)** **Introduction to Matter** **Introduction to Motion and Stability** **Fresh Eyes on Ice**	**Matter and Its Interactions:** Develop models to describe the atomic composition of simple molecules and extended structures. MS-PS1-1 **Motion and Stability:** Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of	Introduction / Review of Physical Science (Physics, Chemistry) Major concepts in Physics, Chemistry and why they are different disciplines Introduction / Review of Scientific Measurement The Metric System and base 10 calculations (multiplying and dividing by 10, scientific notation) Length (with calculations / activity) Mass (with calculations / activity) Volume (with calculations / activity) Density (with calculations / activity) Matter Introduction and/or Review States of matter (liquid, solid, gas) and explanations of energy in each	Notes: ● Class structure will follow 5-E model, an inquiry-focused approach to teaching and learning. ● Introduce grading structure and portfolio system in Google Classroom in first weeks and reinforce continually with portfolio checks every time summative assessments are given. Students will need

(first quarter)	the object. MS-PS2-2	system States of Matter Model Construction Lab Introduction to Motion & Stability Forces UAA Bridge Building Competition (two-three weeks; focus on forces, stability, and introduction to engineering) Newton's First Law (object in motion will stay in motion, object at rest will stay at rest, unless acted upon by unbalanced force). Speed, motion, inertia, friction Inertia Lab (creating a "wall" of index cards to stop a "wrecking ball") Newton's Second Law (acceleration = net force on object / object's mass, or a = f/m) Acceleration Acceleration Lab Fresh Eyes on Ice Project / data collection (this will be interspersed between other units)	training on Google Docs / Forms / Google Classroom. ● The composition of matter is explained briefly, but atomic composition and other major topics of chemistry are covered in "Foundational Changes" year at ACSA ● Laboratory activities will occur once weekly, but more important labs are listed here
Newton's Third Law **Work and Simple Machines** **Inventions and Invention Convention** **Science Fair Project** **Energy** **(second quarter)**	**Newton's Third Law:** Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. MS-PS2-1 **Modeling Potential Energy:** Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. MS-PS3-1	Newton's Third Law (equal and opposite reactions) Soda Can Rocket Lab Work and Simple Machines Work Inclined Plane Wedge Screw Lever Wheel and Axle Pulley Compound Machines Hydraulics	

		Engineering, Inventions, and Invention Convention Inventions in early American history (will cover some from this list, with focus on those employing simple machines in their designs: https://www.pbs.org/wgbh/americanexperience/features/telephone-technology-timeline/) Engineering and "inventing" using the Engineering Design Process Arctic Innovation Competition (using inventions already created) Science Fair Project Starters Fresh Eyes on Ice Project / data collection	
Earth and Space Science **Science Fair** **(third quarter)**	**Earth and Space Sciences:** Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. MS-ESS1-1 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. MS-ESS1-2 Analyze and interpret data to determine scale properties of objects	Earth and Space Science The Solar System, seasons, and lunar phases Planets and objects in our solar system Why Visit? - Planet / Moon Presentations (students "sell" the idea that their planet/moon should be explored by people) Gravity and motion of objects in space Science Fair Waves, Sound, Light introduction (if time)	

	in the solar system. MS-ESS1-3		
Waves, Sound, and the Electromagnetic Spectrum **Thermal Energy** **(fourth quarter)**	**MSPS4-1:** Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. **MSPS4-2:** Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. **MSPS4-3:** Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	Waves Waves as energy transferred through a material Waves in water and connections to coastal erosion Properties of waves Amplitude, Frequency, Wavelength Sound Speed of sound waves in different materials Electromagnetic Spectrum Range of EMS Role of EMS radiation in modern communication Thermal Energy Heat, specific heat, and temperature Principles of heat conservation and dissipation	

Resources:

CK-12 Online Middle School Physical Science Textbook

Semester 1 Learning Goals

Differentiation Statement: Class A, B, and C will all focus on similar learning goals and the same overall content. Here, text in black refers to learning goals that apply directly to all three classes. Differentiation will take the place of modified content and assessment. For example, the types of careers and details covered for "I can describe a career in the physical sciences…." will range from discussing career paths and basic types of major career pathways with class A, to calculating wage earnings and other details of specific careers in the sciences with class C.

For other learning targets, text in red refers to those learning targets for class A, text in pink refers to learning targets for class B, and text in blue refers to learning targets for class C. These learning targets are the basis for differentiation, but content and assessments will also differ from the three classes.

Importantly, students in any one class will also receive extension options if they finish work at a class level but are ready to move to the next level (for

example, if a student in class B is ahead of the group and can easily calculate metric values up to 1000 times greater or smaller using the principles of scientific notation, they will be given extensions at the class C level for that activity). Likewise, every attempt will be made to meet students who are struggling with content at their level. The learning targets will remain the same, but time and resources will be granted to those students (even if it will require work outside of school) who need it. However, the same assessments will always be given for every student and every student will be held to the same learning goal.

Units of Instruction	Sub-Units	Learning Goals	Notes & Activities
Introduction to Physical Science	Introduction / Review of Physical Science (Physics, Chemistry) Major concepts in Physics, Chemistry and why they are different disciplines	*I can describe a career in the physical sciences and the type of education and/or training required for it.*	*Note: this section will be filled in as the semester progresses with exact activities and notes about the curriculum.
Scientific Measurement (review as needed with B, C class)	Introduction / Review of Scientific Measurement The Metric System and base 10 calculations (multiplying and dividing by 10, scientific notation) Length (with calculations / activity) Mass (with calculations / activity) Volume (with calculations / activity) Density (with calculations / activity)	*I can describe the steps of the scientific process / give examples for the steps of the scientific process / connect the scientific process to a real-world research process happening today.* *I can choose the appropriate (accurate and efficient) metric tool for measuring length, volume, and mass.* *I can accurately measure length in metric units to the mm, volume to the ml, and mass to the mg.* *I can design an experiment to find an irregular object's volume using water displacement (differentiation depends on type of object, and types of tools available to calculate volume).* *I can calculate the density of objects after measuring their mass and being given their volume / I can calculate the density of objects after measuring their mass and calculating their volume using water displacement / I can calculate the density of objects using a process I choose depending on the size and shape of the object (eg, choose to calculate a cylinder's volume using math, but choose to calculate an irregular object's volume using water displacement)* *I can use principles of base 10 to convert values in the metric*	

Introduction to Matter	Matter Introduction and/or Review States of matter (liquid, solid, gas) and explanations of energy in each system States of Matter Model Construction Lab	*system up to 100 times less / greater / up to 1000 times less / greater / as large or as small as standard units of metric measurement.* *I can create models that show the difference between atoms in a solid, atoms in a liquid, and atoms in gasses / I can create models that show the difference between atoms in a solid, atoms in a liquid, and atoms in gasses and provide real-life examples for each / I can create models that show the difference between atoms in a solid, atoms in a liquid, and atoms in gasses, provide real-life examples for each, and explain how a molecule (eg, water) can exist in all three states given different conditions.*	
Introduction to Motion and Stability **Fresh Eyes on Ice**	Introduction to Motion & Stability Forces UAA Bridge Building Competition (two-three weeks; focus on forces, stability, and introduction to engineering)	*I can use vector force arrows to diagram at least two forces on an object given a real-world example; I can create a diagram showing at least three vector forces on an object given a real-world example; I can create a diagram showing at least three vector forces on an object given a real-world example, and when given a vector force diagram, translate that into at least two real-world representations for that diagram.* *I can apply my knowledge of vector forces to build a model bridge using limited resources that will hold at least 11kg / at least 18kg / at least 30kg.*	
	SECOND QUARTER		
SECOND QUARTER **Newton's First Law**	Newton's First Law (object in motion will stay in motion, object at rest will stay at rest, unless acted upon by unbalanced force). Speed,	*I can create and perform an experiment showing that the motion (or lack thereof) of an object is determined by the sum of forces acting on it; I can create and perform an*	

	motion, inertia, friction Inertia Lab (creating a "wall" of index cards to stop a "wrecking ball")	*experiment comparing how the motion of a more or less massive object is related to the forces acting upon it; I can create and perform an experiment showing how mass, the forces acting on an object, and motion are interrelated, and apply that to a real-world example.*	
Newton's Second Law	Newton's Second Law (acceleration = net force on object / object's mass, or a = f/m) Acceleration Acceleration Lab	*Interpret a dataset to show how net force and mass are related to the acceleration of an object*	
	Fresh Eyes on Ice Project / data collection (this will be interspersed between other units)	*Collect and interpret real-world data and connect that data to changes in climate.*	
Newton's Third Law	Newton's Third Law (equal and opposite reactions) Soda Can Rocket Lab Work and Simple Machines Work	*I can use principles in Newton's Third Law to improve a "rocket" nozzle for a soda can rocket; I can use principles in Newton's Third Law to improve a "rocket" nozzle for a soda can rocket and connect Newton's Third Law to other real-world physical phenomena; I can use principles in Newton's*	

Work and Simple Machines **Inventions and Invention Convention**	Inclined Plane Wedge Screw Lever Wheel and Axle Pulley Compound Machines Hydraulics Engineering, Inventions, and Invention Convention Inventions in early American history (will cover some from this list, with focus on those employing simple machines in their designs: https://www.pbs.org/wgbh/americanexperience/features/telephone-technology-timeline/) Engineering and "inventing" using the Engineering Design Process Arctic Innovation Competition (using inventions already created) Science Fair Project Starters Fresh Eyes on Ice Project / data collection	*Third Law to improve a "rocket" nozzle for a soda can rocket and transfer learnings from that project to theorizing how to make helmets and/or seat belts safer.* *I can identify the various types of simple machines and describe how they have been used in history by humans to accomplish tasks otherwise impossible without them.* *I can describe at least five inventions from American history and provide evidence and argument for how they transformed ways of living.* *I can describe the steps of the Engineering Design Process and give real-world examples for how the process is used to create technologies.* *I can use the Engineering Design Process to design a new technology that solves a real-world problem in Alaska.*	

Science Fair Project **Energy** **(second quarter)**			
Semester 2 Learning Goals			
Earth and Space Science **Science Fair** **(third quarter)**	Earth and Space Science The Solar System, seasons, and lunar phases Planets and objects in our solar system Why Visit? - Planet / Moon Presentations (students "sell" the idea that their planet/moon should be explored by people) Gravity and motion of objects in space Science Fair	*I can list all of the major bodies in our solar system, order them, and describe their major characteristics.* *I can describe one solar system body in detail, and give convincing arguments for why it should be explored by humans.* *I can create a model that shows how gravity results in the balance of our solar system, and also how gravity can result in impacts and captures between bodies in the solar system.* *I can design and conduct an original science fair project following the steps of the scientific process. [separate individual learning targets will be broken down within this process, to reflect the amount of time and effort students will need to put into their science fair project and give weight to the science fair for grading in PowerSchool.]*	Students might create solar system mobiles with the sun at the center for this learning target.

Waves, Sound, and the Electromagnetic Spectrum **Thermal Energy** **(fourth quarter)**	Waves Waves as energy transferred through a material Waves in water and connections to coastal erosion Properties of waves Amplitude, Frequency, Wavelength Sound Hearing Speed and properties of sound waves in different materials Electromagnetic Spectrum Range of EMS	*I can use a slinky to demonstrate different types of waves and correctly identify each; I can use a slinky to demonstrate different types of waves and describe a real-world example of each type of wave; I can use a slinky to demonstrate different types of waves and describe how that wave is used in a technology that helps humans.* *I can develop and use a model that describes how waves are reflected, absorbed, or transmitted through different kinds of materials.* *I can describe how ocean waves of certain types (ie tides, storm surges, tsunamis) can impact landscapes and/or communities.* *I can use drawings to illustrate the different properties of waves and how energy increases or decreases within the wave depending on these properties; I can use drawings to illustrate the different properties of waves and how energy increases or decreases within the wave depending on these properties, and give real-world examples for changes within a waveform; I can use drawings to illustrate the different properties of waves and how energy increases or decreases within the wave depending on these properties, and argue which waveforms work best to communicate through different mediums and which properties could be altered to communicate signals.* *I can design an improved "ear" for humans based on an understanding of how hearing works.* *I can list and order the types of radiation within the EMS by energy level; I can list and order the types of radiation within the EMS by energy level and describe real-world*	

	Role of EMS radiation in modern communication Thermal Energy Heat, specific heat, and temperature Principles of heat conservation and dissipation	*examples of each type of radiation; I can list and order the types of radiation within the EMS by energy level and describe real-world examples of each type of radiation and their use in modern technology.* *I can describe the difference between digital and analog signals and provide evidence for why digital signals are more reliable; I can compare and contrast technologies that communicate in digital and analog signals and argue which signals are more reliable; I can compare and contrast technologies that communicate in digital and analog signals and argue which signals are more reliable, describing situations where both technologies are assets.* *I can design and build a technology to decrease thermal heat transfer.*	

2024 - 2025 Government/History (Theme: In Motion)

Grades: 5-8	**Outline**: This course begins with an introduction to the three branches of the government, focusing on national, presidential, state and local elections. Then the course transitions into Westward Expansion and the Civil War in semester one. In the second semester, the course focuses on political movements, such as Women's Rights and Civil Rights, the impact of the Industrial Revolution on society and historical figures that have made major contributions to society.
Length: Two Semesters	
Prerequisites: None	

Year Outline

Main Units	Sub-Units	Skills Developed (with Literacy Standards linked)
Government (Quarter 1)	Legislative, Executive, Judicial National, State, Local	Students will: • Keep an organized Interactive Notebook throughout the year • Understand the difference between primary and secondary text and analyze the relationship between the two on the same topic (RSL1 and 9) • Determine main ideas from primary text and write a summary of the texts and research (RSL2) • Cite specific textual evidence to support analysis of primary and secondary sources (RSL1) • Follow multi-step instructions (to various degrees of complexity based on age) when doing activities and projects • Conduct research on historic figures and events (RSL2) • Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts) (RSL6) • Distinguish among fact, opinion, and reasoned judgment in a text (RSL8) • Practice reading/comprehending various texts with the preloading of vocabulary (RSL4) • Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies (RSL4) • Synthesize ideas from several texts/sources • Describe how a text presents informations (e.g., sequentially, comparatively, causally) (RSL5) • Identify key steps in a a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised and lowered) (RSL3) • Represent historic information in a variety of ways (e.g. chart, diagram, graph, table, writing,
Westward Expansion (Quarter 2)	Manifest Destiny Monroe Doctrine	
Civil War (Quarter 2)	Pre-1860: Disunion The Country Goes to War - 1861 Life at War Antietam and Emancipation Proclamation - 1862 The Home Front Shifting Tides 1863 Bringing the War to an End -	

	1864-1865 Effects of the Civil War - 1865 and Beyond	poster, presentation, photographs, pictures, etc.) (RSL7) • Present information to an audience - class, community, peers, etc. • Collaborate with classmates during discussions, presentations, etc. • Read and comprehend history/social studies texts in the grades 6-8 text complexity band independently and proficiently (RSL10)
Political Movements (Quarter 3)	Civil Rights, Women, Labor	
Industrial Revolution (Quarter 3)	Inventions	
Contributions to Society (Quarter 4)	Women Minorities Organizations	

Class Breakdown

Class A	Class B	Class C
• BrainPop - Identical individual review quizzes and graded quizzes • Fill-in-the-blank notes, doodle notes • Introduction to researching on the Internet and through text with assistance; research texts provided based on skill level • Read informational texts as a class or in small groups, pre-load vocabulary • More direct instruction when taking notes, using manipulatives, working on projects, etc. • All tests open notes • Present information through posters, charts, graphs, etc.	• BrainPop - Collective Review Quizzes and Graded Quizzes • Organized, full page notes for structured note-taking, with practice on independent note-taking • Research with assistance or in small groups; practice independent research • Read informational texts semi-independently with vocabulary pre-loading • Teacher-guided review guides • Tests primarily open notes • Present information through Google Sides/ Canva/PowerPoint and verbally within	• BrainPop - Graded Quizzes • Guided independent note-taking from slides/lectures • Research and write about historical figures and events with little to no assistance • Read informational texts and write out and define new vocabulary in Interactive Notebook • Student-led review guides • Tests primarily closed note • Present information through electronic visuals (student choice) and verbally

	class	present information to peers, school, community, etc.

Semester 1

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives
Government	ACS.G&C.A ACS.G&C.B ACS.G&C.C	How societies define authority, rights, and responsibilities through a governmental process Constitutional foundations of the American political system and the democratic ideals of this nation Character of the government of the state	Judicial Legislative Executive Equality Authority Power Freedom Justice Privacy Property Responsibility Sovereignty Two-Party System	• Understand the necessity and purpose of government. • Understand the meaning of fundamental ideas, including equality, authority, power, freedom, justice, privacy, property, responsibility, and sovereignty. • Describe how the United States organizes its government. • Present on the United States Constitution, including separation of powers, the executive, legislative, and judicial branches of government, majority rule and minority rights. • Know how power is shared in the United States' constitutional government at the federal, state, and local levels. • Recognize the significance of diversity in the American political system.
Suggested Activities and Resources	Government and citizenship resources • Videos ○ BrainPop - Branches of Government, Democracy, Political Beliefs, Political Parties, Political Parties Origins, Presidential Power, Primaries and Caucuses, Voting Rights, U.S. Constitution, Voting • Classroom Constitution • iCivics - Middle School Scope and Sequence with lesson plans			

		• We the People - Congressional Hearings Simulation • Reader's theater of constitutional convention • Vote for Kids in Alaska - Alaska Children's Trust • Constitution Day Activities • Discuss the First Amendment and visit news media to discuss free press • News magazines - e.g., Scholastic News, Weekly Reader • Visit local government offices • Interview elected officials (Neal Foster?) • Establish a mock government • Community service projects • Attend City Council meetings • Student Government Elections • Listen to Podcasts • Civic engagement lesson plan - PBS Cultural Standards - Community service projects - collaboration with NCC?, develop understanding of how local decisions are made Digital literacy standards - Organize students' Google drives			
Civil War	ACS.H.A ACS.H.B ACS.H.C ACS.H.D	Equality for all Americans was a factor that influenced the start of the Civil War. Understand what was considered the appropriate reach of the federal government at that time. Efforts to reconcile differing cultural values under a single national flag. Understand how the Civil War ended slavery and transformed the country from a union of states to a nation. Spurred industrialization, expanded women's roles and redefined citizenship.	Union Secession Reform Great Awakening Abolitionist Assimilation Temperance Sectionalism	• Identify the causes of the American Civil War. • Describe the state of the nation and sequence the first events of the Civil War. • State the meaning and impact of the Emancipation Proclamation. • Describe the day-to-day life of a Civil War Soldier. • List examples of work done on the home front and describe how news traveled to the home front. • Discuss the effects of the battles of Gettysburg and Vicksburg, paying particular attention to the Gettysburg address. • List and discuss the sequence of events leading to the end of the Civil War, paying attention to the election of 1864. • Discuss the effects of the Civil War and the	87

				importance of the Reconstruction Era.
Suggested Activities and Resources		Civil War ● Civil War Curriculum - American Battlefield Trust ● Videos ○ BrainPop - Civil War, Civil War Causes, Civil Rights, Frederick Douglass, Slavery, Reconstruction, Abraham Lincoln, Jim Crow ● War Has Been Declared - National Park Service Lesson Plans on Civil War ● Teaching the Civil War - PBS LearningMedia CULTURAL STANDARDS -		
Westward Expansion	ACS.H.A ACS.H.B ACS.H.C ACS.H.D	History is a record of human experiences that links the past to the present and the future. Explore how the gold rush and mining opportunities (silver in Nevada) help fuel the desire to drive West. Research how the opportunity to work in the cattle industry; to be a "cowboy" was one of the factors contributing to Westward expansion. Faster travel to the West by railroad; availability of supplies due to the railroad allowed the United States the possibility to move westward. Understand how the opportunity to own land cheaply under the Homestead Act motivated early settlers of the west. Understand the impacts of Westward Expansion on the development of the	Migration Indigenous Exploration Exploitation Perspective Population Distribution Interaction Interdependence Economics Social Systems Political Systems Monroe Doctrine Manifest Destiny Expansion Reservation Plantation Urbanization	● Understand chronological frameworks for organizing historical thought and place significant ideas, institutions, people, and events within time sequences. ● Use visual data and technology to demonstrate the effects of immigration, industrialization, slavery and westward expansion. ● Relate economic nationalism at home and the Monroe Doctrine abroad. ● Outline the emergence of American culture and literature. ● Cause and effect: westward expansion and the removal or assimilation of Native Americans. ● Explain the United States territorial expansion between 1801 and 1861 and analyze how it affected relations with external powers and Native Americans.

		United States		
Suggested Activities and Resources		Westward expansion • Videos ○ BrainPop - Westward Expansion, Trail of Tears, Bass Reeves, Gold Rush, Native American Traditions, Lewis and Clark, Reservations, Wounded Knee Massacre • Simulation of Westward Expansion - Santa Fe/Oregon Trail: Life in a Wagon Party • Dramatize significant events during Westward Expansion, skits • Westward Expansion Murals • Using Google Earth to show historical changes of major cities • Charting Lewis and Clark's expedition using journals, websites and other resources • Political cartoons - Monroe Doctrine • Mapping activities that demonstrate territorial expansion, areas of exploration, Trail of Tears, areas of industrialization, etc. • Use of primary sources relative to the Indian Removal Act, railroad construction, urbanization and Westward Expansion • Narratives of Frederick Douglsass and other formers slaves • Cherokee Indian removal census activity • America: The Story of Us - The History Channel documentary film series • Into the West - Historical Fiction Series • Recognizing Ethnic and Cultural Heritage (REACH) lessons • Timeline of Westward Expansion • Foldables • Doodle Notes • Google Slides and fill–in-the-blank notes • Graphic organizers for note-taking Cultural Standards - Find a way to incorporate Indigenous Ways of Knowing into the lesson plans		

Semester 2

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives
Political Movements	ACS.H.A ACS.H.B	Understand historical themes through factual knowledge of time, places, ideas, institutions, cultures,	Montgomery bus boycott	• Understand major developments in societies as well as changing patterns related to class,

Civil Rights Movement
 	
Women's Movement
 	
Labor Movement
 	
Pride Movement
	ACS.H.C
	
	ACS.H.D
		people, and events.
		
		Identify different forms of civic participation.
		
		Understand why and how civic engagement matters.
		
		Understand the historical laws behind the current LGBTQ+ movement.
			Jim Crow
			Racial segregation
			Congress of Racial Equity
			Brown vs Board of Education
			Demonstration
			Equality
			
			Women's Suffrage
			Ballot
			Enfranchise
			Equal Rights
			Feminism
			Petition
			
			Labor union
			American Federation of Labor
			Samuel Gompers
			Socialism
			Lockout
			Haymarket Riot
			Anarchism
				ethnicity, race and gender.
				• Civil Rights Movement:
				  ○ Understand the implications of segregation.
				  ○ Explain the key events of the Civil Rights movement of the 1960's.
				  ○ Compare and contrast the civil rights issues of the 1960's to those of modern society.
				• Women's Movement
				  ○ Understand that until the 19th Amendment was ratified, many states denied women the right to vote.
				  ○ Use primary and secondary sources to understand the ways that women advocated for the right to vote.
				  ○ Evaluate the importance of the federal government in securing women's right to vote.
				• Labor Movement:
				  ○ Describe current examples of organized labor, including their demands, setbacks and successes.
				  ○ Utilize historical documents to analyze examples of organized labor in the Gilded Age, including their demands, setbacks and successes.
				  ○ Compare the labor movements of the Gilded Age to those in the U.S. today.
				• Pride Movement
				  ○ Laws banning homosexuality
				  ○ Laws banning LGBTQ+ community to marry

Suggested Activities and Resources		Political Movements • Videos ○ BrainPop - Brown v. Board of Education of Topeka, Black Lives Matter Protest, The Pride March at 50, AAPI Heritage Month, Civil Rights, Voting Rights, Disability Rights, Black History Month • iCivic - Online curriculum and paper resources for every history and social studies topic from K-12 • Junior Scholastic Teaching Kits • TPT Foldables, Doodle Notes, Interactive Notebook Worksheets CULTURAL STANDARDS - examine how individual decisions affect the collective, relate international examples to local small-scale examples; examine issues from multiple perspectives, look for solutions to community problems in different parts of the world, identify how local issues and solutions differ from other global ones		
Industrial Revolution **Inventions**	ACS.H.A ACS.H.B ACS.H.C ACS.H.D	Technological changes: New basic materials, iron and steel New energy sources: coal, steam engine, electricity, petroleum New organization of work: factory system, division of labor, specialized function New forms of transportation: locomotive, automobile, airplane Application of science to industry. Major Inventions: assembly line, telegraph, steam engine, sewing machine, internal combustion engine.	Industrialization Factory Entrepreneur Urbanization Enclosure Laissez-faire Union Corporation Middle Class Child Labour Adam Smith Henry Bessemer Cottage Industry	• Identify revolutions in energy, manufacturing and transportation. • Evaluate the impact of industrialization on the power structure of the world. • Use critical reading skills to argue the pros and cons of the Industrial Revolution. • Analyze and evaluate primary sources and pictures of inventions in small groups while recording findings in chart form.
Suggested Activities and Resources		• Videos ○ BrainPop - Industrial Revolution, Assembly Line, Railroad History, Cars, Gas and Oil • Invention Convention • Mr. Donn's World History Lesson Plans - Industrial Revolution • The Industrial Revolution - History Teaching Institute • Industrial Revolution Walk Tour - TPT CULTURAL STANDARDS - students are able to choose an invention relevant to them and their interests/hobbies		

Contributions to Society	ACS.H.A ACS.H.B ACS.H.C ACS.H.D	Research the histories and contributions of various figures and organizations around the world. • Rachel Carson • Pablo Picasso • Leonardo da Vinci • Hugo Junkers • Ismail al-Jazari • Napoleon Bonaparte • Bruce Lee • Cleopatra • Marie Curie • Anna Pavlova • Cristiano Ronaldo • J.K. Rowling • Chairil Anwar • Lee Byung-Chull • Elon Musk • Mahatma Ghandi • Ho Chi Minh • Jeff Bezos • The Intelligent Robotics Lab	Global Globalization Engineers Technology Humanitarian Politician Contribution Qualitative Quantitative	• Use critical reading skills, primary and secondary sources, and research various people who have made major, lasting and far-reaching impacts on society, either on a country level or global level. • Debate whether artistic contribution or political contribution has a bigger impact on society.
Suggested Activities and Resources		Contributions to Society • Bulletin boards - beginning of quarter • Living Presentations • BrainPop Videos • Research presentation, medium of choice - digital, paper, electronic, media, etc. • Contributions to society biography projects CULTURAL STANDARDS -		

Resources			
Curriculum	Text	URL	Notes
	By History Gal	https://byhistorygal.com/	Resources for teaching middle school social studies
	TPT	www.tpt.com	Teacher made resources
	AI	Brisk	AI created lesson plans and resources
Online Resources	Type	URL	Notes
	Newsela	https://newsela.com/	For researching current topics
	TPT	www.tpt.com	Teacher-made resources
	BrainPop	www.brainpop.com	Short animated videos and quizzes on multiple topics
	Blog about teaching history	https://www.musingsofahistorygal.com/	Advice and resource lists for teaching history/social studies
	Graphic Organizers	https://www.hmhco.com/blog/free-graphic-organizer-templates	Has graphic organizers to differentiate lessons for different learning abilities
Agencies & Community	Department / Affiliation	Contact	Contact Information

	Cultural Center	Marjorie T. Tahbone	kunaq@kawerak.org
	Library	Marguerite La Riviere	https://www.nomealaska.org/library
	Museum	Cheryl Thompson	https://www.nomealaska.org/memorial-museum
	Nome Community Center		https://www.nomecc.org/

2024-2025: Language Arts (In-Motion)

Grades: 5-8	**Overview:** Language Arts emphasizes writing to develop and organize ideas and to apply skills in the mechanics of writing. Students write for a variety of purposes and audiences, and conventions of good writing (such as grammar, spelling, paragraph structure, and essay structure) are studied and applied. Additionally, responding to text and peer revising is integral to the processes of writing. Year-long scope and sequence at the end of this guide
Length: Two Semesters	
21st Century Skills: Collaboration, Communication, Creativity, Critical Thinking Cultural Standards incorporated (specific activities incorporating cultural standards denoted with a #).	

WHOLE YEAR				**Suggested Content Objectives to Support Essential Learnings**
Suggested Units	**Standards**	**Essential Learnings**	**Essential Vocabulary and Concepts**	Grade differentiation: Specific content just for 5th-6th grade denoted with a * Specific content to challenge 7th-8th graders denoted with a ^
Writing	Alaska State ELA standards: Writing and Language	Students will produce original writing that demonstrates grade-appropriate use of the conventions of writing and language.	-6+1 traits -Paragraph structure (topic sentence, supporting details, conclusion sentence)* -Essay/expository writing structure (introduction, body, conclusion) -Effective Leads -Complete sentences -Citations -Revision -Punctuation	• Use the 6+1 Traits as developmentally appropriate, which include: ideas, organization, voice, word choice, sentence fluency, and conventions • Identify relevant information from credible sources with guidance from classroom teacher and librarians • Begin to synthesize information toward an original composition* • Synthesize information from multiple sources to create original compositions^ • Recognize and use freewriting as a tool for discovery and understanding* • Use freewriting strategies to increase writing length and depth of content^ • Identify and begin to analyze effective, powerful sentences in published nonfiction

				● Participate in full-class revision workshops to begin to apply a significant revision process. ● Use a writing rubric to self-evaluate a piece of writing. ● Utilize standardized formats for citations (Based on AP Style) Understand, recognize, and apply use of: ● relevant details ● appropriate paragraph structure and breaks ● variety of transitional words and phrases ● conclusion sentences ● appropriate paragraph structure* ● beginning 3-paragraph essay structure* ● appropriate 5-paragraph essay structure^ ● effective leads using basic elements such as questions and statements*, developing into more advanced methods such as using quotes and connecting background information or facts^ ● citations (in-text and works cited lists) and text references to support ideas
Speaking and Listening	Alaska State ELA standards: speaking and listening	Students will express ideas coherently for a variety of audiences and purposes.	-Active listening -Substantial feedback -Critical thinking -Constructive criticism -Self-reflection -Poise -Voice (volume, clarity) -Life -Expression -Eye contact -Gestures -Speech (pace, rate)	● Demonstrate ability to speak and listen for a variety of purposes and audiences ● Demonstrate ability to be active, respectful, and supportive audience members ● Ask clarifying questions ● Respond to others' ideas and questions, elaborating on or comparing/contrasting information ● Demonstrate proficiency in public speaking skills (PVLEGS) ● Self-evaluate public speaking skills based on rubric criteria (PVLEGS)

Mechanics and Conventions Alaska State ELA standards: Writing and Language Students will demonstrate grade-appropriate use of the conventions of the English language. **Class A (5th/6th grade):** Use nouns, pronouns, relative pronouns, conjunctions, and verbs appropriately. Use appropriate punctuation at the end of a sentence. Capitalize the beginning of a sentence and the pronoun I. Form and use the perfect tense. Use proper verb tense and correct inappropriate shifts in verb tense Use correlative conjunctions Use commas to separate items in a series Use a comma to separate an introductory element from the rest of the sentence Use a comma to set off the words yes and no, and to set off a tag question from the rest of the sentence. **Class B (6th/8th grade):** Use adjectives, adverbs, relative pronouns, relative adverbs, prepositions, and interjections appropriately. Recognize phrases and clauses Use and identify simple, compound, and complex sentences. Correct and revise run-on sentences. Identify and correct misplaced and dangling modifiers. Use commas to separate coordinate adjectives. Use subjective, objective, and possessive pronouns correctly. Correctly use commas, parentheses, and dashes to set off nonrestrictive/ parenthetical elements. **Class C (7th/8th grade):**	Identify and correct punctuation and grammar errors in a variety of writing styles. Use punctuation appropriately to improve the flow and readability of original writing Determine the appropriate type of punctuation to use based on sentence and writing purpose. Revise writing for specific and accurate word choice.

Correctly use verbals (gerunds, participles, and infinitives). Identify and use verbs in active and passive voice. Use indicative, imperative, interrogative, conditional, and subjunctive verbs. Identify and correct incorrect shifts in verb voice and mood. Correctly use commas, ellipses, and dashes for pauses/breaks. Use ellipses to indicate omission.				
The Writing Process	Alaska State ELA standards: Writing and Language	Students will learn the steps of the writing process	-prewriting -drafting -revising -editing -publishing	Recognize and use freewriting as a tool for discovery and understanding Prewriting - Explore ideas, choose a purpose, choose a topic, brainstorm, gather details, sequence/organize/prioritize ideas Drafting - Put ideas down, develop a controlling idea, structure ideas Revising - Re-read draft, use a rubric to evaluate, analyze and change or improve Participate in full-class revision workshops to begin to apply a significant revision process Editing - Check fact accuracy, correct errors in grammar, usage, and mechanics Publishing - Produce final copy, share writing Use a writing rubric to self-evaluate a piece of writing
Suggested Activities and Resources:				**Free Write Journaling** **No Red Ink (or comparable resource such as IXL)** **Performance Units** **6-trait writing slideshow** **Write routinely for short periods (freewrite, reflections, response to text)** **Whole class, small group, and partner revising of paragraphs, stories, and essays**

	Self-evaluation and reflection using rubrics **Variety of structured writing projects including paragraph responses, nonfiction (informative and explanatory) essays, narrative writing, poetry, and fiction.**

QUARTER 1				Suggested Content Objectives
Units of Instruction	**Standards (Writing and Speaking and Listening)**	**Essential Learnings**	**Essential Vocabulary and Concepts**	Grade Differentiation: **5th-6th grade:** ● Focus on proper sentence structure and paragraph structure instead of essay format. **7th-8th grade:** ● Students focus on essay structure
Narrative Writing, Logical Fallacies and Propaganda	Anchor standard: Use narrative writing to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach,	Students will create creative fiction and nonfiction writing drawing on first-hand experience and knowledge, creativity, and research. Students will make connections between their lives and the wider world.	-fiction vs. non-fiction -Informative writing vs. narrative writing - Persuasive writing - Propaganda tactics - Logical fallacies - Paragraph vs. essay	Learn how to use online resources to collaborate with others, edit, and revise writing (GC, tech bootcamp). Use online resources to set learning goals and track learning/growth (NRI) Write a linear narrative drawing on real experiences, using descriptive words and sensory details (Campout memories/reflections) Write a campaign speech and flier incorporating propaganda topics and logical fallacies

Suggested Activities and Resources	● **Technology Boot Camp** ● **Procedures/routines/binders** ● **Intro to NRI, GC, Free Write** ● **Focus on establishing the structure of free writing and grammar units with shorter project units** ● **6 traits of writing focus: voice and organization** ● **Project 1: Campout Memories/Reflections** ● **Project 2: Elections: Campaign Speech with Flier (propaganda and logical fallacies + art integration) Integration with Social Studies**

QUARTER 2				**Suggested Content Objectives**
Units of Instruction	**Standards (Writing and Speaking and Listening)**	**Essential Learnings**	**Essential Vocabulary and Concepts**	Grade Differentiation: 5th-6th: ● Students will conduct research that looks at different aspects of the same topic. They will summarize and paraphrase information and provide a list of sources. 7th-8th: ● Students assess the credibility of multiple sources and follow a standard format for citations.
Poetry Writing, Poetry Presentation, Public Speaking, Research Writing	Anchor standards: Use Narrative writing to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single	Students will write SLAM poetry,# exploring figurative language and poetic devices. Students will present their poetry publicly using public speaking skills.	-Figurative language -Poetic form -Revision for descriptive language - Public Speaking - SLAM poetry - Research - Non-fiction writing	● Research and synthesize relevant details and sources to produce a work of historical fiction. ● Develop abilities to identify figurative language and apply the use of figurative language and descriptive language in writing SLAM poetry.

	sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. Conduct a research project, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy; quote or paraphrase the data and conclusions without plagiarism and following a standard format for citations.^	Students will conduct research and synthesize information to create informational writing about different components of the life and inventions of a famous inventor.	- Essay^	Practice speaking and listening in public settings. Conduct research writing on different components of inventions and inventors. Recognize and apply the use of figurative language to communicate abstract ideas Interpret figurative language to infer meaning
Suggested Activities and Resources		**• SLAM Poetry: Public Speaking • Bulletin boards: Inventors and inventions (with arts integration). Integration with all classes. • Revision and 6-trait writing focus: ideas, and word choice**		

QUARTER 3				**Suggested Content Objectives**
Units of Instruction	**Standards (Writing and Speaking and Listening)**	**Essential Learnings**	**Essential Vocabulary and Concepts**	Grade Differentiation: 5th-6th grade: • Students will have teacher-directed science projects • Students will work off of sentence stem prompts for science fair 7th-8th grade: • Students will have self-directed science fair projects
Letter and template for student-led conferences, directions, technical writing, Historical Fiction	Anchor standards: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Students will employ the proper conventions of letter writing to write a letter to their parents for student-led conferences.# Students will employ technical writing to present findings and explain processes. Students will write directions (science fair procedures) that are logical, able to be followed, and make sense.	Technical writing -Explaining processes - Public speaking and listening - Story arc -Conflict/ Resolution	Write for entertainment Practice speaking and active listening skills Employ creative writing techniques including story arc, plot, conflict/resolution, and characters Gather relevant information from multiple sources Use online search terms effectively

	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	Students will give and receive feedback for procedures through a peer review process.# Students will present and answer questions about scientific and procedural writing. Students will write a piece of historically accurate fiction, following the structure of a basic story plot (exposition, rising action, conflict/resolution, climax, falling action, conclusion) with voice appropriate to the task at hand.	- Plot -Characters - Voice	Paraphrase research information Write for multiple purposes and audiences Adapt voice for different audiences
Suggested Activities and Resources		**• Student-led conferences: Writing Friendly Letter (integration with all classes).** **• Science Fair. Integration with science class.** **• 6 traits focus: sentence fluency, voice** **• Historical Fiction (with arts integration): journal entry or story from the Civil War- Civil Right Movement. Integration with social studies.**		

QUARTER 4				**Suggested Content Objectives**
Units of Instruction	**Standards (Writing and Speaking and Listening)**	**Essential Learnings**	**Essential Vocabulary and Concepts**	Grade Differentiation: 5th-6th grade: • Students will write 3-paragraph essays (intro, body, conclusion) • Text evidence will include simple statements 7th-8th grade: • Students will write 5-paragraph essays • Students will participate in debates • Text evidence must include direct quotes
Expository Writing to inform	-Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation. -Delineate a speaker's argument and specific claims, distinguishing claims that are	Students will work within a group format to create essays and presentations on groups, people, and movements that have contributed to society. Students will present information in multiple forms of media based on research,	-credible sources -biography -research -citation (in-text, works cited)	Research and synthesize information Work collaboratively within a group Research and synthesize relevant details and sources to produce an informative essay that shows* (class

	supported by reasons and evidence from claims that are not. - Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.	synthesizing ideas, evaluating claims, and providing evidence from a topic. Students will create short skits and film productions for film fest to further convey information regarding contributions to society.# Students will produce writing that focuses on presenting information*, comparing/contrasting ideas or movements, and analyzing the effects of different pieces of information^.	- text support -evidence	A), compares/contrasts (B), or analyzes^ (C) different components of the way different groups and people have contributed to society. - Employ evidence to support claims. - Evaluate historical accuracy of sources by comparing multiple sources.^ - Present in front of an audience
Suggested Activities and Resources		• **Artist in Residence (integration with all classes)** • **Speeches/presentations/public speaking: Contributions to society (integration with all classes)** • **Film Fest (multimedia and art integration): Contributions to Society (integration with all classes)**		

SCOPE and SEQUENCE

Date		Content
Week 1 Sept. 3	T	Ice breakers and intros
4	W	Binder and Classroom Expectations, Procedures
5	Th	Tech Bootcamp: Google Classroom, NRI
6	F	Anvil HIke
Week 2 9	M	Grammar 1 units: A: Using nouns, pronouns, and relative pronouns correctly B: Use relative pronouns, adjectives, and adverbs correctly C: Using verbals (gerunds, participles, and infinitives)
10	T	Grammar
11	W	Grammar

12	Th	Camp out
13	F	Camp Out
Week 3 16	M	Intro: Freewrites and goal setting Prewriting
17	T	Free Writes: Drafting
18	W	Free writes: Drafting
19	Th	Free Writes: Drafting
20	F	Free Writes: Word count and recording
Week 4 23	M	Project: Campout Memories pre-writing
24	T	Campout memories drafting
25	W	Camp out memories drafting
26	Th	Campout memories drafting
27	F	Campout memories revising
Week 5 30	M	Campout memories: peer revision
Oct. 1	T	MAP
2	W	MAP
3	Th	Campout memories: Edits
4	F	Campout memories: Final due
Week 6 7	M	Grammar 2 units: A: Use conjunctions and verbs properly B: Use relative adverbs, prepositions, and interjections properly C: Identify and use verbs in active voice
8	T	Grammar
9	W	Grammar
10	Th	Grammar

	11	F	Grammar
Week 7	14	M	IN-SERVICE
	15	T	Free Write unit 2
	16	W	Free Write
	17	Th	Free Write
	18	F	Free Write
Week 8	21	M	Project #2: Campaign Speeches Prewriting
	22	T	Campaign Speeches drafting
	23	W	Campaign Speeches Drafting
	24	Th	Campaign Speeches peer review
	25	F	Campaign speeches revisions
Week 9	28	M	Campaign speeches editing
	29	T	Campaign speeches final with art integration
	30	W	Campaign speeches final with art integration
	31	Th	Campaign speeches final with art integration
END Q1	**November 1**	F	Campaign speeches final with art integration
Q 2 Week 1	**4**	M	Grammar 3 units: A: Ending sentence punctuation, Capitalizing beginning sentences and I B: Recognize phrases and clauses; using and identifying simple, compound, and complex sentences. C: Identify and use verbs in passive voice; correct passive to active voice.
	5	T	Grammar
	6	W	Grammar
	7	Th	Grammar
	8	F	Grammar

Week 2	11	M	Inservice
	12	T	Minimum day: Conferences
	13	W	Minimum Day: Conferences
	14	Th	Free Writing Unit 3
	15	F	Free Writing
Week 3	18	M	Project: SLAM Poetry intro and brainstorming
	19	T	SLAM POETRY: Prewriting
	M 20	W	SLAM POETRY: Drafting
	21	Th	SLAM POETRY: Drafting
	22	F	SLAM POETRY: Revisions
Week 4	25	M	SLAM POETRY: Peer Reviews
	26	T	SLAM Poetry: Edits
	27	W	SLAM poetry: Final Writing
	28	Th	HOLIDAY
	29	F	HOLIDAY
Week 5	**December 2**	M	SLAM poetry: public speaking performance practice
	3	T	SLAM poetry: public speaking performance practice
	4	W	SLAM poetry: public speaking performance practice
	5	Th	SLAM poetry: public speaking final performances
	6	F	SLAM poetry: public speaking final performances
Week 6	9	M	Grammar 4 Units: A: Verb tenses: correcting inappropriate shift in tenses. B: Correct and revise run-on sentences; Identify and correct misplaced and dangling modifiers. C: Use indicative, imperative, conditional, subjunctive, and interrogative verbs.

	10	T	Grammar
	11	W	Grammar
	12	Th	Grammar
	13	F	Grammar
Week 7	16	M	Free Writing: Unit 4
	17	T	Free Writing
	18	W	Free Writing
	19	Th	Free Writing
	20	F	Free Writing
Week 8	**January 6**	M	In-Service
	7	T	MAP
	8	W	MAP
	9	Th	Project: Bulletin Boards
	10	F	Bulletin Boards
Week 9	13	M	Bulletin Boards
	14	T	Bulletin Boards
	15	W	Bulletin Boards
	16	Th	Bulletin Boards
END Q2	17	F	Bulletin Boards
Q3 Week 1	20	M	Grammar 5 Units: A: Use correlative conjunctions; use a comma to separate items in a series. B: Use commas to separate coordinate adjectives C: Identify and correct incorrect shifts in verb voice and mood.
	21	T	Grammar:

	22	W	Grammar:
	23	Th	Grammar
	24	F	Grammar
Week 2	27	M	Free Writes: Unit 5
	28	T	Free Writes: Unit 5
	M 29	W	Free Writes: Unit 5
	30	Th	Free Writes: Unit 5
	31	F	Free Writes: Unit 5
Week 3	February 3	M	Grammar 6 Units: A: Use a comma to separate introductory elements B: Non-restrictive and parenthetical elements of a sentence: commas, parentheses, and dashes C: Correctly use commas, ellipses, and dashes for pauses/breaks
	4	T	Grammar
	5	W	Grammar
	6	Th	Grammar
	7	F	Grammar
Week 4	10	M	Project: Write a Friendly Letter prewriting and drafting
	11	T	Write a friendly letter revisions
	12	W	Write a friendly letter: final
	13	Th	Minimum: Conferences
	14	F	Minimum: Conferences
Week 5	17	M	In-service
	18	T	Free Writes Unit 6
	19	W	Free Writes

	20	Th	Free Writes
	21	F	Free Writes
Week 6	24	M	SCIENCE FAIR
	25	T	SCIENCE FAIR
	26	W	SCIENCE FAIR
	27	Th	SCIENCE FAIR
	28	F	SCIENCE FAIR
Week 7	March 3	M	SCIENCE FAIR
	4	T	SCIENCE FAIR
	5	W	SCIENCE FAIR
	6	Th	SCIENCE FAIR
	7	F	SCIENCE FAIR
Week 8	17	M	Project: Historical Fiction
	18	T	Historical Fiction
	19	W	Historical Fiction
	20	Th	Historical Fiction
	21	F	Historical Fiction
Week 9	24	M	Historical Fiction
	25	T	Historical FictionHistorical Fiction
	26	W	Historical Fiction
	27	Th	Historical Fiction
END Q3	28	F	Historical Fiction
Q4 Week 1	31	M	GRAMMAR 7 Units: A: Use a comma to set off the words yes/no/tag questions

		B: use subjective, objective, and possessive pronouns correctly. C: Use ellipses to indicate omission.
April 1	T	Grammar
2	W	Grammar
3	Th	Grammar
4	F	Grammar
Week 2 7	M	TESTING
8	T	TESTING
9	W	TESTING
10	Th	Intro to: Contributions too Society
11	F	Contributions to Society
Week 3 14	M	DC? Free Writes Unit 7
15	T	DC? Free Writes
16	W	DC? Free Writes
17	Th	DC? Free Writes
18	F	In-service
Week 4 21	M	Vacation
22	T	ARTIST in RESIDENCE
23	W	ARTIST in RESIDENCE
24	Th	ARTIST in RESIDENCE
25	F	ARTIST in RESIDENCE
Week 5 28	M	ARTIST in RESIDENCE
29	T	ARTIST in RESIDENCE
30	W	ARTIST in RESIDENCE

	May 1	Th	ARTIST in RESIDENCE
	2	F	ARTIST in RESIDENCE
Week 6	5	M	PROJECT: Contributions to Society Cont'd
	6	T	PROJECT: Contributions to Society Cont'd
	7	W	PROJECT: Contributions to Society Cont'd
	8	Th	PROJECT: Contributions to Society Cont'd
	9	F	PROJECT: Contributions to Society Cont'd
Week 7	12	M	FILM FEST: Contributions to Society
	13	T	FILM FEST: Contributions to Society
	14	W	FILM FEST: Contributions to Society
	15	Th	FILM FEST: Contributions to Society
	16	F	FILM FEST: Contributions to Society
Week 8	19	M	FILM FEST: Contributions to Society
	20	T	FILM FEST: Contributions to Society
	22	W	FILM FEST: Contributions to Society
	23	Th	FILM FEST: Contributions to Society
	24	F	FILM FEST: Contributions to Society
Week 9	26	M	Vacation
	27	T	Free Writes/Short Project
	28	W	Free Writes/Short Project
	29	Th	Free Writes/Short Project
	30	F	8th grade promotion: LAST DAY of SCHOOL

2024 - 2025 Reading (Theme: In Motion)

Grades: 5-8	This year-long reading course is designed to enhance students' reading and analytical skills through a focused exploration of diverse literary forms including fiction, nonfiction, poetry, and drama. The central theme, "In Motion," will guide students as they engage with texts that explore personal growth, societal shifts, and historical movements. This thematic exploration aims to build deep comprehension, critical thinking, and a nuanced understanding of how individuals and communities evolve.
Length: Two Semesters	
Prerequisites: None	

Year Outline

Main Units	Sub-Units	Skills Developed
Fiction and Nonfiction (Quarter 1)	Science and Technology	Students will: **Cite Evidence**: Students will cite textual evidence to support analysis and inferences drawn from texts, ensuring a strong understanding of the text's explicit content and underlying themes. **Identify Themes**: Students will determine and analyze the development of themes or central ideas in texts, summarizing main ideas or events in correct sequence. **Analyze Dialogue and Incidents**: Students will analyze how dialogue or incidents in a story propel the action, reveal aspects of a character, or provoke decisions. **Understand Word Meaning**: Students will determine the meaning of words and phrases in context, including figurative and connotative meanings, and analyze the impact of specific word choices on meaning and tone. **Compare Text Structures**: Students will compare and contrast the structure of different texts, analyzing how structure contributes to meaning and style. **Analyze Point of View**: Students will analyze how differences in the points of view of characters and the audience create effects such as suspense or humor. **Evaluate Adaptations**: Students will analyze how filmed or live productions of stories or dramas stay faithful to or depart from the original texts, evaluating directorial choices.
Short Stories (Quarter 1 & 2)	Civil War	
Poetry (Quarter 2)	Civil War Westward Expansion	

Types of Nonfiction (Quarter 3)	Westward Expansion Civil Rights Literature Circles	**Comprehend Diverse Literature**: Students will read and comprehend a range of literature from various cultures, ensuring exposure to different perspectives and complexity levels. **Analyze Informational Texts**: Students will determine central ideas and subtopics in informational texts, analyzing their development and summarizing the content accurately. **Evaluate Arguments**: Students will delineate and evaluate arguments and specific claims in texts, assessing reasoning and evidence, and recognizing irrelevant evidence or bias. **Engage in Discussions**: Students will engage effectively in collaborative discussions with diverse partners on grade-level topics, building on others' ideas and expressing their own clearly. **Vocabulary Development**: Students will determine or clarify the meaning of unknown words using various strategies, demonstrate understanding of figurative language, and acquire and use grade-appropriate academic and domain-specific vocabulary.
Drama (Quarter 4)	Civil Rights Literature Circles	

Class Breakdown

Class A	Class B	Class C

· **Cite Evidence:** Begin citing textual evidence for analysis. · **Identify Themes:** Determine and summarize the theme or central idea. · **Analyze Dialogue and Incidents:** Describe plot development and character responses. · **Compare Text Structures:** Analyze how text structure contributes to meaning. · **Analyze Point of View:** Explain the author's development of narrative perspective. · **Modern Fiction Analysis:** Compare different forms of texts on similar themes. · **Comprehend Diverse Literature:** Read and understand a range of literature. · **Analyze Informational Texts:** Determine and summarize central ideas and subtopics. · **Evaluate Arguments:** Trace and assess arguments and claims in texts. · **Engage in Discussions**: Participate in discussions on class topics and texts. · **Presentation Skills:** Present claims and findings clearly with relevant details. · **Vocabulary Development:** Determine meanings of unknown words and figurative language.	· **Cite Evidence:** Cite several pieces of textual evidence for analysis. · **Identify Themes:** Determine and analyze theme development over the text. · **Analyze Dialogue and Incidents:** Analyze how story elements interact (e.g., setting and characters). · **Compare Text Structures**: Analyze how form or structure contributes to meaning. · **Analyze Point of View:** Analyze how author contrasts different points of view. · **Modern Fiction Analysis:** Compare fictional portrayals with historical or cultural accounts. · **Comprehend Diverse Literature:** Read and understand literature from various cultures. · **Analyze Informational Texts:** Determine and analyze central ideas and subtopics. · **Evaluate Arguments**: Assess reasoning and evidence in arguments and claims. · **Engage in Discussions:** Build on and express ideas clearly in discussions. · **Presentation Skills:** Present findings coherently with relevant evidence. · **Vocabulary Development:** Determine meanings and interpret figures of speech.	· **Cite Evidence:** Cite evidence that strongly supports analysis. · **Identify Themes:** Analyze theme development and its relationship to characters and plot. · **Analyze Dialogue and Incidents:** Examine how dialogue and incidents influence the plot and characters. · **Compare Text Structures:** Compare and contrast text structures and their impact on meaning. · **Analyze Point of View:** Analyze how different perspectives create effects like suspense or humor. · **Modern Fiction Analysis:** Analyze how modern fiction draws on traditional themes and patterns. · **Comprehend Diverse Literature:** Read and understand literature from various cultures. · **Analyze Informational Texts:** Summarize and analyze central ideas and subtopics. · **Evaluate Arguments:** Identify bias and propaganda in arguments and claims. · **Engage in Discussions:** Clearly express and build on ideas in collaborative discussions. · **Presentation Skills:** Present findings with clear reasoning and well-chosen details. · **Vocabulary Development:** Understand meanings of unknown words and figurative language.

Semester 1: Quarter 1

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives
Fiction and Nonfiction Sub-Unit: Science and Technology	RL.KI.2.6-8 RL.KI.3.6-8 RL.CS.4.6-8 RL.CS.5.6-8 RL.IK.7.6-8	Themes and central ideas in texts emerge and evolve through characters, settings, and plot events. Dialogue and key events in a story drive the narrative forward, revealing character traits and influencing characters' decisions. The meaning of words and phrases depends on their context, including figurative and connotative meanings. Different texts utilize various structures, such as chronological order or cause and effect, to convey meaning and influence readers' interpretations. Written texts and their live adaptations can differ significantly in interpretation and presentation.	fiction confirm decision determine evidence fact fantasy investigate opinion prove argue battle challenge compete conclude convince issue force energy frequency artificial intelligence resistance	**Big Questions:** Unit 1 Fiction and Nonfiction: How do we decide what is true? Unit 2 Short Stories: Is conflict always bad? Students will: • recognize and appreciate fiction, nonfiction, and short stories as literary forms • read and analyze a variety of fiction, nonfiction, and short stories • apply reading skills: making inferences, using prior knowledge, asking questions, drawing conclusions • analyze literary elements such as plot, narrator, author's perspective, and tone • compare literary works and the experience of reading versus watching (e.g. The Wild Robot). • build vocabulary and vocabulary concepts • compare different narrative perspectives in fiction and nonfiction • explore ethical dilemmas presented in fiction and nonfiction related to science and technology

				• analyze the influence of the author's background and perspective on their writing

Suggested Activities and Resources	**Books: (Subject to change)** Class A - "The Wild Robot" by Peter Brown Class B - "The Boy Who Harnessed the Wind" by William Kamkwamba, The Inuit Thought of It by Alootok Ipellie and David MacDonald Class C - "Hidden Figures" by Margot Lee Shetterfly, Indigenous Ingenuity by Deidre Havrelock and Edward Kay **Resources:** Prentice Hall Literature Language and Literacy Fiction and Nonfiction Anchor Chart Blooket CommonLit Canva **Activities:** Daily Reading Logs: Class A Class B and C Weekly reflection + vocabulary journals Media comparisons **Hands-On Project Ideas:** Fictional Character Diaries Non-fiction News Magazine Fictional and Nonfictional Podcasts Storytelling Adaptations - dramatic readings, puppet shows, poetry, drawings, videos, etc.

Semester 1: Quarter 2

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives

Short Stories and Types of Nonfiction Sub-Unit: Civil War	RL.IK.9.6-8 RL.KI.1.6-8 RL.CS.6.6-8 RI.IK.8.6-8 RI.CS.6.6-8	The point of view and perspective in both short stories and nonfiction texts shape the narrative, influencing how events are perceived and interpreted by readers. Nonfiction texts often contain varying degrees of credibility and bias. Analyzing sources, arguments, and evidence helps to evaluate the reliability and objectivity of the information presented. Short stories and nonfiction texts use different structures and elements to convey themes and ideas. Creating visual representations of themes and events from texts about the Civil War and Westward Expansion helps illustrate the complex ideas and historical contexts. The setting in short stories plays a crucial role in enhancing the narrative, influencing the development of themes and characters.	argue battle challenge compete conclude convince issue concept distinguish examine guess judge measure observe purpose question refer source study manifest destiny homestead frontier citizenship injustice equality	**Big Questions:** Unit 2 Short Stories: Is conflict always bad? Unit 3: What is important to know? Students will: ● understand the characteristics and elements of short stories ● read and analyze a short story and nonfiction ● understand the characteristics, types, and purposes of essays, articles, and other nonfiction ● evaluate the credibility and bias in nonfiction texts ● compare and contrast different types of nonfiction texts (memoirs, speeches, essays) ● explore the use of setting to enhance the narrative in short stories ● analyze themes in short stories and nonfiction texts ● evaluate the impact of point of view on the reader's understanding ● create visual representations of themes and events from the civil war and westward expansion

Suggested Activities and Resources	**Books: (Subject to change)** Class A - Big Bad Ironclad Class B - "Soldier's Heart" by Gary Paulsen Class C - "Across 5 Aprils" by Irene Hunt **Resources:** Prentice Hall Literature Language and Literacy Fiction and Nonfiction Anchor Chart Blooket CommonLit **Activities:** Daily Reading Logs Weekly reflection + vocabulary journals **Hands-On Project Ideas:** Story Elements Puzzle Timeline Creations Escape Room Jeopardy

Semester 2: Quarter 3

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives

Types of Nonfiction and Poetry Sub-Unit: Westward Expansion	RI.IK.7.6-8 RI.KI.3.6-8 RI.KI.9.6-8 RI.CS.5.6-8 RI. CS.4.6-8	Visual elements in nonfiction texts, such as images, charts, and graphs, enhance comprehension by providing additional context and clarity. Poetry, including narrative and lyric forms, is characterized by specific elements such as meter, rhyme, and imagery. The historical context of nonfiction texts related to civil rights and westward expansion provides insight into past events and their relevance to current issues. Word choice and imagery in poetry play a crucial role in expressing themes of identity and resistance. The structure of nonfiction texts, such as chronological order or problem-solution, contributes to their meaning and purpose.	knowledge limit measure narrow observe refer source study communicate correspond quote reveal symbolize visual message gesture migration settlement trail conflict	**Big Questions:** Unit 3: What is important to know? Unit 4: Do we need words to communicate well? Students will: ● relate visuals to types of nonfiction ● understand the characteristics, elements, and forms of poetry ● read and analyze narrative poems and lyric poems ● relate visuals to poetry ● analyze the historical context of nonfiction texts related to civil rights and westward expansion ● connect nonfiction texts to current events ● analyze the impact of word choice and imagery in poetry ● explore themes of identity and resistance in poetry **Literature Circle Objectives** Students will: ● work effectively in small groups, demonstrating active listening, respectful communication, and constructive feedback. ● Students will identify and discuss new vocabulary encountered in the texts, using context clues and other strategies to determine meanings. ● summarize key points, ask and answer critical questions, and make connections to other texts and real-world experiences. ● take on rotating roles within their literature circles (discussion director, summarizer, connector, and vocabulary enricher)

Suggested Activities and Resources	**Resources:** Prentice Hall Literature Language and Literacy CommonLit Canva Poetry Foundation Poetry Out Loud **Books:** Literature Circle Selections... (subject to change) Class A: Little House Big Woods, A People's History of American Empire (Graphic Novel), Sarah Plain and Tall Class B: Little House on the Prairie, Sarah Plain and Tall, Blood on the River..?, Stella by Starlight Class C: Little House on the Prairie, Stella by Starlight **Activities:** Daily Reading Logs Weekly reflection + vocabulary journals **Hands On Project Ideas:** Comic Storyboard Scavenger Hunt Book Trailer Board Game Creation Poetry and Media Festival/Fair

Semester 2: Quarter 4

Units of Instruction	Standards	Essential Learnings	Essential Vocabulary and Concepts	Suggested Content Objectives

Drama Sub-Unit: Civil Rights	RI.RR.10.6-8 RI.KI.1.6-8 RI.KI.2.6-8 RL.RR.10.6-8	Drama encompasses various elements such as character development, motivation, dialogue, and plot structure. Historical and cultural contexts provide essential background for understanding dramas, offering insight into the themes and motivations of characters. Visual elements, such as stage design and costumes, are integral to drama, enhancing comprehension and engagement by providing context and supporting the narrative. Different adaptations of a drama can vary significantly in their interpretation of the original text. Drama often explores themes of identity, prompting reflection on personal and societal questions such as "How do we decide who we are?"	diverse perspective reaction reflect respond similar unique expectations ideals individuality activism protest empowerment civil rights advocacy oppression resistance	**Big Questions:** Unit 5: How do we decide who we are? Students will: ● understand the elements and types of drama ● read and analyze an example of drama ● relate visuals to elements of drama ● explore character development and motivation in drama ● evaluate the historical and cultural context of drama ● reflect on the themes and identity **Literature Circle Objectives** Students will: ● work effectively in small groups, demonstrating active listening, respectful communication, and constructive feedback. ● analyze themes, characters, and plot developments, citing specific textual evidence to support their interpretations and arguments. ● Students will identify and discuss new vocabulary encountered in the texts, using context clues and other strategies to determine meanings. ● summarize key points, ask and answer critical questions, and make connections to other texts and real-world experiences. ● take on rotating roles within their literature circles (discussion director, summarizer, connector, and vocabulary enricher)

Suggested Activities and Resources	**Resources:** Prentice Hall Literature Language and Literacy CommonLit Canva Dramatic Learning **Books:** Literature Circle Selections (subject to change) Class A: A Place to Land: Martin Luther King Jr. and the Speech that Inspired a Nation, Voice of Freedom Fannie Lou Hamer, Sit-In How Four Friends Stood Up by Sitting Down Class B: Fighter in Velvet Gloves, Black Like Me, Claudette Colvin Twice Toward Justice, If you lived...MLK, Freedom Walkers Class C: Fighter in Velvet Gloves, Black Like Me, Claudette Colvin Twice Toward Justice,If you lived...MLK, Freedom Walkers, The Watsons Go to Birmingham, Roll of Thunder, Hear My Cry **Activities:** Daily Reading Logs Weekly reflection + vocabulary journals **Hands-On Project Ideas:** Readers Theater Playwriting Workshop and Performance Costume Design Challenge Mini Drama Documentary (interviews, narration, and footage)

Anvil City Science Academy Four Year Thematic Rotation -- CURRENT (modified June 2024)						
Year	Theme	Subject	Quarter 1	Quarter 2	Quarter 3	Quarter 4
2021-2022	Alaska Studies; Who We Are and Where We Come From	Science	Ecosystems Overview	Energy and Resources in Ecosystems Organism Populations	Cells and Body Systems Science Fair	Growth, Development, Reproduction of Organisms
		Social Studies (AK studies)	AK Geography/Regions Nome Region Geography/History	Alaska History Alaska from Sale to Statehood/	Alaska Native Cultures	Alaska Economy Current Issues and Civic Responsibility
		Language Arts	The Writing Process Conventions Technical writing (flora and fauna field guide) Informative/Explanatory texts Student biographies	Writing about texts: fiction Formal essays Conventions Book reviews Compare/Contrast Essay Wax Museum/Skits	Literature devices and figurative language Conventions Poetry forms Literature Analysis: Text-dependent analysis essay Short constructed response	Speeches: (informative, demonstrations, compare/contrast, promotion or persuasive) Conventions Narrative Writing: fiction retelling Alaska Native
		Reading	Fiction and Nonfiction Plot Structure Informational Text Structure	Themes in Oral Tradition and Storytelling	Poetry (Inflections and Voice) Drama (Projection and Structure)	Native Alaskan Myth and Alaska Legends
		Art	Tundra Art - elements of art Animal Self Portrait	Tlingit Block Printing Perspective Drawing	Beading Native Dancing	Carving - Totem Poles Ceramics
		Thematic Projects	Nome Plants Field Guide	Nome Interviews - Oral HIstory Science - local knowledge interviews Wax Museum/Skits	*Family genetics/heredity* Poetry Out Loud Poetry Writing Science Fair (practice presenting/speaking)	Artist in residence Acting out native myths Retelling short stories Speeches DC trip 3rd Annual Book ACSA Trailer Spotlight
2022-2023	Foundational Changes	Science	Earth Processes - Geologic Time	Earth's Features Earth's Systems	Matter - Solids, Liquids, and Gasses Science Fair	Chemistry

		Social Studies (Early Am. History)	United States landforms/regions Geography and Native Cultures	Explorers, Conquerors & Settlements	Colonization	The American Revolution 1754 - 1783
		Language Arts	Nonfiction narrative writing: Island Map Fiction Narrative writing: Writing Short Stories (Formally writing primary source story telling) with illustration/multi-media production	Informative/Explanatory writing/essays (Bulletin boards) Figurative language and poetry structure: Writing Poetry (Poetry Slam) with Christmas gift projects of framed multi-media art poetry	Essay writing: Argumentative/persuasive /Support Claims Research writing: science fair	Writing Reader's Theaters (historical) Elements of skits, plays, and dramas Presentations: whole-school culmination presentations with slides
		Reading	Nonfiction and informational text: Primary Sources and Bias	Fiction Story Structure and Nonfiction Text Structure (Author's Purpose)	Fiction and Nonfiction Thematic Comparative Text	Drama: Revolutionary War
		Art	Rock Strata-elements of art Navajo inspired weaving Illustration of animals and people for narrative writing	Stop gap animation Illustrate poems Negative/Positive Space Model of solar system Earth rotating on axis	Performance of rock cycle or water cycle	Artist in Residence
		Thematic Projects	Island Biography ACSA Boot Camp Rachel - Google Docs Colleen - Google Slides Jeff - Google Classroom Jessica - Google Drive	Bulletin Boards	Science Fair - collaboration between science and writing	Reader's Theater Foundational Changes Presentation (on anything from the year)
2023-2024	The World Around Us	Science	Water Cycle Weather and Climate Natural Resources	Environmental Science Greenhouse Effect Alaska Resources Debates - Local Issue Research	Human Population and Interaction with Environment Science Fair	Environmental Issues Around the World/Solutions Debates - Climate Refugees or World Environmental Issues
		Social Studies (World Geo. & Ancient Cultures)	Geography/Map Skills North America & South America	Mesopotamia Egypt Africa	Europe - Greece & Rome Asia - China (Dynasties)	Oceania - Mawari Latin America - Maya, Aztec and Inca
		Language Arts	Narrative Writing Informative/Explanatory Writing	Poetry Writing Research writing and Argumentative/Support Claims: Mini debates START: Poetry Out Loud	FINISH: Poetry Out Loud Writing Myths Writing Directions, Technical Writing (science fair)	Expository Writing: Bulletin Boards: Countries within Continents Research writing and Argumentative/Support Claims: Mini debates

						Back From the Dead
		Reading	Fiction and Nonfiction (Comparative Text)	Non Fiction	Mythology (Old World) Holocaust (8th Grade)	Mythology (New World)
		Art	Flags Locker Poster Eco Art Sculpture - Spider	Printmaking/Fabrics - Adinkra Egyptian Art	Mosaics Ink Paintings Origami	Aboriginal Art Pastels Mobiles
		Thematic Projects	Artist in Residence	Debate - local environmental issues	Science Fair	Bulletin Boards - Continents/Countries Debates - worldly climate refugees/environmental issues
2024 - 2025	In Motion	Science	Intro to Physical Science Scientific Measurement Introduction to Matter (mass, volume, density)	Forces/Motion/Energy Machines / Inventions (Engineering / inventing?)	Space Science Earth's Movements Science Fair	Waves - Sound, Light, Electromagnetic Spectrum Thermal Energy Transfer
		Social Studies (Government & Am History 1801 - 1865/Civil Rights)	Government Three levels Legislative Executive Judicial	Westward Expansion Manifest Destiny Civil War 1801-1865	Movements - Civil Rights and Women Industrial Revolution/Inventions Labor Movements	Contributions to Society 1801-onward
		Language Arts	-Procedures/routines /binders -Intro to NRI, GC, Free Write -Technology Boot Camp -Something with elections (campaign speech, flier, etc.) -Campout Memories/Reflections	-SLAM Poetry -Bulletin boards: Inventors and Inventions	-Student-led conferences -Science Fair -Historical Fiction: journal entry or story from the Civil War-Civil Rights Movement	- Artist in Residence - Speeches/presentations/public speaking: Contributions to Society
		Reading	Fiction and Nonfiction Reading A List Reading B List Reading C List	Fiction and Nonfiction Reading A List Reading B List Reading C List Lemonade Wars	Literature Circles: Civil War Novels Red Badge of Courage	Literature Circles: Civil Rights Novels Roll of Thunder, Hear My Cry All American Boys The Watsons Go to Birmingham
		Art	DRAWING Drawing/Shadows for Three Dimensional Shapes Portrait Drawing Reverse Self Portrait (Light)	THEATER/MUSIC Shadow Puppets with created sounds/music (Sound and Light) PAINTING Color Theory (Light) Impressionism Painting	THEATER Living Timeline Backdrop (Westward Expansion)	Recycled Material Mixed Media Pop Art Tessellations Artist in Residence

			Atom Drawings	(Movements)		
		Thematic Projects	Campout Technology Boot Camp	Bulletin Boards (Inventors/Inventions)	Science Fair Student Led Conferences	DC Trip Artist in Residence
		Special Education	https://ncheteach.org/resources (Social Studies/History) https://ca.pbslearningmedia.org/subjects/science/physical-science/?rank_by=recenc (Physical Science) I have a packet for Bloody Sunday I created that is leveled. Super easy start with picture prompts for tests and ends with gifted and talented as you analyze the song "Bloody Sunday" and group discussions/writing on whether you would have crossed the bridge that day. Here's a taste of the ending for the advanced students: https://youtu.be/sc6mMRUi_Xg?si=CGn6mh7g5XZztxrL I have a formula I created that helps nonwriters work together to create a five paragraph opinion essay. This is NOT for students that write well - it's for the ones who do not write. I can give you the lesson plan and pictures of final products. Math Resources - https://www.nj.gov/education/specialed/programs/additionalsupports/mathsupports/ Core Lesson/Etc. Repository - https://hippocampus.org/			

Adopted Textbook: Miller & Levine Biology Length: Full Year Grades: 9, 10, 11, 12	Course Overview *Biology* is a one-year course designed to meet the Biological Science Requirements for graduation. Students will engage in the practices of science to help them understand how scientific knowledge develops as well as gain an appreciation for the wide range of approaches used to investigate, model and explain the world. Such practices will include learning how to develop and use models, planning and carrying out investigations, analyzing and interpreting data as well as engaging in argument from evidence. Academic content will focus on core ideas that will help students develop a broader and deeper understanding of content so that it can be used to make sense of new information and resolve authentic problems. First semester will begin with the nature of science and transition to the study of structures and processes of organisms before concluding with the inheritance and variation of traits. Second semester will begin with the study of the ecosystem dynamics and cycles of matter/energy transfer, and conclude with biological change over time. **Needs to be Edited or developed** **Not being used in curriculum currently**

Unit One
Nature and Process of Science (3 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Investigation 1 *Nature of Science* P4, P6, P5, NOS2, NOS7	**Investigation 1** ****Collaborative Activities**** 1. What is the process of science? a. How does science work? b. How do scientists test ideas?	**Investigation 1** 1. What is the process of science? **Vocabulary terms** Science, Hypotheses, evidence, data, Natural world The process of science is ongoing and centers around testing ideas about the natural world. Ideas can come from exploration and discovery, societal needs, and/or the scientific community. Evidence from testing can lead to more exploration/discovery, receive feedback/analysis from the scientific community and/or have impacts on society.	**Investigation 1** 1. What is the process of science? **Summative Assessment: Quiz 1. Explain the major themes that make up the scientific process. 2.Connect scientific process from activity by charting their pathway on Science Flowchart.	**Investigation 1** 1. What is the process of science? E.Culturally-knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. 1.recognize and build upon the inter-relationships that exit among the spiritual, natural and human realms in the world around them, as reflected in their own cultural traditions and beliefs as well as those of others.	**Investigation 1** 1. What is the process of science? ****Collaborative Activities**** I)Communication skill ▪ What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf II)Team Building ▪ Kagan Activity (refer to Kagan book) **1.How does science work?** ▪ Understanding the Science FlowChart https://undsci.berkeley.edu/lessons/introducing_flow_hs.html 2.Tracking progress through the scientific process ▪ Gummy Bear Challenge Activity pdf (in folder) ▪ The Great Fossil Find http://www.indiana.edu/~ensiweb/lessons/gr.fs.fd.html ***and/or*** Paleontology Activity ▪ **Reading material:** Newsela articles **Other Resources** Crime Scene: Case of the Missing Computer Chip

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		Scientists can test ideas by examining events and processes long past, very distant, and not directly observable as well as testing ideas through experimental procedure (historical vs. experimental) Scientists look for patterns in their observations and data. Raw data must be analyzed and interpreted before we can tell whether a scientific idea is likely to be accurate or inaccurate. Scientists work collaboratively.		3.demonstrate an understanding of the relationship between world view and the way knowledge is formed and used. **Collaborative Activity** 1.Communication skill 2. Team building	http://www.indiana.edu/~ensiweb/lessons/crime.html **Alaska Native Knowledge Network Resources** People of Kauwerak: Legends of the Northern Eskimo http://www.alaskool.org/native_ed/historicdocs/people_of_kauwerak/Kauwerak_pp.htm#top Inupiat Ioitqusiat: Those things that make us who we are http://www.ankn.uaf.edu/curriculum/Inupiaq/Ilitqusiat/index.html Masterworks of Yupik Science and Survival http://www.yupikscience.org/ Cultural education: http://www.ankn.uaf.edu/ANCR/Yupiaq/Yaav2001.pdf
Investigation 2 *Science Fair*	**Investigation 2** **2.How can we demonstrate the process of science?**	**Investigation 2** **2.How can we demonstrate the process of science?**	**Investigation 2** **2.How can we demonstrate the process of science?**	**Investigation 2** **2.How can we demonstrate the process of science?**	**Investigation 2** **2.How can we demonstrate the process of science?** Understanding the Science FlowChart https://undsci.berkeley.edu/lessons/introducing_flow_hs.html The Gummy Bear Challenge Activity pdf **Other Resources** Exploring Bounding Balls https://undsci.berkeley.edu/lessons/bouncing_balls.html Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf
~Investigation 3 NOS2, NOS3, NOS5, P3, P4, P6	**~Investigation 3** 1.What is science? 2.What are hypotheses? 3.How does our understanding of the natural world change?	**~Investigation 3** Scientists strive to test ideas with evidence from natural world and exposing ideas to testing. Scientific knowledge is open to question and	**~Investigation 3** 1.Explain that science is a both a body of knowledge and process of building knowledge about the natural world. 2.Explain that science is uncertain and as new	**~Investigation 3** E.Culturally-knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all	**~Investigation 3** Graphic Organizer of the institution of science/use cut-outs from magazines

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		revision as new ideas surface and new evidence is discovered. Hypotheses are proposed explanations for a narrow set of phenomena. Hypotheses are usually inspired and informed by previous research and/or observations.	evidence is revealed ideas may change. 3. Identify testable hypotheses that are informed from observations or research. **Cooperative Objective** 4.Explain the importance of being specific when offering and receiving communication.	elements in the world around them. 1.recognize and build upon the inter-relationships that exist among the spiritual, natural and human realms in the world around them, as reflected in their own cultural traditions and beliefs as well as those of others. 3.demonstrate an understanding of the relationship between world view and the way knowledge is formed and used.	

Unit Two
From Molecules to Organisms: Structure and Function (6-8 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Investigation 1 HS-LS1-2 HS-LS1-3	**Investigation 1** **(Investigative Question)** **1.What causes an athlete to collapse then go into a coma after running a marathon? (Why did treating Michele with water make her condition worse?)** **Quest #1** a)How is the human body organized? b)What are the main points of the cell theory? c)How do microscopes work? d)What is the role of the cell nucleus? e)What is the function of the mitochondrion? f) What is the function of the cell membrane?	**Investigation 1** **1. What causes an athlete to collapse then go into a coma after running a marathon?** **Quest #1 Vocabulary** Cell, cell theory, cell membrane, solute/solvent, nucleus, mitochondrion, cytoplasm, organelle, cell membrane, lipid bilayer, selectively permeable, homeostasis, diffusion, osmosis, isotonic, hypertonic, hypotonic osmotic pressure Multicellular organisms have a hierarchical structural organization, in	**Investigation 1** **1. What causes an athlete to collapse then go into a coma after running a marathon** ****Quest #1: Life is Cellular** **1.Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.** **2.**List the major body systems and explain the major functions and	**Investigation 1** **1. What causes an athlete to collapse then go into a coma after running a marathon**	**Investigation 1** **1. What causes an athlete to collapse then go into a coma after running a marathon?** ****Collaborative Activities**** **I)Communication skill** - What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - What do you admire about people in your life? https://www.aeseducation.com/blog/what-is-collaborative-learning-and-how-do-you-use-it 2 **II)Team Building** - Kagan Activity (refer to Kagan book) - The Line Game- Collaborative learning practice

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	g) How does passive transport work? h)how does active transport work? **Test #1** a)How do single-celled organisms maintain homeostasis? b)How do the cells of a multicellular organism work together to maintain homeostasis? c) How is human body organized? d) What is homeostasis? e) What are the major organ systems and their functions? f) What are the structures and functions of the urinary system? g) What are the structures and functions of the nervous system? h)How do the organ systems interact to provide specific functions for the human body? I)What happened to Michele?	which any one system is made up of numerous parts and is itself a component of the next level. **Test #1 Vocabulary** Tissue, organ, organ system, receptor, homeostasis, negative feedback,	organs of the nervous and urinary systems 4.Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated. **Cooperative Objectives** . **Project Component** Demonstrations, lab **Rubrics?**		https://www.aeseducation.com/businesscenter21/3-best-collaborative-learning-lesson-plans-for-middle-school Quest #1 **a-c) Life is Cellular** - Investigation Case Study about Max (screenshot in folder) …Reference: Chapter Mystery in Miller & Levine Biology textbook (p. 189) - **KWL Chart** - **Content in textbook:** *Life is Cellular PP. 242-247* in Biology textbook - **Material:** *Levels of Organization* (pdf in folder) - **Quick Lab/Demo:** What is a cell? (pp 243 in textbook) - **Activity:** *Teachers Pay Teachers* Microscope Coloring- Reading + Coloring (pdf in folder and online) **d-f) Cell Structure** - **Content in textbook:** *Cell Structure PP. 248-257* in Biology textbook - **Activity:** Cells alive! Website + Cell Lab (in folder)…or another interactive website - **Demo:** Semi-permeable membrane p 3 in Diffusion/Osmosis Activities (pdf in folder) g-h) Cell transport - **Content in Textbook: pp 260-265** - **Demo:** Diffusion and molecular movement p 3 in Diffusion/Osmosis Activities (pdf in folder) - **Lab:** Osmosis Lab (pdf in folder) or… Osmosis, Diffusion and Egg Experiments https://www.stevespanglerscience.com/lab/experiments/growing-and-shrinking-egg/ http://www.adfg.alaska.gov/static-sf/Region1/amphib/pdfs/osexp.pdf - **Cell Transport Reading** (in folder) - **Video:** Osmosis/Diffusion Video on youtube **Test #1** a-d)Homeostasis and Cells - **Content in Textbook (Cells and Homeostasis): pp. 266-269** - **Content in Textbook (Organization of Human Body): pp 904-909** - **Activity:** Draw a concept map to model

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					level of organization (pg. 268 in textbook) e-I) Organization of Human Body - **Content in Textbook (urinary and endocrine systems): pp.** 913-914, 930-932) - **Activity:** All Systems Go! Worksheet + answer key (pdf in folder) - **Material**: The Biology Classroom website (hyponatremia, urinary system. Notes, etc.) - **Material**: Scientific American, *Strange But True* article- updated version? (pdf in folder)
Investigation 2 HS-LS1-3	**Investigation 2** **2.How can you provide evidence that feedback mechanisms maintain homeostasis?** a. What is homeostasis? b. How is feedback inhibition (positive and negative) used to return the body back to its normal, homeostatic state? What are examples of each? c. How do organ systems interact to adjust heart rate in the human body?	**Investigation 2** **2.How can you provide evidence that feedback mechanisms maintain homeostasis?** Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (neg. feedback) what is going on inside the living system.	**Investigation 2** **2.How can you provide evidence that feedback mechanisms maintain homeostasis?** **Summative assessment: Heartrate Lab Conduct an **investigation** to provide evidence that feedback mechanisms maintain homeostasis.	**Investigation 2** **2.How can you provide evidence that feedback mechanisms maintain homeostasis?**	**Investigation 2** **2.How can you provide evidence that feedback mechanisms maintain homeostasis?** **Collaborative Activities** **I)Communication skill** - What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - What do you admire about people in your life? https://www.aeseducation.com/blog/what-is-collaborative-learning-and-how-do-you-use-it 2 **II)Team Building** - Kagan Activity (refer to Kagan book) - The Line Game- Collaborative learning practice https://www.aeseducation.com/businesscenter21/3-best-collaborative-learning-lesson-plans-for-middle-school a-c) Homeostasis - **Reading Material:** Kahn Academy *Homeostasis* article (pdf in folder) - **Activity:** Homeostasis and Negative Feedback worksheets (in folder) - **Lab:** Heart rate Lab (in folder and online) https://www.trschools.k12.wi.us/faculty/JBRUNETTE/cms_files/assignment_attach/7052/CopyofHomeostasisandHeartRateLabTemplate.pdf

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Investigation 3 HS-LS1-6 HS-LS1-7	**Investigation 3** **3. What causes muscles to burn during and delayed muscle soreness after a workout?** **QUEST #1** a) What are chemical compounds? b)What happens to chemical bonds during chemical reactions? c) What is energy? d) Where do organisms get energy and how do they use it? (What is ATP?) e) What is cellular respiration? (How can we demonstrate "process?") f) What happens during the process of glycolysis? g) What happens during the Krebs Cycle? h) How does the electron transport chain use high-energy electrons from glycolysis and the Krebs cycle? I) How much ATP does cellular respiration generate? k)How do organisms generate energy when oxygen is not available? **PROJECT** a)How does the body produce ATP during different stages of exercise? b)How do muscles cause movement and provide support? c)What causes the burning sensation during intense exercise? d)What causes muscle soreness after an intense workout?	**Investigation 3** **3. What causes muscles to burn during and delayed muscle soreness after a workout?** **Vocabulary** Compound, element, ions, periodic table, chemical reaction, reactant, product, ATP, cellular respiration, aerobic, anaerobic, glycolysis, NAD+, Krebs cycle, matrix, fermentation Sugar molecules contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells. Organisms get energy from food. Cellular respiration is a process that releases energy from food in presence of oxygen. There are three stages: glycolysis, the Krebs Cycle, and electron transport chain. During glycolysis, 1 molecule of glucose is transformed into 2 molecules of pyruvic acid. During the Krebs cycle, pyruvic acid is broken down into carbon dioxide in a series of energy extracting reactions. The electron transport chain uses the	**Investigation 3** **3. What causes muscles to burn during and delayed muscle soreness after a workout?** **Summative Assessment: QUEST #1 2.Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.** (Construct and revise an explanation based on evidence for how carbon, hydrogen and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. **MAYBE)** ****Summative Assessment: Project-Exercise Calendar for Max** **-Rubric for exercise plan** 3.Explain how muscles cause movement. 4.Construct a fitness plan that explains the cause of the muscle fatigue and soreness of the two athletes and ways they can meet their fitness goals. **Cooperative Objective** 1.Communicate with group members how they can improve	**Investigation 3** **3. What causes muscles to burn during and delayed muscle soreness after a workout?**	**Investigation 3** **3. What causes muscles to burn during and delayed muscle soreness after a workout?** ****Collaborative Activities**** **I)Communication skill** - What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - What do you admire about people in your life? https://www.aeseducation.com/blog/what-is-collaborative-learning-and-how-do-you-use-it 2 **II)Team Building** - Kagan Activity (refer to Kagan book) - The Line Game- Collaborative learning practice https://www.aeseducation.com/businesscenter21/3-best-collaborative-learning-lesson-plans-for-middle-school **Test #1** a-b) The Nature of Matter - **Case Study Introduction** (pdf in folder): Maxed out Muscles- change story to training for cross country - **Content in textbook:** *Nature of Matter PP. 42-46* and *Chemical Reactions* pp 58-59 in Biology textbook - **Demo:** Chemical Reaction (ask Deering) c-e) Overview of Cellular Respiration - **Content in textbook:** *Cellular Respiration an Overview PP. 310-312* - **Activity:** *How do Organisms Use Energy? Wkst (in folder)* - **Activity:** *Using Models to Understand Cellular Respiration* wkst (in folder) - **Activity:** Modeling Process by building marshmallow cube from toothpicks f-i) The Process of Cellular Respiration - **Content in textbook:** *Process of cellular respiration PP. 314-320* in Biology textbook - **Activity:** Make a video on your phone of the Cellular Respiration Process using Game Pieces (use Key for Shorter version of Using Models to

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		high-energy electrons from glycolysis and the Krebs Cycle to convert ADP into ATP. Together, glycolysis, the Krebs cycle and the electron transport chain release about 36 molecules of ATP per molecule of glucose. In absence of oxygen, glycolysis is kept going by the pathway of fermentation, which releases energy from food molecules by producing ATP. For short, quick bursts of energy, the body uses ATP already in muscles as well as ATP made by lactic acid fermentation. For exercise longer than 90 seconds, cellular respiration is the only way to continue generating a supply of ATP. Skeletal system supports the body, protects internal organs, assists in movement, stores minerals, and produces red blood cells. Bones are a solid network of living cells. Joints permit bones to move without damaging each other. There are three types of muscle tissue: smooth, skeletal and cardiac. Skeletal muscles pull on body parts are they contract.	sharing research with the group.		Understand Cellular Respiration wkst)…Rubric for project? j) Fermentation - **Content in textbook:** *Fermentation PP. 321-323* in Biology Text - **Case Study-**Quick Lab: p. 323 in Biology text **PROJECT** a-e) Energy and Exercise - **Content in textbook:** *Energy and Exercise PP. 324-325* in Biology textbook - **Activity:** *How do muscles get energy* worksheet (pdf in folder) - **Reading:** Scientific American Soreness articles (updated versions?) - **Presentation:** Mr. Fry video and/or Jeff Collins on workout plan

Unit Three Independent Relationships in Ecosystems (9-11 weeks)					
STANDARDS	**ESSENTIAL QUESTIONS**	**UNIT CONTENT**	**UNIT OUTCOMES**	**CULTURAL STANDARDS & CONNECTIONS**	**SUGGESTED ACTIVITIES**
Investigation 1 HS-LS2-3 HS-LS2-5	**Investigation 1** **1.Can we construct an enclosed ecosystem that could sustain plant life?** **TEST #1** a. What is Bisophere 2? b.What molecules make up life? What elements does carbon bond with to make up life's molecules? c. What are the functions of each of the four groups of macromolecules? d.What is photosynthesis and how does it compare to cellular respiration? e. How do consumers obtain energy and nutrients? (Photosynthesis and cellular respiration) f. How does water cycle globally? g. What is the important of the main nutrient cycles? h. How does nutrient availability affect primary productivity? i. How is the hydroponic system designed to maintain the life of the plants? j. How can you construct a terrarium that provides all the materials to keep your plant alive? k.What processes are occurring in your terrarium? L. How did your terrarium compare to those from other groups? M.How did the expected observation from your experiment compare to the observations that were observed?	**Investigation 1** **1.Can we construct an enclosed ecosystem that could sustain plant life?** **Vocabulary Test #1** Monomer, polymer, carbohydrates, lipid, nucleic acid, protein, amino acid, photosynthesis, biogeochemical cycle, nutrient, nitrogen fixation, denitrification, limiting nutrient **(Main focus: Text)** **Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes.** **Photosynthesis and cellular respiration are important components of the carbon cycle, in which carbon is exchanged among the biosphere, atmosphere, oceans, and geosphere through chemical, physical, geological and biological processes. The chemical elements that make up the molecules of organisms pass through food webs and into and out of the atmosphere and soil, and they are combined and recombined in different ways. At each link in an ecosystem,**	**Investigation 1** **1.Can we construct an enclosed ecosystem that could sustain plant life?** 1. **Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions** 2. **Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere and geosphere.** 3. Consider limitations of data analysis (e.g. measurement error, sample selection) when analyzing and interpreting data and propose a secondary experimental design. 4. Compare and contrast various types of data sets to examine consistency of measurements and observations. 5.Design an enclosed ecosystem that demonstrates how energy and matter flow through the system.	**Investigation 1** **1.Can we construct an enclosed ecosystem that could sustain plant life?** ****Test#1: Summative Assessment** ****Project: Develop Terrarium with group members** -Science Fair Rubric	**Investigation 1** **1.Can we construct an enclosed ecosystem that could sustain plant life?** ****Collaborative Activities**** **I)Communication skill** - What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - What do you admire about people in your life? https://www.aeseducation.com/blog/what-is-collaborative-learning-and-how-do-you-use-it 2 **II)Team Building** - Kagan Activity (refer to Kagan book) - The Line Game- Collaborative learning practice https://www.aeseducation.com/businesscenter21/3-best-collaborative-learning-lesson-plans-for-middle-school a-c) Carbon Compounds - **Engagement Activity:** *Life in Biosphere 2* Ted Talk- https://www.youtube.com/watch?v=a7B39MLVeIc - **Content in textbook:** *Carbon Compounds PP. 52-57* and *Chemical Reactions* pp 58-59 in Biology textbook d-i) Cycling of Matter - **Activity:** *Mineral Cycling Through the Ecosystem* (PDF in folder) - **Activity:** *Introduction to the Carbon Cycle* (PDF in folder) - **Activity:** *Carbon Cycle Practice Sheet* (doc in folder(- **Demo:** Hydroponic system - **Reading Material:** Hydroponic systems? j-m) Designing Closed System Terrariums - **Materials:** Closed System Terrariums https://extension.psu.edu/creating-a-closed-terrarium

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		matter and energy are conserved. Matter is recycled within and among ecosystems, unlike the one-way flow of energy. Matter cycles through organisms and the environment through biogeochemical cycles. The flow of matter can involve biological, geological, chemical and physical processes and human activity. These global processes cycle matter through global systems. Every organism needs nutrients to survive. The carbon, nitrogen, and phosphorus cycles are especially important for life. The availability of nutrients can influence the long-term survival of organisms. If amply sunlight and water are available, the primary productivity of an ecosystem may still be limited by the availability of nutrients.	**Cooperative Objective** 1.Reflect on learning and ability to work on a team		https://extension.msstate.edu/sites/default/files/publications/publications/P3253_Terrarium.pdf - **Materials:** How to set up experiment (pdfs in folder) **Alaska Native Knowledge Network Resources** Yup'ik Bird Book http://ankn.uaf.edu/Resources/course/view.php?id=15 Plants of My People http://ankn.uaf.edu/ANCR/Inupiaq/plantsofmypeople/index.html **Other Resources** Teachers Pay Teachers: Cooperative Learning Starter Kit (pdf)
Investigation 2 HS-LS2-6	**Investigation 2** **2.How do abiotic and biotic factors shape the habitat where an organism lives?** (How will Climate Change challenge the stability of the marine ecosystem in the Bering Sea Region?) a.Why is ecology important? b.What are biotic and abiotic factors? c.What is the difference between weather and climate?	**Investigation 2** **2.How do abiotic and biotic factors shape the habitat where an organism lives?** **Vocabulary** Biotic factor, abiotic factor, biosphere, ecology, species, population, community, ecosystem, atmosphere, hydrosphere, geosphere, climate, weather, greenhouse effect (Standard)	**Investigation 2** **2.How do abiotic and biotic factors shape the habitat where an organism lives?** ****Project: Summative Assessment** **- Newspaper article?** 1.**Use mathematical representations to support explanations based on evidence that changing conditions may result in a new ecosystem.**	**Investigation 2** **2.How do abiotic and biotic factors shape the habitat where an organism lives?**	**Investigation 2** **2.How do abiotic and biotic factors shape the habitat where an organism lives?** ****Collaborative Activities**** **I)Communication skill** - What's Your Point? Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - Oh, Puh-leeeeeeeze! Activity https://www.dol.gov/odep/topics/youth/softskills/Communication.pdf - What do you admire about people in your life? https://www.aeseducation.com/blog/what-is-collaborative-learning-and-how-do-you-use-it 2 **II)Team Building** - Kagan Activity (refer to Kagan book) - The Line Game- Collaborative learning practice

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	d.How are Earth's climate and average temperature determined? e.What factors shape regional climate? f.What does climate change involve? g.What is algae? (h. What is eutrophication? i. What are harmful algal blooms? j.Why is it important to study the marine ecosystem of the NBS? k. What biotic and abiotic factors have shaped the Northern Bering Sea marine ecosystem? l. How is climate change impacting the Northern Bering Sea?	**Complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (ecosystem is resilient) as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat stability.** (Standard) **Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions and the decline and sometimes extinction of some species.** (Main Focus: Text) A habitat refers to the physical and biological environmental factors of an ecosystem that affect the organisms living there. Every species in a habitat has its own range of tolerance, which are	2.Compare graphical displays to support explanations based on evidence that changing conditions alter the complex interactions in numbers and types of interactions between organisms in an ecosystem. 3.Communicate findings through a visual display cites data analysis from one other research group. **Cooperative Objective** 1. Select credible resources on the internet. **Project Component** Visual display with graphs, presentation to class **RUBRIC** for display		https://www.aeseducation.com/businesscenter21/3-best-collaborative-learning-lesson-plans-for-middle-school a-f) Introduction to Global Systems - **Content in textbook:** *Biomes and Aquatic Ecosystems PP.* 78-83 and *Climate, Weather and Life* pp. 85-91 - Climate change activities: https://www.climate.gov/teaching/learning-activities https://scied.ucar.edu/activity g-i) Algae and Eutrophication - **Activity:** Protist lab (pdf in folder: can I find another that is geared specifically to algae in Teachers Pay Teachers?) - **Material:** *Marine Phytoplankton of South Central Alaska* (pdf in folder(- **Activity:** The Effect of Fertilizer on Algae lab https://www.sciencebuddies.org/science-fair-projects/project-ideas/EnvSci_p054/environmental-science/effect-of-fertilizers-on-algal-growth - **Resource:** Eutrophication https://oceanservice.noaa.gov/facts/eutrophication.html j-l. Changes in Northern Bering Sea - **Presenter:** Gay Sheffield - **Material:** Strait Science presentation - **Material:** NOAA Bering Sea Report - **Material:** Bering Science Newsletter - ****Activity:** S1-Algae samples with Norton Sound Hospital **Other Resources** Janice VanCleave's Ecology for Every Kid: Boundaries: Understanding Ecosystems and Biomes (p. 73) Icy Lands: Learning about Plants and Animals in Polar and Tundra Biomes (p. 83)

		environmental conditions in which it can survive and reproduce. Within a habitat, a species occupies a niche, which includes the range of physical and biological conditions in which it can survive and reproduce. Competition within and among species helps determine the numbers and kinds of species in a community and the niche that species occupies. Populations of predators and prey, and of herbivores and plants, powerfully influence each other, and often cycle up and down over time. Symbiosis describes the interdependent relationships between two species. In commensalism, one organism benefits and other is neither helped nor harmed. In mutualism, both species benefit. A parasitic relationship is one in which one organism lives inside or on another organism. **Investigation 2** Vocabulary terms: population density, population distribution, age structure, immigration, emigration, exponential growth, logistic growth, carrying capacity, limiting factor, density-dependent limiting factor, density-independent limiting factor			

Investigation 2 HS-LS2-1	**Investigation 2** What factors contribute to changes in populations? How do ecologists study populations? What factors affect population growth? What happens during exponential growth? What is logistic growth? What factors determine carrying capacity? What limiting factors depend on population density? What limiting factors do not typically depend on population density? How has human population size changed over time? Why do population growth rates differ among countries?	**(Text content)** Ecologists study populations by examining their geographic range, growth rate, density and distribution, and age structure. For a population to increase the number of births Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors such as the availability of living and nonliving resources and from such challenges such as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. ****Note: Proceed with** **Investigation 4** Anthropogenic changes (induced by human activity) in the environment- including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change- can disrupt an ecosystem and threaten the survival of some species. Biodiversity is increased by the formation of new species (speciation) and	**Investigation 2** 1.Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. 2.Construct a claim as a team supported by evidence that explains why and how a population can experience exponential growth.	**Investigation 2** Edit Chapter Mystery to be more place-based E.Culturally-knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. 2.Understand the ecology and geography of the bioregion they inhabit	

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Investigation 4 HS-LS2-7	**Investigation 4** (Overarching question) How have human activities shaped local and global ecology? How do our daily activities affect the environment? Why is soil important, and how do we protect it? What is the primary sources of water pollution? What are the major forms of air pollution? Why is biodiversity important? What are the most significant threats to biodiversity? How do we preserve biodiversity? How does the average ecological footprint in America compare to the world's average? How can ecology guide us toward a sustainable future?	decreased by the loss of species (extinction). But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value.	**Investigation 4 if time** **Investigation 4** 1.Design, evaluate and refine a solution for reducing the impacts of human activities on the environment and biodiversity. 2. Write a magazine article that cites evidence from research supporting an argument as to how European green crabs got to the Pacific Northeast as well as a workable solution for increasing the native population of mussels while containing or decreasing	**allows.** **Investigation 4** Edit activity to be more place-based E.Culturally-knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. 2.Understand the ecology and geography of the bioregion they inhabit	**Investigation 2** Chapter Mystery: A Plague of Rabbits (p. 129 in Miller & Levine Biology textbook) Impacts of Climate Change on Caribou lesson plan (pdf) ADF&G Bear Curriculum: Carrying Capacity lesson plan Populations Explosions lesson plan (pdf) Caribou Trails newsletter (paper copies and pdf versions available) **Other Resources**

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			the European green crab population. (Project)		**Investigation 4** Problem-based Learning Activity: Disappearing Mussels! (p. 61a-61b in Miller and Levine Biology textbook) Mitigation and Adaptation lesson plan (pdf) Population Explosions lesson plan (pdf) Fire and Forest: Interactions of Wildlife and Permafrost lesson plan (pdf) Janice VanCleave's Ecology for Every Kid Water Problems: The Problems of Water Pollution and How to Solve Them (p. 133) Global Warming: What the Greenhouse Effect is (p. 139) Good and Bad: How Plastics Affect the Environment (p. 147) Acid Rain: The Causes and Effects of Acid Rain (p. 155) Buildup: Where Most of Your Garbage Goes (p. 171) Reusable: Learning About Renewable Energy Sources (p. 177) Endangered: Learning About Endangered Animals (p. 193)

Unit Four
Heredity: Inheritance and Variation of Traits (3-4 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Investigation 1 HS-LS3-1 HS-LS3-2	**Investigation 1** (Overarching Question) What is the structure of DNA, and how does it function in genetic inheritance? What clues did bacterial transformation yield about the gene? What role did bacterial viruses play in identifying genetic material?	**Investigation 1** Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an	**Investigation 1** 1.Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	**Investigation 1**	**Investigation 1** Problem-based Activity: To Eat or Not to Eat (Miller & Levine Textbook p. 305a-305b) DNA Extraction lesson plan (pdf) Investigating DNA lesson plan (pdf) Mad Mutation lesson plan (pdf) Issues in Genetics lesson plan (pdf) Hands-On General Science Activities with Real-Life Applications book

	What is the role of DNA in heredity? What are the chemical components of DNA? What clues helped scientists solve the structure of DNA? What does the double-helix model tell us about DNA? What role does DNA polymerase play in copying DNA? How does DNA replication differ in prokaryotic cells and eukaryotic cells? (Overarching Question) How does information flow from DNA to RNA to direct the synthesis of proteins? How does RNA differ from DNA? How does the cell make RNA? What is the genetic code, and how is it read? What role does the ribosome play in assembling proteins? What is the "central dogma" of molecular biology? How do mutations affect genes? How are prokaryotic genes regulated? How are genets regulated in eukaryotic cells? What controls the development of cells and tissues in multicellular organisms?	organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. In sexual reproduction, chromosomes can sometimes swap during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited. Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors.	2.Made and defend a claim based on evidence that inheritable genetic variations may result from; a)new genetic combinations through meiosis, b) viable errors occurring during replication and/or c) mutations caused by environmental factors. 3.Construct a claim based on evidence from research about whether you support or oppose the development and distribution of GM foods. (Project)		The Blueprint of Life activity (p. 211) Recipe for Proteins activity (p. 216) Monstrous Mutations activity (p. 253)
Unit Five **Biological Evolution: Unity and Diversity (6-8 weeks)**					

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Investigation 1 HS-LS4-1 HS-LS4-2	**Investigation 1** (Overarching Question) What is natural selection? What was Charles Darwin's contribution to science? What three patterns of biodiversity did Darwin note? What did Hutton and Lyell conclude about Earth's history? How did Lamarck propose that species evolve? What was Malthus's view of population growth How is inherited variation used in artificial selection? Under what conditions does natural selection occur? What does Darwin's mechanism for evolution suggest about living and extinct species? How does the geographic distribution of species today relate to their evolutionary history? How do fossils help to document the descent of modern species from ancient ancestors? How do homologous structures and similarities in embryonic development suggest about the process of evolutionary change? How can molecular biology be used to race the process of evolution? (Overarching Question) How do fossils help biologists understand the history of life on Earth? What do fossils reveal about ancient life?	**Investigation 1** Genetic information provides evidence of evolution. DNA sequences vary among species, but there are many overlaps; in fact, the ongoing branching that produces multiple lines of descent can be inferred by comparing the DNA sequences of different organisms. Such information is also derivable from the similarities and differences in amino acid sequences and from anatomical and embryological evidence. Natural selection occurs only if there is both 1) variation in the genetic information between organisms in a population and 2)variation in the expression of that genetic information- that is, trait variation- that leads to differences in performance among individuals. Evolution is a consequence of the interaction of four factors: 1) the potential for a species to increase in number, 2) the genetic variation of individuals in a species due to mutation and sexual reproduction 3) competition for an environment's limited supply of the resources	**Investigation 1** 1.Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. 2.Construct an explanation based on evidence that the process of evolution primarily results from four factors: a) the potential for a species to increase in number, b) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, c) competition for limited resources and d) the proliferation of those organisms that are better able to survive and reproduce in the environment	**Investigation 1**	**Investigation 1** Chapter Mystery: Murder in the Permian (p. 536-537 in Miller & Levine Biology Textbook) Researching Natural Selection lesson plan (pdf) Fossil Hunt lesson plan (pdf) **Guest Presenter from NorthWest Campus or paleontologist from UAF

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Investigation 2 HS-LS4-3 HS-LS4-4	How do we date events in Earth's history? How was the geologic time scale established, and what are its major divisions? How have our planet's environment and living things affected each other to shape the history of life on Earth? **Investigation 2** (Overarching Question) How can populations evolve to form new species? How is evolution defined in genetic terms? What are the sources of genetic variation? What determines the number of phenotypes for a given trait? How does natural selection affect single-gene and polygenic traits? What is genetic drift? What conditions are required to maintain genetic equilibrium? What types of isolation lead to the formation of a new species? What is a current hypothesis about Galapagos Finch speciation? What are molecular clocks? Where do new genes come from? How may Hox genes be involved in evolutionary change?	that individuals need in order to survive and reproduce and 4) the ensuing proliferation of those organisms that are better able to survive and reproduce in that environment. **Investigation 2** (HS-LS4-2) The traits that positively affect survival are more likely to be reproduced, and thus are more common in the population. Natural selection leads to adaptation, that is, to a population dominated by organisms that are anatomically, behaviorally, and physiologically well suited to survive and reproduce in a specific environment. That is, the different survival and reproduction or organisms in a population that have an advantageous heritable trait leads to an increase in proportion of individuals in future generations that have the trait and to a decrease in the proportion of individuals that do not.	**Investigation 2** 1.Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. 2Construct an explanation based on evidence for how natural selection leads to adaptation of populations. 3. Develop a claim based on empiracle evidence regarding how climate change has impacted the biomes and ecosystems in which you live and what can be done to raise local awareness. (project)	**Investigation 2**	**Investigation 2** Problem-based Activity: The Alpine Chipmunk's Genetic Decline (p. 447a-447b in Miller & Levine Biology Textbook) Variation and Selection lesson plan (pdf) Hands-On General Science Activities with Real-Life Applications book Changes and Adaptations: Changing with the Times (p. 244) Changes and Adaptations: Plant Production (p. 247)
NAME OF UNIT (SUGGESTED TIME FRAME IN WEEKS)					

(Date of most recent revision)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
NAME OF UNIT (SUGGESTED TIME FRAME IN WEEKS)					
STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES

(Date of most recent revision)

NAME OF UNIT (SUGGESTED TIME FRAME IN WEEKS)					
STANDARDS	**ESSENTIAL QUESTIONS**	**UNIT CONTENT**	**UNIT OUTCOMES**	**CULTURAL STANDARDS & CONNECTIONS**	**SUGGESTED ACTIVITIES**

(Date of most recent revision)

NAME OF UNIT (SUGGESTED TIME FRAME IN WEEKS)					
STANDARDS	**ESSENTIAL QUESTIONS**	**UNIT CONTENT**	**UNIT OUTCOMES**	**CULTURAL STANDARDS & CONNECTIONS**	**SUGGESTED ACTIVITIES**

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MTH 153 Algebra 1-B

Adopted Textbook: If applicable	Course Overview: **The main goal of Algebra is to develop fluency in working with linear equations. Students will extend their experiences with tables, graphs, and equations and solve linear equations and inequalities and systems of linear equations and inequalities. Students will extend their knowledge of the number system to include irrational numbers. Students will generate equivalent expressions and use formulas. Students will simplify polynomials and begin to study quadratic relationships. Students will analyze situations verbally, numerically, graphically, and symbolically. Students will apply mathematical skills and make meaningful connections to life experiences.**
Length: Full Year	
Grades:	

Chapter 7 Exponents and Exponential Functions

STANDARDS	SUGGESTED ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	SUGGESTED ACTIVITIES	SUGGESTED SUMMATIVE ASSESSMENT	ALASKA CULTURAL STANDARDS AND CONNECTIONS
A.SSE.2 **F.IF.8b** **N.RN.1** **N.RN.2** **F.IF.7e** **F.LE.2** **F.BF.2** **F.LE.1** **F.IF.3**	**How can you make good decisions?** **What factors can affect good decision making?**	**Core Concepts:** -simplify polynomial expressions and apply the laws of exponents in problem-solving situations -graph and analyze exponential functions -analyze data and represent situations involving exponential growth and decay using tables, graphs, or algebraic methods -relate geometric sequences to exponential functions, and write recursive formulas to represent sequences **Academic Vocabulary/ Terminology:** monomial (Lesson 7-1) constant (Lesson 7-1) zero exponent (Lesson 7-2) negative exponent (Lesson 7-2)	-use the necessary algebraic skills required to simplify algebraic expressions and inequalities in problem-solving situations -use properties of exponents to simplify expressions and to transform and solve exponential and logarithmic equations	–exponential functions practice -investment calculations -credit card debt calculations	Chapter Test	

		order of magnitude (Lesson 7-2) rational exponent (Lesson 7-3) cube root (Lesson 7-3) *n*th root (Lesson 7-3) exponential equation (Lesson 7-3) scientific notation (Lesson 7-4) exponential function (Lesson 7-5) exponential growth (Lesson 7-5) exponential decay (Lesson 7-5) compound interest (Lesson 7-6) geometric sequence (Lesson 7-7) common ratio (Lesson 7-7) recursive formula (Lesson 7-8)				

Chapter 8 Quadratic Expressions and Equations						150
STANDARDS	**SUGGESTED ESSENTIAL QUESTIONS** **When could a nonlinear function be used to model a real-world situation?**	**UNIT CONTENT** **Core Concepts:** -add, subtract, and multiply polynomials -factor as necessary in problem situations -solve quadratic equations using concrete models, tables, graphs, and algebraic methods **Academic Vocabulary/ Terminology:** polynomial (Lesson 8-1) binomial (Lesson 8-1) trinomial (Lesson 8-1) degree of a monomial (Lesson 8-1) degree of a polynomial (Lesson	**UNIT OUTCOMES** -use tools including factoring to simplify expressions and to transform and solve equations -determine reasonable domain and range values of quadratic functions -analyze situations involving quadratic functions and formulate quadratic equations to solve problems -solve quadratic equations using	**SUGGESTED ACTIVITIES** -FOIL video -task cards for adding and subtracting polynomials -multiplying polynomials practice	**SUGGESTED SUMMATIVE ASSESSMENT** Chapter Test	**ALASKA CULTURAL STANDARDS AND CONNECTIONS**

		8-1) standard form of a polynomial (Lesson 8-1) leading coefficient (Lesson 8-1) FOIL method (Lesson 8-3) quadratic expression (Lesson 8-3) factoring (Lesson 8-5) factoring by grouping (Lesson 8-5) Zero Product Property (Lesson 8-5) quadratic equation (Lesson 8-6) prime polynomial (Lesson 8-7) difference of two squares (Lesson 8-8) perfect square trinomial (Lesson 8-9) Square Root Property (Lesson 8-9)	graphs, tables, and algebraic methods			151

Chapter 9 Quadratic Functions and Equations						
STANDARDS **F.IF.4** **F.IF.7a** **A.REI.4b** **A.SSE.3b** **F.IF.8a** **F.IF.6** **F.LE.1** **F.IF.7b**	**SUGGESTED ESSENTIAL QUESTIONS** **Why do we use different methods to solve math problems?**	**UNIT CONTENT** **Core Concepts:** -identify and sketch the general forms of quadratic parent functions -analyze graphs of quadratic functions and draw conclusions -make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the	**UNIT OUTCOMES** -relate representations of quadratic functions, such as algebraic, tabular, graphical, and verbal descriptions -determine a quadratic function from its roots or a graph -determine solutions of exponential equations using graphs, tables,	**SUGGESTED ACTIVITIES** -sketching quadratic equations practice -solving equations using graphs activity -transformations of quadratic functions (Desmos)	**SUGGESTED SUMMATIVE ASSESSMENT** Chapter Test	**ALASKA CULTURAL STANDARDS AND CONNECTIONS**

		horizontal intercepts of the graph of the function -solve quadratic equations using concrete models, tables, graphs, and algebraic methods -use characteristics of the quadratic parent function to sketch the related graphs -analyze functions with successive differences and ratios -identify and graph special functions. **Academic Vocabulary/ Terminology:** quadratic function (Lesson 9-1) parabola (Lesson 9-1) axis of symmetry (Lesson 9-1) vertex (Lesson 9-1) minimum (Lesson 9-1) maximum (Lesson 9-1) double root(Lesson 9-2) transformation (Lesson 9-3) completing the square (Lesson 9-4) Quadratic Formula (Lesson 9-5) discriminant (Lesson 9-5) step function (Lesson 9-7) greater integer function (Lesson 9-7) absolute value function (Lesson 9-7)	and algebraic methods			152

Chapter 10 Radical Functions and Geometry						
STANDARDS **F.IF.4** **F.IF.7b** **A.REI.4a** **N.RN.2** **A.CED.2**	**SUGGESTED ESSENTIAL QUESTIONS** **How can you choose a model to represent a real-world situation?**	**UNIT CONTENT** **Core Concepts:** -add, subtract, multiply, and simplify radical expressions -solve radical equations -use the Pythagorean Theorem and trigonometric ratios to solve problems **Academic Vocabulary/ Terminology:** radicand (Lesson 10-1) radical function (Lesson 10-1) conjugate (Lesson 10-2) radical equations (Lesson 10-4) hypotenuse (Lesson 10-5) legs (Lesson 10-5) converse (Lesson 10-5) midpoint (Lesson 10-5) sine (Lesson 10-6) cosine (Lesson 10-6) tangent (Lesson 10-6) trigonometry (Lesson 10-6) inverse cosine (Lesson 10-6) inverse sine (Lesson 10-6) inverse tangent (Lesson 10-6)	**UNIT OUTCOMES** **Preparation for Geometry** -use the Pythagorean Theorem -identify and apply patterns from right triangles to solve meaningful problems -use formulas for length, slope, and midpoint -use ratios to solve problems involving similar figures **Preparation for Algebra 2** -formulate equations and inequalities based on square root functions, use a variety of methods to solve them, and analyze the solutions in terms of the situation	**SUGGESTED ACTIVITIES** -finding missing side lengths of real world applications -creating triangles with specific angles (ramps) -formulas with radicals	**SUGGESTED SUMMATIVE ASSESSMENT** Chapter 10 Test	**ALASKA CULTURAL STANDARDS AND CONNECTIONS** 153

Chapter 12 Statistics and Probability						
STANDARDS **S.ID.2** **S.ID.3**	**SUGGESTED ESSENTIAL QUESTIONS** How are statistics and	**UNIT CONTENT** **Core Concepts:** -identify various sampling techniques and recognize a biased sample	**UNIT OUTCOMES** -identify various sampling techniques and recognize a biased sample -count outcomes using the Fundamental	**SUGGESTED ACTIVITIES** -Google Sheets data displays -calculating mean,	**SUGGESTED SUMMATIVE ASSESSMENT** Chapter 12 Test	**ALASKA CULTURAL STANDARDS AND CONNECTIONS**

	probability used in the real world?	-count outcomes using the Fundamental Counting Principle -use combinations and permutations to determine probabilities -find the probability of two independent events or dependent events, and find the probability of two mutually exclusive or inclusive events -use random variables to compute probability, and use probability distributions to solve real-world problems -use probability simulations to model real-world situations **Academic Vocabulary/ Terminology:** population (Lesson 12-1) sample (Lesson 12-1) bias (Lesson 12-1) observational study (Lesson 12-1) experiment (Lesson 12-1) statistic (Lesson 12-2) parameter (Lesson 12-2) standard deviation (Lesson 12-2) distribution (Lesson 12-3) symmetric distribution (Lesson 12-3) theoretical probability (Lesson 12-5) experimental probability (Lesson 12-5)	Counting Principle -use combinations and permutations to determine probabilities -find the probability of two independent events or dependent events, and find the probability of two mutually exclusive or inclusive events -use random variables to compute probability, and use probability distributions to solve real-world problems -use probability simulations to model real-world situations	median, mode, etc. in Google Sheets -Farkle probability activity		154

		simulation (Lesson 12-5) permutation (Lesson 12-6) combination (Lesson 12-6) compound event (Lesson 12-7) independent events (Lesson 12-7) dependent events (Lesson 12-7) mutually exclusive (Lesson 12-7) random variable (Lesson 12-8) probability distribution (Lesson 12-8) expected value (Lesson 12-8)				

US HISTORY 11 Semester One

Adopted Textbook: *United States History and Geography*, Appleby, et. al, McGraw Hill Education 2016 Length: Full Year Grade: 11	Course Overview: U.S. History 11 explores changes, conflict, and cultural shifts within America from the Reconstruction Era to the present day, inclusive of Native Alaska and Native American tribal history and perspectives. Students will critically study major social, political, economic, and cultural events and analyze how those events affected the development of American society, formulating connections between these events and the challenges faced by our nation today. In this process, students work on constructing an understanding of their own roles and responsibilities as US citizens in responding to those challenges. Throughout the course, students will analyze relevant primary sources and informational text to practice and develop effective research, writing, and reading skills. All course outcomes and objectives align with the National Council on Social Studies Standards for 6-12 Social Studies.

Unit One: Reconstruction: Aftershock of the Civil War [1865-1877] (3 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Alaska Content Standards: 11-12.WHST.1d, 2; 11-12.RH.1; GC.B3, GC.B5, H.A1, H.A3, H.A7, H.A8, H.B1e, **NCSS Thematic Standards:** 1.A. 1.B. 1.C. 1.D. 2.A. 2.B. 2.C. 2.D. 6.F. 6.H. 9.B.	*How do nations recover from war?* *Was Reconstruction a success or a failure?* *Did the Reconstruction governments rule the South well?* *Does racial equality depend upon government action?*	**Essential Concepts:** • Radical Reconstruction • Jim Crow laws • Ku Klux Klan • federal vs. state rights • Civil Rights Act 1875 • Compromise of 1877 • Reconstruction Amendments • Grandfather Clause **Essential Vocabulary:** • lynching • freedmen • sharecropping • succession • poll tax	Describe the threats African Americans faced in the Reconstruction South. Outline how different groups in the South responded to Reconstruction. Explain the political conflicts that defined the Reconstruction Era South. Describe the challenges within the voting experience for African Americans. Summarize the events of the controversial election of 1877.	Explore history of Jim Crow laws in Western Alaska Region. Assess the 14th Amendment's impact on Native American life. Compare Reconstruction voting challenges with Native Rights lobbying by Alaska Federation of Natives towards Senator Begich's bill, the "Native Voting Rights Act of 2014."	PBS Voting Then, Voting Now Simulation Take a sample Voting Literacy Test Criticise the rhetoric of the KKK: *Adapted DBQ- The Klansman's Manual* Film Excerpts: History Channel's *Aftershock: Beyond the Civil War* (2006) U.S. Supreme Court Case: *Plessy vs. Ferguson* (1869).

Unit Two: Migration & Immigration: Westward Expansion [1865-1890] (4 weeks)

US HISTORY 11 Semester One

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES
Alaska Content Standards: AH.ICGP.3, 5, 7; 11-12.WHST.9; 11-12.RH.2 G.B6, G.B7, G.D4, G.D5, GC.A3, GC.C8, GC.G6, H.A4, H.B2, H.B4, H.C2 **NCSS Thematic Standards:** 2.B 4.B. 1.D. 2.D. 3.F. 3.H. 4.G.	*How did the Native American Indians concept of land ownership and respect for the natural environment compare with that of white settlers?* *How did the U.S. Government treat Native Americans after the Civil War?* *Does the United States have a mission to expand freedom and democracy?* *Has the American West been romanticized?* *Did America fulfill the dreams of immigrants?* *How did immigrants contribute to the nation's development?*	**Essential Concepts:** • Manifest Destiny • Monroe Doctrine • Roosevelt Corollary • Dawes Allotment Act • Transcontinental Railroad • Battle of Little Bighorn • Indian Removal Act of 1830 • Bureau of Indian Affairs • Homestead Act • Trail of Tears • Wounded Knee Massacre • Indian Appropriations Acts **Essential Vocabulary:** • imperialism • assimilation • expansionism • reservation • assimilation • land grant • immigration	Describe how Western Expansion affected the US Economy as a whole, with unique opportunities and challenges. Analyze the Wild West Myth and the stereotypes of its participants. Describe the factors that encouraged the settlement of the Great Plains following the Civil War. Analyze the factors that caused conflicts between the Native Americans and settlers on the Great Plains. Identify effects of privatization of communal reservation lands on Native American Culture. Identify how how mining and ranching affected the development of the West. Outline the settlement patterns of immigrants and their influence on American Culture.	Interpret ANCSA and ANILCA legislation in relation to Alaska Native land rights. Identify the Bureau of Indian Affairs impact on Native Alaskan Culture and way of life. Describe the impact of the reservation system on Native Americans, federally recognized Tribal Governments. Analyze how manifest destiny has impacted Alaska.	Create Homestead Act Advertisement Posters Film Excerpts: *America the Story of Us: Heartland* (2010) Brown Choices Curriculum: *Westward Expansion: A New History* Analyze media, literature and art that construct "Wild West" Stereotypes Westward Expansion Living Timeline Activity *Citizenship Counts:* Immigration Factors Activity* **Resource included in Appendix*

Unit Three: Industrialization & Urban America [1865-1901] (4 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES

US HISTORY 11 Semester One

Alaska Content Standards: AH.CC.1, 2; 11-12.WHST.9; 11-12.RH.2, 9 G.A5, G.D1, G.E4, GC.B2, GC.B4, GC.B8, GC.B9, GC.F7, GC.G3 GC.G6, H.A7, H.B1e, H.B2, H.C1 **NCSS Thematic Standards:** 2.B. 5.B. 1.C. 5.D. 8.D. 8.E. 5.E. 4.G.	*How did the United States become an Industrialized society after the Civil War?* *Has rapid industrial development been a blessing or a curse for Americans?* *How did the views of Social Darwinists contrast with the views of labor leaders and progressive reformers?* *Were big business leaders "captains of industry" or "robber barons?"* *Should business be regulated closely by the government?*	**Essential Concepts:** • Labor Unions • Great Awakening • Gilded Age • Progressive Movement • Social Darwinism • Transcontinental Railroad • Populism • Plessy vs. Ferguson • W.E.B. Du Bois **Essential Vocabulary:** • monopoly • tenements • capitalism • free market • Laissez Faire capitalism • reform • populists • philanthropy • assimilation • tariff • anti-trust • industrialization • urbanization • suffrage • nativism	Outline the rise of large-scale businesses and their different forms of organization. Define the basic economic concepts and forces at play in the Industrial/Gilded Age. Analyze the concept of Social Darwinism and predict how the ideology impacted economic practices in the late 1800s and early 1900s. Identify and explain the short and long term effects of Industrialization. Explain the significance of the featured events in the labor movement, and the attitude of the American people toward working conditions in the United States. Evaluate how The Second Industrial Revolution fundamentally changed the meaning of work for many Americans.	Review the Alaska Landlord Tenant Act. Compare with industrialization and development of Alaska: i.e. mining, oil drilling. Meet with a local Labor Union President.	Reading: Excerpts from Upton Sinclair's *The Jungle* (1906). Labor Union Collective Bargaining Simulation Monopoly Board Game Analogy/ Role play Reading: Jacob Riis *How the Other Half Lives: Studies among the Tenements of New York* (1890) Reading: *Triangle Shirtwaist Fire* Interpreting political cartoons: *"What a Funny Little Government!"* Cartoonist Horace Taylor (1899) Wizard of Oz Populism Analogy Film Excerpts: *America the Story of Us: Cities* (2010) Reading: Excerpts from W.E.B. Du Bois: *The Souls of Black Folks* (1903)

Unit Four: World Power and Progression: Imperialism & World War I [1872-1920] (3 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES

US HISTORY 11 Semester One

Alaska Content Standards: AH.CC.1; 11-12. WHST.9; 11-12.RH.2, 9 G.D1, GC.D2, GC.D3, GC.F2, GC.G5, H.A7 H.B2, H.B5 **NCSS Thematic Standards:** 2.B. 5.B. 1.C. 8.D. 5.E. 8.E. 4.G.	*Why did the United States enter World War I, and what impact did American soldiers have on the war?* *Why do some historians call World War I the first modern war?* *Was it possible for the US to maintain neutrality in World War I?* *Should the United States fight wars to make the world safe for democracy?*	**Essential Concepts:** • Spanish American War • Expansion in the Pacific • American Diplomacy in Asia • Woodrow Wilson • World War I • Open Door Policy • League of Nations • Great Migration • Red scare • Central Powers • Allied vs. Central powers • Wartime Industry • Canary Girls **Essential Vocabulary:** • annexation • jingoism • protectorates • draft • patriotism • propaganda • war bond • armistice • reparations	Identify the causes of the Spanish-American war. Explain how the desire for new markets and the need for resources motivated American imperialism. Describe how the construction of the Panama Canal, the Roosevelt Corollary, and dollar diplomacy spread U.S. influence to other nations. Evaluate arguments in support of or in opposition to U.S. involvement in World War I. Outline the economic and social factors that led to the First Red Scare after WWI.	Analyze primary sources on acquisition of Alaska / Alaska Purchase. Discussion on different perspectives of Alaska Day. Brainstorm alternatives to "celebrating" Alaska Day. Meet with Local Bering Land Bridge National Park Service Ranger to discuss history of the Park Service (formed in 1916).	Yellow Journalism Article "Mad Libs" Activity *Zimmerman Telegram* and Woodrow Wilson's *Declaration of War* (1917). Interpret political cartoons relating to the Spanish American War Analyze and Create WWI Propaganda Read excerpts from Erich Maria Remarque's novel All Quiet on the Western Front (1928) or watch *All Quiet on the Western Front (1930)* film. Reading & Analysis: Rudyard Kipling: *White Man's Burden* (1899)* **Resource included in Appendix*

Unit Five: Boom & Bust: The Twenties & Thirties [1921-1940] (3 weeks)

STANDARDS	ESSENTIAL QUESTIONS	UNIT CONTENT	UNIT OUTCOMES	CULTURAL STANDARDS & CONNECTIONS	SUGGESTED ACTIVITIES

US HISTORY 11 Semester One

Alaska Content Standards: 11-12.WHST.1, 1a,, 7; 11-12.RH.1,2 GC.B6, GC.B7, GC.C2, GC.F1, GC.F2, GC.G5, GC.G6,GC.F5, GC.F8, H.A7, H.A8, H.C3, H.B1a, H.B1e H.B1d H.B2, H.C3 **NCSS Thematic Standards:** 2.B. 2.D. 5.E. 7.A. 7.D.	*Does government have a responsibility to help the needy?* *Does war cause national prosperity?* *Was American foreign policy during the 1920s isolationist or internationalist?* *Was the decade of the 1920s a decade of innovation or conservatism?* *Did the Nineteenth Amendment radically change women's role in American life?* *Was the New Deal an effective response to the depression?* *Did Franklin Roosevelt's New Deal weaken or save capitalism?* *How has the cultural identity of the United States changed over time?*	**Essential Concepts:** • Harlem Renaissance • Works Progress Administration • New Deal • Hooverville • National Origins Act • Religious Fundamentalism • Prohibition • Franklin D. Roosevelt • Herbert Hoover **Essential Vocabulary:** • isolationism • economic depression • speculation • welfare state • stock market • bootlegging • suffrage • drought • subsidy • mass media • jazz • nativism • cultural conflict	Outline the economic policies of the 1920's. Measure the effects of nativism and Xenophobia on American society during this decade. Explain how the popular culture and culture clashes of the Roaring 1920's and the emergence of mass media affected American Society. Evaluate how speculation caused the stock market to fail. Describe the effects of the Great Depression on the American people. Evaluate the impact of New Deal Programs on the economy.	Since Time Immemorial Curriculum- *"Reform, Prosperity and the Great Depression" Indian Reorganization Act.* Effects of Great Depression on Alaska: fish, copper prices.	Simulation of an assembly line Simulation: Stock Market Crash Roaring 1920's Era Research Paper Collaborate with English III: F. Scott Fitzgerald: *The Great Gatsby* (1925) Analyze music and art of the Harlem Renaissance Film Excerpts: *America the Story of Us: Bust* (2010) Listen to FDR's Fireside Chat: *"More Important Than Gold"* (1933)

Planning for Success

Since this is the third version of the *Bookworms* materials, and since we have worked directly with so many teachers, teacher leaders, and administrators, we have a very strong sense of what it takes to succeed. As in any change this large, leadership matters. If the items in this section are not addressed prior to implementation, *Bookworms* is unlikely to be associated with different achievement outcomes. That is why we place this section first, even before we describe the instructional design. Here is a cheat sheet for the *Bookworms* lingo, sorted into that all-important schedule, as you think about planning:

45 minutes	Grade Level: Shared Reading (SR)		
45 minutes	Grade Level: English Language Arts (ELA)		
	Interactive Read Alouds (IRA)	Writing Instruction	Culminating Tasks (CTs)
45 minutes	Assessment-Based Differentiated Instruction (DI) Block for three 15-minute groups		

Establishing Coherence

A novel component of *Bookworms* is its comprehensiveness. To be successful, leaders must think about how it will interact with state and local assessment and intervention policies. *Bookworms* is more similar to a comprehensive school reform than it is to a traditional commercial core or basal reading program. It serves the needs of more students and it uses instructional time in an unusually high-density way. Some things to consider *before* adopting *Bookworms*:

- The daily instructional schedule is really important, and it has implications for special educators, reading specialists and for teachers of multilingual learners. Each of the 3 blocks of time that we planned for in *Bookworms* **must** be 45 minutes long. It will not be possible for teachers to shorten any of them. Leaders who schedule the day without keeping those minutes protected are likely to frustrate teachers working on something very new and scuttle the potential effects of the design on student achievement.
- *Bookworms* DI Block has been successfully used as an RTI/MTSS curriculum in many schools and for many years. Some schools want to use Shared Reading and ELA but continue with an intervention curriculum instead of the DI Block. Having a "different" approach to the skills block could be problematic (and expensive). Students will not have

time during the other two blocks to do their written responses. They have to be done as seat work during the DI Block. For schools making this choice, we suggest that Shared Reading be extended to 60 minutes so students can complete their written work.

- We have seen many schools schedule their instructional day by staggering the DI Block across the day. For example, kindergarten may have it begin at 8:00, first grade at 8:50, and second grade at 9:40. That way, specialists can provide additional interventions with students at each grade level instead of their time for self-selected reading or they can substitute a Tier 3 intervention curriculum for the small group who might need it. That small group of students would have time for a 30-minute intervention and their written responses during that time. Appendix B contains a sample schedule so you can see what we mean.

A second area of coherence to consider is in the area of external assessments. *Bookworms* contains curriculum-embedded assessments, and learning how to interpret them is important for teacher success. Teachers will need a valid external screening measure of oral reading fluency in Grades 1–5. The curriculum already contains a diagnostic decoding measure. Some districts use large-scale computer-adaptive assessments to meet state requirements for RTI/MTSS. These can be very helpful as an external transfer measure, but **not** for placement in our DI Block groups. We recommend that leaders are very specific with teachers that diagnostic information from these additional external assessments will not be used for student groupings in the DI Block.

We know that many teachers spend many days of instruction on test preparation in the spring. We wholeheartedly endorse the use of valid and reliable state outcome tests. These tests help us measure the effects of the curriculum in general and for specific groups of students over time. It makes sense for students to know the format of their outcome tests in advance. What does not make sense is for them to trade instructional opportunities for test practice. We recommend that schools cancel the DI Block for the two weeks prior to testing so that teachers can work with their homeroom students to show them what the test will be like, practice with released items, and build excitement for them to showcase everything they have learned.

A final area of coherence for leaders to attend to is grading and report cards. *Bookworms* will generate weekly word study grades (spelling in K–2, and both spelling and vocabulary in 3–5), biweekly comprehension grades from written responses, and composition and mechanics grades. All will be generated from rubrics. Actually figuring out in advance how the rubrics for these will yield grades consistent with local report card requirements in advance of implementation will smooth the way for teachers to embrace the curriculum.

The DI Block will produce initial assessments of foundational skills and progress monitoring approximately every three weeks. Finally, kindergarten Shared Reading will provide ample opportunities to document student attainment of additional foundational skills. We have designed a reporting sheet for teachers to use during instruction to gather that evidence.

A list of assessment opportunities to use to inform grading policies is presented below. Tools and rubrics are located in the Lesson Plans.

Assessment Plan

Area	Timing	Strategy
Word Study Assessments	Every 5 days during Shared Reading	% Correct
Word Study Progress	Once each month: for students with weak achievement on Word Study Assessments	Spelling Tool to track progress
Text Connections	Every 5 days	Review 4 times per module using the Written Response Rubric to evaluate evidence of text comprehension
External Oral Reading Fluency Screening	Module 1, Lessons 6–14	WC1M: Risk Status
Informal Decoding Inventory	Module 1, Lessons 6–14	Individually administered to determine DI placement if warranted
High-frequency word inventory	Module 1, Lessons 6–14	Individually administered if warranted
DI Progress Monitoring	Every 3–4 Weeks	Individually administered during DI Block; used to regroup
Opinion Writing	Once per module during ELA	Opinion Writing Rubric applied to finished writing
Narrative Writing	Once per module during ELA	Narrative Writing Rubric applied to finished writing
Informational Writing	Once per module during ELA	Informational Writing Rubric applied to finished writing
Editing	Once per module during ELA	Editing Rubric applied to finished writing
Speaking and Listening	Once per month during ELA	Observation with rubric during ELA
Content Knowledge, Literacy Knowledge, and Integration of Knowledge and Ideas	At the end of each module during ELA	Culminating Task Rubrics

Flexible Schedules

Bookworms is packed with opportunities for teaching and learning. To make the most of them, teachers need a schedule that matches their real-time opportunities for teaching. We have planned lessons for an entire, uninterrupted school year. If teachers are on temporary leave, we recommend that substitutes simply follow the lesson plans as best they can, moving forward in shared reading books, read alouds, and writing tasks rather than suspending them.

For schools with fewer teaching days, or with important planned interruptions to regular instruction, here are our recommendations for how to condense the curriculum to fit the days allowed.

Grade 2

In the first Plan for Grade 2, teachers can shorten the curriculum by either 10 or 20 days. In the second Plan, teachers can shorten by 10 days and still teach the full set of Shared Reading texts and word study lessons.

Grade 2: Plan A

Number of Days	Shared Reading	ELA
170 days	Omit Module 4, Lessons 31–40	Omit Module 4, Lessons 17–22 and either Culminating Task
160 days	Omit Module 4, Lessons 21–40	Omit Module 4, Lessons 17–30 and do either Culminating Task beginning day 17

Grade 2: Plan B

Number of Days	Shared Reading	ELA
170 days	Beginning Lesson 21, teach 2 Shared Reading lessons each day. Each of the final two texts will be read in one week instead of two.	Omit Module 4, Lessons 17–30 and do either Culminating Task beginning Lesson 17. Then use ELA time for an extra Shared Reading lesson.

Grades 3–5

For grades 3–5, it is possible to remove lessons from any module. Here are our recommendations to reduce instructional days without disrupting the connections between reading and writing and without leaving any book unfinished. Simply skip omitted lessons and schedule the next lessons in the Module.

Grade 3

Number of Days	Shared Reading	ELA
170 days	Omit Module 4, Unit 1, Lessons 16–20. Omit Module 4, Unit 2, Lessons 21–25.	Omit Module 4, Unit 2, Lessons 21–30.
165 days	Omit Module 4, Unit 2, Lessons 26–40.	Omit Module 2, Unit 2; Lessons 26–32. Omit Module 2, Unit 3, Lessons 33–34 and Lesson 40. Omit Module 3, Unit 3, Lessons 41–45.
160 days	Omit Module 4, Unit 1, Lessons 16–20. Omit Module 4, Unit 2, Lessons 26–40.	Omit Module 2, Unit 2; Lessons 26–32. Omit Module 2, Unit 3, Lessons 33–34 and Lesson 40. Omit either of the Culminating Tasks in Module 4.

Grade 4

Number of Days	Shared Reading	ELA
170 days	Omit any 3 bump days. Omit Module 4, Unit 2, Lessons 31–37.	Omit Module 4, Unit 1, Lessons 1–3. Omit Module 4, Unit 2, Lesson 13. Omit Module 4, Unit 3, Lessons 14–19.
160 days	Omit 1 bump day. Omit Module 3, Unit 1, Lessons 37–55.	Omit Module 4, Unit 2, Lesson 13. Omit Module 4, Unit 3; Lessons 14–27. Omit either Culminating Task.

Grade 5

Number of Days	Shared Reading	ELA

170 days	Teach 2 Shared Reading lessons on each day where ELA lessons are omitted.	Omit Module 2, Unit 1, Lessons 5–13.
165 days	Omit Module 4, Unit 1, Lessons 31–45.	Omit Module 4, Unit 2, Lessons 23–35. Omit Module 4, Unit 3, Lessons 44–45.

Planning for Support

Teachers will need initial curriculum training and ongoing support, but the only real way to learn to teach *Bookworms* is to begin teaching it. The curriculum itself is educative; the goal of the initial training we have designed is to show teachers how to use the materials. Our experience is that leaders tend to spend more money on face-to-face initial training than they need to and less on ongoing coaching support than they ought to. They also tend to prefer cross-grade training so they can have teachers trained on days already scheduled (and paid for) in preplanning and post-planning. The problem with this approach is that all schools want training at the exact same time and *Bookworms* is very specific at each grade level. To do it well, we need to have six trainings going on concurrently—one for each grade—for four or five days.

The *Bookworms* team at UD has been designing these initial supports for several years. We have taken our original face-to face materials and created grade-level-specific, interactive virtual training housed and presented in the University of Delaware's LMS (Learning Management System) platform. The trainings ask teachers to read lesson plans, watch lesson simulations, and engage in discussion and problem solving. Having each grade-level team engage in this training, with the support of a UD coach or with a local team leader or coach, allows teachers to begin this journey with their grade-level colleagues. Virtual training using a LMS is very flexible. A district can bring grade levels together across schools or allow them to work in very small school-level groups. They can also stretch the training across more than 4 days, doing half days in May and June rather than waiting until just before school opens in July or August. Virtual training is cost-effective, scalable, and customizable. These affordances make grade-specific virtual training our actual preference for schools getting started.

We have designed new teacher trainings that require a half day of virtual interaction with our team and a half day of grade-level follow up over the course of a full week, with a day for Shared Reading, a day for Read Alouds, a day for Writing instruction, and two days for DI. We have designed these trainings to prepare teachers for the first month of school. Studying the curriculum a segment at a time and then collaborating and physically preparing with colleagues has been well received.

A second essential professional support teachers need is dedicated, organized, required collaborative time with grade-level colleagues. The only person who can really understand what a teacher is actually experiencing during initial implementation is a person also teaching the

same lessons in the same school. If teachers have time to collaborate, and protocols to use that time to share implementation successes and challenges, they are more likely to experience initial success. Our experience is that meaningful collaborations are nearly impossible during single 45-minute planning periods. 90 minutes every two weeks is much more productive. Some schools do this after school. Others have substitutes scheduled in advance. If there are 5 teachers per grade level, 5 subs could allow 90-minute planning sessions for three grade levels in one day and three the next.

Teacher collaboration time must be used wisely. Our coaching model (Walpole, 2021) engages teacher teams in setting implementation goals, engaging in structured lesson simulation, and then preparing for an upcoming lesson. Coaches can observe those lessons and engage individual teachers in confidential discussions and problem-solving.

Creating a coherent supervision and evaluation system is also essential. A principal and assistant principal can share grade levels, including participation in their collaborative planning sessions. We recommend that administrators have their own set of lesson plans and a shared set of books. That way they can begin the year trying to understand what the curriculum looks like in practice alongside teachers, building collegiality and participating in problem solving. They can give teachers time to practice safely. When teachers build confidence, they can begin formal evaluation and feedback. Time spent watching *Bookworms* instruction *before* evaluations begin will ensure that administrators customize their evaluation processes and forms to the affordances of the curriculum. It does not make sense to ask teachers to use new approaches and then provide formal evaluations that are not sensitive to their emerging success with those approaches.

Adding formal *Bookworms* coaching for teachers is icing on the cake. But few people enjoy cake without icing. Peer coaching (if it is well planned), coaching from a school or district coach, or external coaching from the *Bookworms* team can ensure that teachers get feedback on their practices so that they can reflect and set goals for themselves. Our team's coaching is non-evaluative feedback, and it can be face-to-face or virtual. Many organizations can provide coaching on generic best practices, but we see coaching as most effective when provided by someone with deep knowledge of evidence-based practice *and* advanced understanding of the actual curriculum. Our team has both.

Collaboration, supervision, and coaching will be easier if leaders set an expectation that specific lessons are taught on specific days. We recommend that Shared Reading and ELA begin as soon as possible once school opens. The DI Block can begin later. Kindergarten can wait until the second quarter. Grade 1 can begin in week 5. Grade 2 and above can begin in week 3. At the beginning of the year, that DI Block time can be used to build classroom community and routines and then for initial assessments. A clear plan for each grade level, mapping the Shared Reading and ELA Lessons onto the actual school calendar, will allow administrators and teachers to plan for field trips and other important school events and keep on track as a team. We share a sample calendar, including real holidays in a specific district, in Appendix C so you can see what we mean. You see that the calendar begins Shared Reading and ELA on day 1, but also identifies goals for building relationships and classroom procedures during the 45-minute DI Block to start the year.

In initial implementation, it is important to help teachers pace themselves. Depending on what teachers did previously, *Bookworms* may be asking them to change nearly everything. The journey is definitely worth it, but leaders and teachers should accept mistakes and struggles during the transition. The lesson plans provide the level of support necessary; teachers should be encouraged to use them very directly at first so that the community can implement all blocks. It is most important to perfect Shared Reading first. Then teachers should perfect ELA, first with the Interactive Read Alouds and then with the Writing instruction. Finally, they should increase their skills in the DI lessons. A focus on specific implementation excellence goals, even while all parts of the curriculum are being rolled out, respects and supports teachers who are trying something new.

Communicating Effectively

Initial implementation will be easier if the leadership team plans strategic communications. *Bookworms* is different from any other core curriculum. An elevator talk including why the school chose *Bookworms*, how teachers will be supported, and how parents can help will go a long way. Some issues to anticipate:

- Teachers may be surprised by the level of detail in the lesson plans, especially as they are learning to pace the lessons. We wrote the plans that way so that teachers would have strong implementation support every day. We refer to Shared Reading and ELA as highly structured, and to DI as initially scripted. We have provided extensive modeling talk in the lessons, but we expect teachers to customize it once they get comfortable.
- *Bookworms* does not include small-group instructional level guided reading. There is no evidence that this approach works. Communications must celebrate the potential of challenging, interesting text to build knowledge and for precise lessons to build foundational skills.
- A school-level policy about homework will help teachers to work as a team. The best homework is either family read alouds or student reading. Some schools choose to send home word study words for the week and reading or listening logs, but this is a local decision. Below find a sample reading log.

	Book	**Minutes**
Monday		
Tuesday		
Wednesday		
Thursday		

- The first year of implementation can include a very large change in the level of text challenge, especially for students in grades 2 and above. Communications can ease this transition, especially if leaders acknowledge that there will be a change, and that the change will be worthwhile for students. Luckily, we know that even older students can adjust when teachers maintain the lesson design.

We see *Bookworms* as a form of advocacy. Teachers deserve curriculum materials that integrate evidence from empirical research. Teachers deserve leaders who facilitate their work and who evaluate them fairly. Students deserve the chance to master foundational skills on time or to get aggressive, targeted support if they don't. Students deserve to read high-quality books of all kinds and to learn to write about them effectively. And families deserve to be able to trust schools to provide children with expert instruction in a respectful, culturally-sustaining, joyful classroom community.

Grade 5 Scope and Sequence

This resource offers a comprehensive outline of the content for each module, ensuring a structured and systematic approach to instruction and assessment.

Assessment Opportunities

Area	Timing	Strategy
Word Study Assessments	Every 5 days during Shared Reading	% correct
Word Study Progress	Once each month, for students with weak achievement on Word Study Assessments	**Grades 3–5: Spelling Tool** to track progress
Text Connections	Every 5 days	Review 4 times per module using the **Grade 5: Written Response Rubric** to evaluate evidence of text comprehension
Opinion Writing	Once per module during ELA	**Grade 5: Opinion Writing Rubric** applied to finished writing
Narrative Writing	Once per module during ELA	**Grade 5: Narrative Writing Rubric** applied to finished writing
Informative Writing	Once per module during ELA	**Grade 5: Informative Writing Rubric** applied to finished writing
Editing	Once per module during ELA	**Grade 5: Editing and Revision Rubric** applied to finished writing

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Area	Timing	Strategy
Speaking and Listening	Once per month during ELA	Observation with rubrics during ELA: • **Grade 5: Speaking and Listening (Group) Rubric** • **Grade 5: Speaking and Listening (Individual) Rubric**
Content Knowledge, Literacy Knowledge, and Integration of Knowledge and Ideas	At the end of each module during ELA	Culminating Task Rubrics: • Module 1: **Grade 5: Compare/Contrast Cells Research Project Rubric** • Module 2: **Grade 5: Civil Rights Research Paper Rubric** • Module 3: **Grade 5: Doing What's Right Rubric** • Module 4: **Grade 5: Book Advertisement Rubric** • Module 4: **Grade 5: Reading and Writing Identity Rubric**

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Shared Reading

Shared Reading Module 1, Unit 1: Self-Discovery

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 30: *Walk Two Moons*	**Lessons 1–5:** comfort, defend, impress, respect, restore, return	• Text Connection (L5, L10, L15, L20, L25, L30) • Word Study Assessment (L5, L10, L15, L20, L25, L30)	L.5.4, L.5.4.b, L.5.5, L.5.6, RF.5.3.a, RF.5.4, RF.5.4.a, RF.5.4.b, RF.5.4.c, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, RL.5.10, SL.5.1, W.5.7
	Lessons 6–10: drama, flinch, judge, potential, sprawls, tradition		
	Lessons 11–15: assure, cantankerous, cavorted, confess, connect, merely		
	Lessons 16–20: careening, descended, hope, plummet, sacrifice, tentative		
	Lessons 21–25: badgered, nonchalant, poise, quivering, relieve, tense		
	Lessons 26–30: discover, independent, legitimate, mischievous, realize, survivor		

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Shared Reading Module 1, Unit 2: Life Science

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
31 – 37: *Animal Cells and Life Processes*	**Lessons 31–35:** cells, digestive, nucleus, organ, organelle, organism, pigment, reproduce	• Text Connection (L35) • Word Study Assessment (L35)	L.5.4, L.5.4.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.10, SL.5.1
	Lessons 36–37: meiosis, mitosis		
38 – 45: *Plant Cells and Life Processes*	**Lessons 38–40:** tissue, waste	• Text Connection (L40, L45) • Word Study Assessment (L40, L45)	L.5.4, L.5.4.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.5, RI.5.6, RI.5.9, RI.5.10, SL.5.1
	Lessons 41–45: disease, ecosystem, osmosis, photosynthesis, transpiration, unicellular		

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Shared Reading Module 2, Unit 1: Earth Science

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 5: *Volcano*	**Lessons 1–5:** avalanche, colonizers, eruption, explosion, lava, survivors	• Text Connection (L5) • Word Study Assessment (L5)	L.5.4, L.5.4.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.6, RI.5.7, RI.5.8, RI.5.9, RI.5.10, SL.5.1
6 – 10: *Oceans*	**Lessons 6–10:** currents, gyre, ridge, tides, trench, tsunami	• Text Connection (L10) • Word Study Assessment (L10)	L.5.4, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.6, RI.5.7, RI.5.10, SL.5.1, W.5.2, W.5.9

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
11 – 15: *The Sun*	**Lessons 11–15:** atmosphere, atom, orbit, revolve, solar system, sunspot	• Text Connection (L15) • Word Study Assessment (L15)	L.5.4, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.5, RI.5.6, RI.5.7, RI.5.10, SL.5.1

Shared Reading Module 2, Unit 2: Unlikely Alliances

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
16 – 45: *The Westing Game*	**Lessons 16–20:** executor, heir, inherit, luxurious, motive, obituary	• Text Connection (L20, L25, L30, L35, L40, L45) • Word Study Assessment (L20, L25, L30, L35, L40)	L.5.4, L.5.4.b, L.5.5, L.5.5.b, L.5.5.c, L.5.6, RF.5.3.a, RF.5.4, RF.5.4.a, RF.5.4.b, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, RL.5.7, RL.5.10, SL.5.1
	Lessons 21–25: alibi, coincidence, defiantly, paralyze, suspicion, timid		
	Lessons 26–30: irony, plot thickens, resemblance, restraining, share, tension		
	Lessons 31–35: astounded, deliberately, financier, foreshadow, incriminating, resolution		
	Lessons 36–40: accomplice, charred, confessed, crossroads, sacrifice, witness		

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Shared Reading Module 3, Unit 1: Hope and Perseverance

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1–20: *Bud, Not Buddy*	**Lessons 1–5:** commence, depression, provoked, revenge, terrified, tolerate	• Text Connection (L5, L10, L15, L20) • Word Study Assessment (L5, L10, L15, L20)	L.5.4, L.5.4.b, L.5.5, L.5.5.b, L.5.5.c, L.5.6, RF.5.3.a, RF.5.4, RF.5.4.a, RF.5.4.b, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, RL.5.7, RL.5.10, SL.5.1
	Lessons 6–10: cardboard jungle, devoured, hypnotized, orphanage, riding the rails, taste		
	Lessons 11–15: judgmental, obvious, rehearse, reputation, resourceful, unions		
	Lessons 16–20: bawling, blended, fumble, insinuating, jazz, rummage		

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Shared Reading Module 3, Unit 2: Physics

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
21–26: *How Does a Waterfall Become Electricity?*	**Lessons 21–25:** dam, electricity, generator, hydroelectric, reservoir, waterwheel	• Text Connection (L25) • Word Study Assessment (L25)	L.5.4, L.5.4.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.5, RI.5.7, RI.5.10, SL.5.1

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
27 – 35: *Ice to Steam*	**Lessons 27–30:** condensation, evaporation, gas, liquid, precipitation, solid	• Text Connection (L35) • Word Study Assessment (L30, L35)	L.5.4, L.5.4.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.6, RI.5.7, RI.5.9, RI.5.10, SL.5.1
	Lessons 31–35: basalt, boiling point, granite, melting point, subliming, volcano		

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Shared Reading Module 4, Unit 1: Demonstrating Courage

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 30: *The Mostly True Adventures of Homer P. Figg*	**Lessons 1–5:** conscription, oblige, prodigious, truss, whinny, wretched	• Text Connection (L5, L10, L15, L20, L25, L30) • Word Study Assessment (L5, L10, L15, L20, L25, L30)	L.5.4, L.5.4.b, L.5.5, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RI.5.4, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, RL.5.7, RL.5.10, SL.5.1
	Lessons 6–10: abolitionists, civilized, conductor, drew, gemstone, skitter		
	Lessons 11–15: guardian, ingenuity, injustice, ruffian, steward, tormentors		
	Lessons 16–20: caravan, elixir, exhibitions, indignity, inspiration, muffle		
	Lessons 21–25: betray, eventually, feverishly, inquiries, requisitioned, scampered		
	Lessons 26–30: artillery, confinement, cruel, duped, trench, wrenches		
31 – 45: *Half and Half*	**Lessons 31–35:** conscious, customs, ethnically diverse, exotic, heritage, thrifty	• Text Connection (L35, L40, L45) • Word Study Assessment (L35, L40, L45)	L.5.4, L.5.4.b, L.5.5, L.5.5.b, L.5.6, RF.5.3, RF.5.4, RF.5.4.a, RF.5.4.b, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, RL.5.7, RL.5.9, RL.5.10, SL.5.1
	Lessons 36–40: authentic, bewildered, conflict, exposition, hyperbole, notable		
	Lessons 41–45: climax, falling action, juxtaposition, rising action, strained, suspense		

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English Language Arts

English Language Arts Module 1, Unit 1: Writing With a Purpose

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 5: Narrative Writing	*Walk Two Moons*	N/A	N/A	• Work Session Product	SL.5.1.b, SL.5.1.d, W.5.3, W.5.3.a, W.5.3.b, W.5.3.e, W.5.4, W.5.5
6 – 10: Opinion Writing	*Walk Two Moons*	N/A	N/A	• Work Session Product	SL.5.1.b, SL.5.1.d, W.5.1, W.5.4
11 – 13: Read Aloud	*Keep On!*	navigate, course, sledge, grueling, resourceful, devised	Sentence Composing • Combine • Expand	• Text Connections • Respond Together	L.5.1.e, L.5.2.a, L.5.3, L.5.3.a, L.5.5, L.5.6, RI.5.1, RI.5.2, RI.5.3, RI.5.4, SL.5.1.b, SL.5.2, W.5.3, W.5.10
14 – 19: Informative Writing	*Walk Two Moons*; *Keep On!*	N/A	N/A	• Work Session Product	L.5.1, L.5.2, L.5.2.d, L.5.2.e, SL.5.1, SL.5.1.b, SL.5.1.d, W.5.2, W.5.2.a, W.5.2.b, W.5.2.c, W.5.5, W.5.9
20 – 25: Read Aloud	*Rats Around Us*	Embedded Vocabulary	Sentence Composing • Combine • Imitate • Expand	• Text Connections • Respond Together	L.5.1.a, L.5.2.a, L.5.2.b, L.5.3, L.5.3.a, L.5.4.a, RI.5.1, RI.5.2, RI.5.3, RI.5.4, RI.5.5, RI.5.8, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.10

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
26 – 35: Narrative Writing	*Keep On!*; *Walk Two Moons*	N/A	N/A	• Work Session Product	L.5.2, L.5.2.d, L.5.2.e, L.5.3.a, L.5.5.c, SL.5.1, SL.5.1.b, SL.5.1.c, SL.5.4, W.5.3, W.5.3.a, W.5.3.b, W.5.3.d, W.5.3.e, W.5.4, W.5.5, W.5.6

English Language Arts Module 1, Unit 2: Powerful Words

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
36: Read Aloud	*Messenger, Messenger*	squints, blare	Sentence Composing • Imitate	• Respond Together	L.5.1.a, L.5.1.b, L.5.1.d, L.5.3, L.5.3.b, L.5.6, RF.5.4.b, RL.5.1, RL.5.2, RL.5.4, RL.5.5, RL.5.7, W.5.10
37: Read Aloud	*Hoops*	thicket, tense	Sentence Composing • Combine • Imitate	• Respond Together	L.5.1, L.5.1.b, L.5.1.d, L.5.3, L.5.3.b, L.5.6, RL.5.1, RL.5.2, RL.5.4, RL.5.5, RL.5.7, RL.5.9, W.5.2
38 – 40: Read Aloud	*The Boy Who Loved Words*	N/A	Sentence Composing • Combine • Expand • Imitate	• Respond Together	L.5.1, L.5.1.e, L.5.2.b, L.5.3, L.5.3.a, L.5.5.a, L.5.6, RL.5.1, RL.5.4, RL.5.6, RL.5.9, SL.5.1.b, SL.5.1.c, W.5.2, W.5.10

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English Language Arts Module 1, Unit 3: Compare and Contrast

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
41 – 45: Culminating Task	*Animal Cells and Life Processes*; *Plant Cells and Life Processes*	N/A	N/A	N/A	L.5.2, L.5.2.d, L.5.2.e, SL.5.1, W.5.2, W.5.4, W.5.5, W.5.7

English Language Arts Module 2, Unit 1: History of Science

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 4: Read Aloud	*The Flu of 1918*	Embedded Vocabulary	Sentence Composing • Imitate • Expand • Combine	• Respond Together	L.5.1.a, L.5.1.c, L.5.1.d, L.5.1.e, L.5.3, L.5.3.a, RI.5.1, RI.5.2, RI.5.4, RI.5.8, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.3
5 – 14: Read Aloud	*The Wright Brothers*	N/A	Sentence Composing • Expand • Imitate • Unscramble • Combine	• Respond Together	L.5.1.a, L.5.1.b, L.5.1.c, L.5.1.d, L.5.1.e, L.5.2.b, L.5.2.c, L.5.3, L.5.3.a, L.5.6, RI.5.1, RI.5.2, RI.5.4, RI.5.8, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.3, W.5.8, W.5.9, W.5.10

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English Language Arts Module 2, Unit 2: History of Civil Rights

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
15 – 32: Read Aloud	*The Watsons Go to Birmingham — 1963*	wobble, delinquent, punctual, intimidate, frostbite, shrug, stagger, peon, mourning, overthrown, tolerate, pinnacle, haphazard, seniority, transferred, deformed, puny, wily, hilarious, cruise, electrocute, o, execute	Sentence Composing • Combine • Expand • Imitate • Unscramble	• Text Connections • Respond Together	L.5.1.a, L.5.1.b, L.5.1.c, L.5.1.d, L.5.2.b, L.5.2.c, L.5.3, L.5.3.a, L.5.3.b, L.5.4, L.5.5, L.5.6, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.6, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.3, W.5.10
33 – 45: Culminating Task	*The Watsons Go to Birmingham — 1963*	N/A	N/A	N/A	L.5.2, L.5.2.d, L.5.2.e, SL.5.1, SL.5.1.b, SL.5.4, SL.5.5, W.5.2, W.5.2.a, W.5.2.b, W.5.2.c, W.5.2.e, W.5.4, W.5.5, W.5.6, W.5.7, W.5.8, W.5.9

English Language Arts Module 3, Unit 1: Themes in Poetry

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 2: Read Aloud	*Poetry: The Grackle, Pigeon, Something Told the Wild Geese*	deem, debacle, commute, gloss	Sentence Composing • Imitate	• Respond Together • Text Connections	L.5.5, L.5.5.a, L.5.6, RF.5.4.b, RL.5.1, RL.5.2, RL.5.4, RL.5.5, RL.5.9, W.5.1, W.5.10

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
3–4: Read Aloud	*Poetry: Long-Leg Lou and Short-Leg Sue, The Earth is a Living Thing*	N/A	N/A	• Respond Together	RF.5.4.b, RL.5.1, RL.5.2, RL.5.5, W.5.10

English Language Arts Module 3, Unit 2: The Underground Railroad

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
5–8: Read Aloud	*Aunt Harriet's Underground Railroad in the Sky*	underground, sympathizer, ramshackle, bedraggled, bounty, compartment, resounding, joyous	Sentence Composing • Expand • Combine • Unscramble • Imitate	• Respond Together	L.5.1.a, L.5.1.c, L.5.1.d, L.5.2.b, L.5.2.c, L.5.3, L.5.3.a, L.5.5, L.5.5.c, L.5.6, RL.5.1, RL.5.2, RL.5.4, RL.5.5, RL.5.6, SL.5.1.b, SL.5.1.c, W.5.1, W.5.3, W.5.10
9–12: Informative Writing	*Aunt Harriet's Underground Railroad in the Sky*	N/A	N/A	• Work Session Product	L.5.2, L.5.2.d, L.5.2.e, RI.5.9, SL.5.1.a, SL.5.1.b, W.5.2, W.5.2.a, W.5.2.b, W.5.4, W.5.5, W.5.6, W.5.7, W.5.8

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English Language Arts Module 3, Unit 3: Doing What's Right

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
13 – 25: Read Aloud	*A Single Shard*	protrude, oblivious, ribbed, derision, resentful, staggered, mire, bland, accomplished, arduous, emissary, impending, feign, dismissive, peril, frenetic, scavenge, secrete, mock, grimace, rueful, don, quell, dignified, skeptical, threshold, solemn	Sentence Composing • Expand • Combine • Imitate	• Text Connections • Respond Together	L.5.1.a, L.5.1.b, L.5.1.c, L.5.1.d, L.5.2.a, L.5.2.c, L.5.3, L.5.3.a, L.5.6, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.3, W.5.10
26 – 35: Culminating Task	*Bud, Not Buddy*	N/A	N/A	N/A	L.5.2, L.5.2.d, L.5.2.e, L.5.5.c, SL.5.1, SL.5.1.b, SL.5.4, SL.5.6, W.5.1, W.5.1.a, W.5.1.b, W.5.1.c, W.5.1.d, W.5.3.d, W.5.4, W.5.5, W.5.6, W.5.8

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English Language Arts Module 4, Unit 1: Trail of Tears

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 16: Read Aloud	*The Porcupine Year*	resounded, meandering, exile, portage, hoisted, uncanny, imperious, cache, bewildered, culprit, concealed, kindle, elude, hunkered, council, bereft, vigor, endurance, infuriated, ministrations, skeletal, emerge, gristle, turbulent, bereaved, floundering, belligerently, arrogance, recede, discreetly, consulted, mutual	Sentence Composing • Unscramble • Expand • Imitate • Combine	• Respond Together	L.5.1.a, L.5.1.c, L.5.1.d, L.5.2.b, L.5.3, L.5.3.a, L.5.5.b, L.5.6, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.3, W.5.10
17 – 22: Informative Writing	*The Porcupine Year*	N/A	N/A	• Work Session Product	L.5.2, L.5.2.d, L.5.2.e, W.5.2.a, W.5.2.b, W.5.2.d, W.5.5, W.5.6, W.5.7, W.5.8, W.5.9

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English Language Arts Module 4, Unit 2: The Importance of Story

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
23 – 35: Read Aloud	*Tuck Everlasting*	contemplation, accessible, frantic, exasperated, remnant, reluctantly, dismay, abruptly, melancholy, shimmered, perilous, decisive, routine, anguish, grudgingly, rhythmic, grated, threadbare, petulant, philosophy, reliable, acrid, unspeakable, remorseless, revulsion, unwittingly	Sentence Composing • Expand • Combine • Unscramble	• Text Connections • Respond Together	L.5.1.a, L.5.1.b, L.5.1.c, L.5.1.d, L.5.2.a, L.5.2.b, L.5.3, L.5.3.a, L.5.6, RL.5.1, RL.5.2, RL.5.3, RL.5.4, RL.5.5, RL.5.6, SL.5.1.b, SL.5.1.c, SL.5.2, W.5.1, W.5.2, W.5.3, W.5.10

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
36 – 40: Culminating Task	*Walk Two Moons*; *Animal Cells and Life Processes*; *Plant Cells and Life Processes*; *Keep On!*; *Rats Around Us*; *Messenger, Messenger*; *Hoops*; *The Boy Who Loved Words*; *Volcano*; *Oceans*; *The Sun*; *The Westing Game*; *The Flu of 1918*; *The Wright Brothers*; *The Watsons Go to Birmingham — 1963*; *Bud, Not Buddy*; *How Does a Waterfall Become Electricity?*; *Ice to Steam*; *Poetry: The Grackle, Pigeon, Something Told the Wild Geese*; *Poetry: Long-Leg Lou and Short-Leg Sue, The Earth is a Living Thing*; *Aunt Harriet's Underground Railroad in the Sky*; *A Single Shard*; *The Mostly True Adventures of Homer P. Figg*; *Half and Half*; *The Porcupine Year*; *Tuck Everlasting*	N/A	N/A	N/A	L.5.2, L.5.2.d, L.5.2.e, SL.5.1, SL.5.1.b, SL.5.1.c, SL.5.3, SL.5.4, W.5.1, W.5.1.a, W.5.1.b, W.5.5

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English Language Arts Module 4, Unit 3: Look How Far I've Come

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
41 – 45: Culminating Task	N/A	N/A	N/A	N/A	L.5.2, L.5.2.d, L.5.2.e, L.5.3.a, SL.5.1, SL.5.1.b, W.5.3.a, W.5.3.b, W.5.3.c, W.5.3.d, W.5.3.e, W.5.4, W.5.5, W.5.6, W.5.10

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Grade 2 Scope and Sequence

This resource offers a comprehensive outline of the content for each module, ensuring a structured and systematic approach to instruction and assessment.

Assessment Opportunities

Area	Timing	Strategy
Word Study Assessments	Every 5 days during Shared Reading	% correct
Word Study Progress	Once each month, for students with weak achievement on Word Study Assessments	**Grades K–2: Spelling Tool** to track progress
Text Connections	Every 5 days	Review 4 times per module using the **Grade 2: Written Response Rubric** to evaluate evidence of text comprehension
Opinion Writing	Once per module during ELA	**Grade 2: Opinion Writing Rubric** applied to finished writing
Narrative Writing	Once per module during ELA	**Grade 2: Narrative Writing Rubric** applied to finished writing
Informative Writing	Once per module during ELA	**Grade 2: Informative Writing Rubric** applied to finished writing
Editing	Once per module during ELA	**Grade 2: Editing and Revision Rubric** applied to finished writing

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Area	Timing	Strategy
Speaking and Listening	Once per month during ELA	Observation with rubrics during ELA: • **Grade 2: Speaking and Listening (Group) Rubric** • **Grade 2: Speaking and Listening (Individual) Rubric**
Content Knowledge, Literacy Knowledge, and Integration of Knowledge and Ideas	At the end of each module during ELA	Culminating Task Rubrics: • Module 1: **Grade 2: Frogs Research Report Rubric** • Module 2: **Grade 2: Native Americans Research Report Rubric** • Module 3: **Grade 2: Making Good Choices Rubric** • Module 4: **Grade 2: Book Advertisement Rubric** • Module 4: **Grade 2: Reading and Writing Identity Rubric**

Shared Reading

Shared Reading Module 1, Unit 1: New Beginnings

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 5: *Arthur's Back to School Day*	**Comparison:** Short vowels, Long vowels	• Text Connection (L5) • Word Study Assessment (L5)	L.2.2.d, L.2.4, L.2.4.c, RF.2.3, RF.2.3.c, RF.2.4.a, RF.2.4.b, RF.2.4.c, RL.2.1, RL.2.3, RL.2.5, RL.2.7, RL.2.10, SL.2.1, SL.2.6

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
6 – 10: *Henry and Mudge*	**Comparison:** Short vowels, Long vowels	• Text Connection (L10) • Word Study Assessment (L10)	L.2.2.d, L.2.4, L.2.4.c, L.2.6, RF.2.3, RF.2.4.a, RF.2.4.b, RF.2.4.c, RL.2.1, RL.2.3, RL.2.5, RL.2.10, SL.2.1, SL.2.6

Shared Reading Module 1, Unit 2: Friendship

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
11 – 15: *Pinky and Rex*	**Comparison:** a clap, aCe cake, ar star	• Text Connection (L15) • Word Study Assessment (L15)	L.2.2.d, L.2.4, L.2.4.c, L.2.6, RF.2.3, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.5, RL.2.6, RL.2.10, SL.2.1, SL.2.6
16 – 25: *Ivy + Bean*	**Comparison:** i fish, iCe bike, ir shirt, or horn, ar star, er shirt, ur shirt	• Text Connection (L20, L25) • Word Study Assessment (L20, L25)	L.2.2.d, L.2.4, L.2.4.c, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.c, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.4, RL.2.6, RL.2.10, SL.2.1, SL.2.6

Shared Reading Module 1, Unit 3: Life Cycles

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
26 – 30: *Tale of a Tadpole (Level 1)*	**Comparison:** a clap, aCe cake, ay cake	• Text Connection (L30) • Word Study Assessment (L30)	L.2.2.d, L.2.4, L.2.4.c, L.2.4.d, L.2.6, RF.2.3, RF.2.3.a, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.6, RI.2.7, RI.2.8, RI.2.10, SL.2.1, SL.2.6

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
31 – 35: *From Tadpole to Frog*	**Comparison:** a clap, aCe cake, ai cake, ay cake	• Text Connection (L35) • Word Study Assessment (L35)	L.2.2.d, L.2.4, L.2.4.d, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.c, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.7, RI.2.9, RI.2.10, SL.2.1, SL.2.6
36 – 40: *Caterpillar to Butterfly*	**Comparison:** e red, ea bee, ee bee	• Text Connection (L40) • Word Study Assessment (L40)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.b, RF.2.3.c, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.7, RI.2.9, RI.2.10, SL.2.1, SL.2.6
41 – 45: *Great Migrations*	**Comparison:** e red, ea red, ee bee, ea bee	• Text Connection (L45) • Word Study Assessment (L45)	L.2.2.d, L.2.4, L.2.4.c, L.2.6, RF.2.3, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.7, RI.2.9, RI.2.10, SL.2.1, SL.2.6

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Shared Reading Module 2, Unit 1: Native Americans

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 5: *The Hopi People*	**Comparison:** i fish, iCe bike, y bike, igh bike	• Text Connection (L5) • Word Study Assessment (L5)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.a, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.6, RI.2.7, RI.2.9, RI.2.10, SL.2.1, SL.2.6
6 – 10: *The Cheyenne People*	**Comparison:** i fish, iCe bike, igh bike, iCC bike	• Text Connection (L10) • Word Study Assessment (L10)	L.2.2.d, L.2.4, L.2.4.b, L.2.6, RF.2.3, RF.2.3.a, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.6, RI.2.7, RI.2.8, RI.2.9, RI.2.10, SL.2.1, SL.2.6

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
11 – 15: *The Cherokee People*	**Comparison:** o doll, oCe rope, oa rope	• Text Connection (L15) • Word Study Assessment (L15)	L.2.2.d, L.2.4, L.2.4.c, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.6, RI.2.7, RI.2.8, RI.2.10, SL.2.1, SL.2.6
16 – 20: *The Mohawk People*	**Comparison:** o doll, oCe rope, oa rope, ow rope	• Text Connection (L20) • Word Study Assessment (L20)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.5, RI.2.7, RI.2.8, RI.2.9, RI.2.10, SL.2.1, SL.2.6

Shared Reading Module 2, Unit 2: Actions and Consequences

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
21 – 31: *A–Z Mysteries*	**Comparison:** u sun, uCe tube, ue tube, ui tube, ew tube, ar star, aCe cake, ai cake, air hare	• Text Connection (L25, L30) • Word Study Assessment (L25, L30)	L.2.2.d, L.2.4, L.2.4.b, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.4, RL.2.5, RL.2.6, RL.2.7, RL.2.10, SL.2.1, SL.2.6
32 – 40: *Cam Jansen Case #27*	**Comparison:** ar star, aCe cake, ai cake, air hare, are hare	• Text Connection (L35) • Word Study Assessment (L35, L40)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.a, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.5, RL.2.6, RL.2.7, RL.2.9, RL.2.10, SL.2.1, SL.2.6
41 – 45: *Practice Makes Perfect for Rotten Ralph*	**Comparison:** er, ear earth, ear pear, ea spread, ee, ea bee	• Text Connection (L45) • Word Study Assessment (L45)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.b, RF.2.3.e, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.2, RL.2.3, RL.2.4, RL.2.5, RL.2.7, RL.2.10, SL.2.1, SL.2.6

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Shared Reading Module 3, Unit 1: Making a Difference in Our World

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 11: *Judy Moody Saves the World*	**Comparison:** er fern, ee bee, ear pear, ir shirt, iCe bike, igh bike, ire bike, or store, ore store, oCe boat, oa boat	• Text Connection (L5, L10) • Word Study Assessment (L5, L10)	L.2.2.d, L.2.4, L.2.4.b, L.2.4.d, L.2.6, RF.2.3, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.2, RL.2.3, RL.2.4, RL.2.5, RL.2.6, RL.2.7, RL.2.10, SL.2.1, SL.2.6

Shared Reading Module 3, Unit 2: Changing the Game

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
12 – 30: *Abraham Lincoln*	**Comparison:** or store, ore store, oCe boat, oa boat, qu queen, squ square, th thin, thr throw, st stick, str straw, sp spin, spl splash, sc scale, scr scratch, sh ship, shr shrimp	• Text Connection (L15, L20, L25, L30) • Word Study Assessment (L15, L20, L25, L30)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.4, RL.2.5, RL.2.6, RL.2.7, SL.2.1, SL.2.6
31 – 35: *Jackie Robinson*	**Comparison:** tch match, Cch match, VVch beach, Cch bench	• Text Connection (L35) • Word Study Assessment (L35)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.2, RI.2.3, RI.2.6, RI.2.7, RI.2.10, SL.2.1, SL.2.6

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Shared Reading Module 3, Unit 3: Mysterious Mummies

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
36 – 40: *Mummies*	**Comparison:** dge bridge, Vge page, V+nge orange	• Text Connection (L40) • Word Study Assessment (L40)	L.2.2.d, L.2.4, L.2.4.d, L.2.6, RF.2.3, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.2, RI.2.3, RI.2.6, RI.2.7, RI.2.9, RI.2.10, SL.2.1, SL.2.6
41 – 50: *The Mystery of the Mummy's Curse*	**Comparison:** hard c comb, soft c city, s sun, hard g game, soft g giraffe, j jar	• Text Connection (L45, L50) • Word Study Assessment (L45, L50)	L.2.2.d, L.2.4, L.2.4.c, L.2.4.d, L.2.6, RF.2.3, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.5, RL.2.7, RL.2.10, SL.2.1, SL.2.6

Shared Reading Module 4, Unit 1: Books and Culture

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Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
1 – 10: *Magic Tree House: Day of the Dragon King*	**Comparison:** o doll, oi soil, oy soil, ew food, oo food, oo book	• Text Connection (L5, L10) • Word Study Assessment (L5, L10)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.5, RL.2.7, RL.2.10, SL.2.1, SL.2.6
11 – 20: *China: Land of the Emperor's Great Wall*	**Comparison:** oo food, ou owl, ow owl, ou food	• Text Connection (L15, L20) • Word Study Assessment (L15, L20)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.b, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.3, RI.2.4, RI.2.5, RI.2.6, RI.2.7, RI.2.8, RI.2.9, RI.2.10, SL.2.1, SL.2.6

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Shared Reading Module 4, Unit 2: Myths and Culture

Lesson Range and Anchor Text	Vocabulary and Word Study	Check for Understanding	Standards Addressed
21–30: *Time Warp Trio: It's All Greek to Me*	**Comparison:** a stamp, au sauce, aw sauce, al bald, other base, _ch base, _sh base, _s base, _x base	• Text Connection (L25, L30) • Word Study Assessment (L25, L30)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.f, RF.2.4, RF.2.4.a, RF.2.4.b, RL.2.1, RL.2.3, RL.2.6, RL.2.7, RL.2.10, SL.2.1, SL.2.6
31–40: *Magic Tree House Fact Tracker: Ancient Greece and the Olympics*	**Comparison:** Base, Plural	• Text Connection (L35, L40) • Word Study Assessment (L35, L40)	L.2.2.d, L.2.4, L.2.6, RF.2.3, RF.2.3.d, RF.2.3.f, RF.2.4, RF.2.4.a, RF.2.4.b, RI.2.1, RI.2.4, RI.2.5, RI.2.6, RI.2.7, RI.2.9, RI.2.10, RL.2.3, RL.2.7, SL.2.1, SL.2.6

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English Language Arts

English Language Arts Module 1, Unit 1: Telling Our Stories

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1–5: Narrative Writing	*Arthur's Back to School Day*	N/A	N/A	• Work Session Product	SL.2.1.a, SL.2.1.b, SL.2.6, W.2.3, W.2.5, W.2.8
6–10: Opinion Writing	*Arthur's Back to School Day*	N/A	N/A	• Work Session Product	SL.2.1.a, SL.2.1.b, SL.2.6, W.2.1, W.2.5

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
11 – 12: Read Aloud	*A New Coat for Anna*	remain, spin, deep, garnet	Sentence Composing • Combine • Expand • Imitate	• Respond Together	L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.2.b, L.2.5.a, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.5, W.2.1, W.2.2, W.2.5
13: Opinion Writing	*A New Coat for Anna*	N/A	N/A	• Work Session Product	SL.2.1.a, SL.2.1.b, SL.2.6, W.2.1, W.2.7
14 – 20: Read Aloud	*Gooney Bird Greene*	admiration, provided, tidied, absolutely, suspense, intermission, research, announced, glamorous, scurried, allegiance, contentedly, strolled, expression, dignified	Sentence Composing • Expand • Combine • Imitate	• Text Connections • Respond Together	L.2.1.b, L.2.1.d, L.2.1.e, L.2.1.f, L.2.2, L.2.2.b, L.2.6, RL.2.1, RL.2.3, RL.2.5, W.2.1, W.2.2, W.2.3, W.2.5

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English Language Arts Module 1, Unit 2: Ways Our World Works

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
21 – 22: Read Aloud	*Magnets Push, Magnets Pull*	Embedded Vocabulary	Sentence Composing • Combine • Expand • Unscramble • Imitate	• Respond Together	L.2.1, L.2.1.e, L.2.1.f, L.2.2, L.2.5, RI.2.1, RI.2.3, RI.2.4, RI.2.6, W.2.1, W.2.5, W.2.8

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
23 – 28: Read Aloud	*Sounds All Around*	N/A	Sentence Composing • Imitate • Expand • Unscramble • Combine	• Text Connections • Respond Together	L.2.1.d, L.2.1.e, L.2.1.f, L.2.4.a, L.2.5, RI.2.1, RI.2.3, RI.2.4, RI.2.7, W.2.2, W.2.5, W.2.8
29 – 32: Read Aloud	*Clang!*	N/A	Sentence Composing • Expand • Imitate • Combine • Unscramble	• Text Connections • Respond Together	L.2.1.c, L.2.1.e, L.2.1.f, L.2.4.a, L.2.5.b, RI.2.1, RI.2.3, RI.2.4, RI.2.6, W.2.2, W.2.5, W.2.8

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English Language Arts Module 1, Unit 3: Animals in the Wild

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
33 – 34: Read Aloud	*Where in the Wild?*	N/A	Sentence Composing • Imitate • Combine • Unscramble • Expand	• Respond Together • Text Connections	L.2.1.e, L.2.1.f, L.2.2.c, L.2.5, RI.2.1, RI.2.3, RI.2.4, RI.2.6, W.2.2, W.2.3, W.2.5, W.2.8

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
35 – 37: Read Aloud	*Camouflage*	Embedded Vocabulary	Sentence Composing • Expand • Combine • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.c, L.2.1.e, L.2.1.f, L.2.4.a, L.2.5, RI.2.1, RI.2.3, RI.2.9, W.2.1, W.2.2, W.2.5
38 – 45: Culminating Task	*Tale of a Tadpole (Level 1)*	N/A	N/A	N/A	L.2.2.e, RI.2.6, SL.2.1.a, SL.2.1.b, SL.2.2, SL.2.6, W.2.2, W.2.5, W.2.6

English Language Arts Module 2, Unit 1: Weather

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 2: Read Aloud	*Going Home*	Embedded Vocabulary	Sentence Composing • Expand • Combine	• Respond Together	L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.5, RI.2.1, RI.2.4, RI.2.7, RL.2.4, W.2.1, W.2.5, W.2.8
3 – 9: Read Aloud	*Tornado*	beckon, hesitated, shivered, bargain, encouragement, commanded, particular, innocent, claimed, details, prompted, rightfully, stern, moping	Sentence Composing • Expand • Combine • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.b, L.2.1.c, L.2.1.d, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.6, RL.2.7, W.2.1, W.2.2, W.2.3, W.2.5

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
10 – 12: Read Aloud	*Cloudy With a Chance of Meatballs*	supplied, assorted, consisted, gradual, accompanied, abandon	Sentence Composing • Imitate • Combine • Unscramble • Expand	• Text Connections • Respond Together	L.2.1, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.4.c, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.5, RL.2.6, RL.2.7, W.2.1, W.2.2, W.2.3, W.2.5
13: Narrative Writing	*Cloudy With a Chance of Meatballs*	N/A	N/A	• Work Session Product	L.2.1, SL.2.1.a, SL.2.1.b, W.2.3, W.2.5, W.2.8

English Language Arts Module 2, Unit 2: Native American Legends

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
14 – 15: Read Aloud	*The Girl Who Loved Wild Horses*	pursue, collect, vanished, joyfully	Sentence Composing • Imitate • Combine • Expand	• Respond Together	L.2.1.e, L.2.1.f, L.2.6, RL.2.1, RL.2.2, RL.2.3, W.2.3, W.2.5
16 – 17: Read Aloud	*The Legend of the Bluebonnet*	plentiful, possession, thrust, miraculous	Sentence Composing • Combine • Expand • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.2, RL.2.3, W.2.5, W.2.8

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
18 – 19: Read Aloud	*Arrow to the Sun*	mocked, chamber, endure, transformed	Sentence Composing • Combine • Expand • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.b, L.2.1.e, L.2.2, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.5, W.2.1, W.2.5
20 – 27: Culminating Task	*The Hopi People*; *The Cheyenne People*; *The Cherokee People*; *The Mohawk People*	N/A	N/A	N/A	L.2.2.e, SL.2.1.a, SL.2.1.b, SL.2.6, W.2.2, W.2.5, W.2.6, W.2.8

English Language Arts Module 2, Unit 3: Our Money, Our Choices: Earning, Saving, Spending

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
28 – 29: Read Aloud	*Alexander, Who Used to Be Rich Last Sunday*	positively, especially, except, stoop	Sentence Composing • Expand • Imitate • Combine	• Respond Together	L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2.a, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.5, RL.2.7, W.2.1, W.2.5, W.2.8
30 – 31: Read Aloud	*Who's Buying? Who's Selling?*	N/A	Sentence Composing • Combine • Imitate • Unscramble • Expand	• Text Connections • Respond Together	L.2.1, L.2.1.c, L.2.1.e, L.2.2, L.2.5, RI.2.1, RI.2.3, RI.2.4, RI.2.9, W.2.1, W.2.2, W.2.5

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
32 – 33: Read Aloud	*My Rows and Piles of Coins*	gaped, determined, confident, astonishment	Sentence Composing • Imitate • Combine • Expand	• Text Connections • Respond Together	L.2.1.b, L.2.1.d, L.2.1.e, L.2.1.f, L.2.5, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.5, W.2.2, W.2.5
34 – 35: Informative Writing	*Who's Buying? Who's Selling?*; *Alexander, Who Used to Be Rich Last Sunday*	N/A	N/A	• Work Session Product	L.2.1, SL.2.1.a, SL.2.1.b, SL.2.6, W.2.2, W.2.8

English Language Arts Module 2, Unit 4: My Story, Your Story

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
36 – 42: Narrative Writing	*Gooney Bird Greene*	N/A	N/A	• Work Session Product	L.2.2.e, SL.2.1.a, SL.2.1.b, SL.2.4, SL.2.6, W.2.3, W.2.5
43 – 44: Read Aloud	*Miss Rumphius*	tropical, isle, satisfaction, scattered	Sentence Composing • Combine • Expand • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.3, RL.2.5, W.2.1, W.2.3, W.2.5
45: Opinion Writing	*Miss Rumphius*	N/A	N/A	• Work Session Product	SL.2.6, W.2.1, W.2.5

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English Language Arts Module 3, Unit 1: Breaking Barriers

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1 – 3: Read Aloud	*Helen Keller*	N/A	Sentence Composing • Imitate • Combine • Unscramble • Expand	• Respond Together • Text Connections	L.2.1.b, L.2.1.c, L.2.1.e, L.2.1.f, L.2.2, L.2.5, RI.2.1, RI.2.3, RI.2.5, RI.2.6, RI.2.8, RL.2.3, W.2.1, W.2.5, W.2.8
4 – 5: Read Aloud	*Amelia and Eleanor Go for a Ride*	Embedded Vocabulary	Sentence Composing • Combine • Imitate • Expand	• Text Connections • Respond Together	L.2.1, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RI.2.1, RI.2.6, RI.2.7, W.2.1, W.2.5, W.2.8
6 – 7: Read Aloud	*Mudball*	sneered, unmistakable, strutted, pounce	Sentence Composing • Combine • Imitate • Expand	• Text Connections • Respond Together	L.2.1.d, L.2.1.f, L.2.2, L.2.3.a, L.2.6, RL.2.1, RL.2.3, RL.2.5, W.2.5, W.2.8
8: Opinion Writing	*Mudball*; *Helen Keller*; *Amelia and Eleanor Go for a Ride*	N/A	N/A	• Work Session Product	L.2.1, SL.2.1.a, SL.2.1.b, SL.2.6, W.2.1, W.2.8

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English Language Arts Module 3, Unit 2: My Story, My Feelings

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
9 – 18: Narrative Writing	*Judy Moody Saves the World*	N/A	N/A	• Work Session Product	L.2.5, SL.2.1.a, SL.2.1.b, SL.2.4, SL.2.6, W.2.3, W.2.6, W.2.8

English Language Arts Module 3, Unit 3: Making History

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
19 – 20: Read Aloud	*Dad, Jackie, and Me*	gloomy, clutched, opposing, riding	Sentence Composing • Imitate • Combine • Expand • Unscramble	• Text Connections • Respond Together	L.2.1, L.2.1.e, L.2.1.f, L.2.6, RL.2.1, RL.2.3, RL.2.6, RL.2.7, W.2.1, W.2.5, W.2.8
21 – 22: Read Aloud	*The Story of Ruby Bridges*	credit, threaten, irritable, mob	Sentence Composing • Unscramble • Expand • Imitate • Combine	• Text Connections • Respond Together	L.2.1, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.3, RL.2.6, RL.2.7, W.2.1, W.2.5, W.2.8

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
23 – 25: Read Aloud	*My Brother Martin*	Embedded Vocabulary	Sentence Composing • Expand • Combine • Imitate	• Text Connections • Respond Together	L.2.1.e, L.2.1.f, L.2.2, L.2.6, RI.2.3, RI.2.4, RI.2.6, RI.2.8, RI.2.9, W.2.1, W.2.5, W.2.8
26 – 30: Culminating Task	*My Brother Martin*; *The Story of Ruby Bridges*; *Dad, Jackie, and Me*; *Abraham Lincoln*	N/A	N/A	N/A	L.2.1, L.2.2, L.2.5, SL.2.1, SL.2.1.a, SL.2.1.b, SL.2.6, W.2.1, W.2.5, W.2.6

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English Language Arts Module 3, Unit 4: Making a Difference in Your World

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
31 – 50: Read Aloud	*Poppy*	swiveling, unconscious, persistence, ruffian, crevice, calculate, acquaintance, revulsion, surveyed, frantically, cascaded, clenched, torrent, ravenously, whimpering, nuzzle, coincidence, tranquility, contemplate, barricaded, obscure, predicament, bewilderment, admiration, elation, launched, phantom, dilapidated, luscious, reluctantly, sufficient, fascination, jubilation, compromise, blunder, methodically, disperse, frail, frolic	Sentence Composing • Imitate • Expand • Combine • Unscramble	• Respond Together • Text Connections	L.2.1, L.2.1.a, L.2.1.b, L.2.1.d, L.2.1.e, L.2.1.f, L.2.2, L.2.3.a, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.4, RL.2.5, RL.2.6, RL.2.7, W.2.1, W.2.2, W.2.3, W.2.5, W.2.8

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English Language Arts Module 4, Unit 1: For Love of Country

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
1–3: Read Aloud	*The Flag We Love*	Embedded Vocabulary	Sentence Composing • Combine • Expand • Imitate • Unscramble	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, RI.2.1, RI.2.4, RI.2.6, W.2.1, W.2.5, W.2.8
4–5: Read Aloud	*The Wall*	weighted, droopy, honor	Sentence Composing • Combine • Imitate • Expand	• Text Connections • Respond Together	L.2.1, L.2.1.f, L.2.2, L.2.3.a, L.2.6, RL.2.1, RL.2.3, RL.2.7, W.2.1, W.2.5, W.2.8

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English Language Arts Module 4, Unit 2: A Cinderella Story

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
6–7: Read Aloud	*Cinderella*	twitter, murmur, astonishment, embraced	Sentence Composing • Combine • Expand • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.d, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.2, RL.2.3, RL.2.6, RL.2.7, W.2.1, W.2.3, W.2.5

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
8 – 9: Read Aloud	*The Rough-Face Girl*	haughtily, spare, glossy, exclaimed	Sentence Composing • Combine • Expand • Imitate • Unscramble	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.6, RL.2.1, RL.2.2, RL.2.9, W.2.5, W.2.8
10 – 11: Read Aloud	*The Egyptian Cinderella*	dainty, murmur, declare, summon	Sentence Composing • Expand • Imitate • Combine	• Text Connections	L.2.1, L.2.1.f, L.2.2, L.2.3.a, L.2.6, RL.2.1, RL.2.2, RL.2.9, W.2.1, W.2.2, W.2.5
12 – 16: Informative Writing	*The Rough-Face Girl*; *The Egyptian Cinderella*; *Cinderella*	N/A	N/A	• Work Session Product	L.2.2.e, L.2.3.a, L.2.5, RL.2.9, SL.2.1.a, SL.2.1.b, SL.2.6, W.2.2, W.2.7

English Language Arts Module 4, Unit 3: Earth and Space: Moving, Growing, Changing

Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
17 – 19: Read Aloud	*Starry Messenger*	Embedded Vocabulary	Sentence Composing • Expand • Combine	• Text Connections • Respond Together	L.2.1.f, L.2.2, RI.2.3, RI.2.4, RI.2.7, W.2.2, W.2.5, W.2.8

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
20 – 22: Read Aloud	*Starstruck*	N/A	Sentence Composing • Combine • Unscramble • Imitate • Expand	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.d, L.2.1.e, L.2.1.f, L.2.2, L.2.3, L.2.4, RI.2.1, RI.2.4, RI.2.6, RI.2.8, RI.2.9, RI.2.10, SL.2.2, SL.2.6, W.2.1, W.2.2, W.2.5, W.2.8
23 – 25: Read Aloud	*Cracking Up*	Embedded Vocabulary	Sentence Composing • Imitate • Expand • Combine	• Text Connections • Respond Together	L.2.1.a, L.2.1.b, L.2.1.e, L.2.1.f, L.2.2, L.2.2.a, RI.2.1, RI.2.2, RI.2.3, RI.2.4, RI.2.6, RI.2.7, W.2.1, W.2.2, W.2.5
26 – 28: Read Aloud	*How a Plant Grows*	Embedded Vocabulary	Sentence Composing • Combine • Expand • Imitate	• Text Connections • Respond Together	L.2.1, L.2.1.e, L.2.2, L.2.4.e, RI.2.3, RI.2.4, RI.2.5, W.2.2, W.2.5, W.2.8
29 – 30: Read Aloud	*How Do You Raise a Raisin?*	Embedded Vocabulary	Sentence Composing • Expand • Imitate • Combine	• Text Connections • Respond Together	L.2.1, L.2.1.a, L.2.1.b, L.2.1.d, L.2.1.f, L.2.2, RI.2.1, RI.2.3, RI.2.6, W.2.2, W.2.5

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English Language Arts Module 4, Unit 4: Look How Far I've Come!

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
31 – 35: Culminating Task	*Arthur's Back to School Day*; *Henry and Mudge*; *Pinky and Rex*; *Ivy + Bean*; *Tale of a Tadpole (Level 1)*; *From Tadpole to Frog*; *Caterpillar to Butterfly*; *Great Migrations*; *A New Coat for Anna*; *Gooney Bird Greene*; *Magnets Push, Magnets Pull*; *Sounds All Around*; *Where in the Wild?*; *Camouflage*; *The Hopi People*; *The Cheyenne People*; *The Cherokee People*; *The Mohawk People*; *A–Z Mysteries*; *Cam Jansen Case #27*; *Practice Makes Perfect for Rotten Ralph*; *Going Home*; *Tornado*; *Cloudy With a Chance of Meatballs*; *The Girl Who Loved Wild Horses*; *The Legend of the Bluebonnet*; *Arrow to the Sun*; *Alexander, Who Used to Be Rich Last Sunday*; *Who's Buying? Who's Selling?*; *My Rows and Piles of Coins*; *Miss Rumphius*; *Judy Moody Saves the World*;	N/A	N/A	N/A	SL.2.1.a, SL.2.1.b, SL.2.2, SL.2.3, SL.2.4, SL.2.6, W.2.1, W.2.5

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Lesson Range and Type	Anchor Texts	Vocabulary	Grammar	Check for Understanding	Standards Addressed
	Abraham Lincoln; *Jackie Robinson*; *Mummies*; *The Mystery of the Mummy's Curse*; *Helen Keller*; *Amelia and Eleanor Go for a Ride*; *Mudball*; *Dad, Jackie, and Me*; *The Story of Ruby Bridges*; *My Brother Martin*; *Poppy*; *Magic Tree House: Day of the Dragon King*; *Time Warp Trio: It's All Greek to Me*; *Magic Tree House Fact Tracker: Ancient Greece and the Olympics*; *The Flag We Love*; *The Wall*; *Cinderella*; *The Rough-Face Girl*; *The Egyptian Cinderella*; *Starry Messenger*; *Cracking Up*; *How a Plant Grows*; *How Do You Raise a Raisin?*				
36 – 40: Culminating Task	N/A	N/A	N/A	N/A	L.2.3, SL.2.1.a, SL.2.1.b, SL.2.1.c, SL.2.4, SL.2.5, SL.2.6, W.2.3, W.2.5, W.2.6

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Great Minds
100 M Street SE, Suite 500
Washington, DC 20003

Phone: 844.853.1010
Email: info@eureka-math.org
Web: eureka-math.org
Twitter: eureka_math

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Grade 5 Pacing and Preparation Guide

Grade 5 Pacing and Preparation Guide

This guide includes three components. The first section, Preparing to Teach a Module, outlines a process for understanding the instructional sequences of the module—a vital foundation for making decisions about pacing. Next, Preparing to Teach a Lesson outlines a process for customizing a lesson to fit the daily time constraints and unique needs of the students.

The final section of this guide, Suggestions for Consolidation or Omissions, is intended to provide guidance in the event that educators need to reduce the number of days in the 180-day curriculum. Keep in mind that Grade 5 is comprised of 149 daily lessons. The remaining 31 instructional days are devoted to the 12 assessments. Assessments are typically allotted one day to administer the assessment, one day to return and review the assessment, and one day for remediation or enrichment. The embedded 16 remediation/enrichment days are intended to provide some built-in flexibility for teachers. However, in the event that even more flexibility is needed, these suggestions for consolidation or omissions will free up additional days. These suggestions should not be viewed as a mandate to omit or consolidate lessons, but as guidance for how to do so wisely when the need arises.

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Preparing to Teach a Module

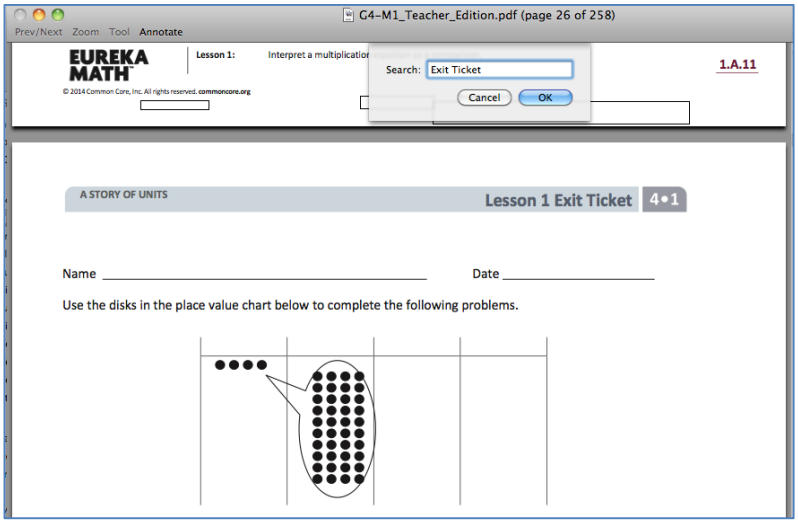
Preparation of lessons will be more effective and efficient if there has been an adequate analysis of the module first. Each module in *A Story of Units* can be compared to a chapter in a book. How is the module moving the plot, the mathematics, forward? What new learning is taking place? How are the topics and objectives building on one another? The following is a suggested process for preparing to teach a module.

Step 1: Get a preview of the plot.

A: Read the Table of Contents. At a high level, what is the plot of the module? How does the story develop across the topics?

B: Preview the module's Exit Tickets[1] to see the trajectory of the module's mathematics and the nature of the work students are expected to be able to do.

Note: When studying a PDF file, enter "Exit Ticket" into the search feature to navigate from one Exit Ticket to the next.



Step 2: Dig into the details.

A: Dig into a careful reading of the Module Overview. While reading the narrative, liberally reference the lessons and Topic Overviews to clarify the meaning of the text—the lessons demonstrate the strategies, show how to use the models, clarify vocabulary, and build understanding of concepts.

[1] A more in-depth preview can be done by searching the Problem Sets rather than the Exit Tickets. Furthermore, this same process can be used to preview the coherence or flow of any component of the curriculum, such as Fluency Practice or Application Problems.

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Consider searching the video gallery on *Eureka Math*'s website to watch demonstrations of the use of models and other teaching techniques.

B: Having thoroughly investigated the Module Overview, read through the chart entitled Overview of Module Topics and Lesson Objectives to further discern the plot of the module. How do the topics flow and tell a coherent story? How do the objectives move from simple to complex?

Step 3: Summarize the story.

Complete the Mid- and End-of-Module Assessments. Use the strategies and models presented in the module to explain the thinking involved. Again, liberally reference the work done in the lessons to see how students who are learning with the curriculum might respond.

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Preparing to Teach a Lesson

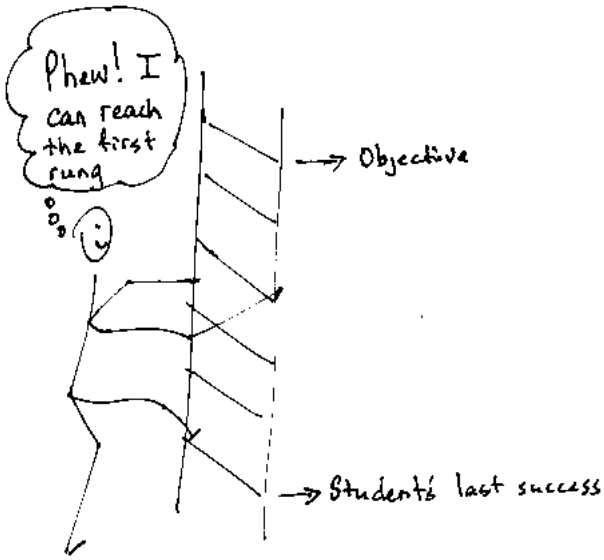
A three-step process is suggested to prepare a lesson. It is understood that at times teachers may need to make adjustments (customizations) to lessons in order to fit the time constraints and unique needs of their students. The recommended planning process is outlined below. Note: The ladder of Step 2 is a metaphor for the teaching sequence. The sequence can be seen not only at the macro level in the role that this lesson plays in the overall story, but also at the lesson level, where each rung in the ladder represents the next step in understanding or the next skill needed to reach the objective. To reach the objective, or the top of the ladder, all students must be able to access the first rung and each successive rung.

Step 1: Discern the plot.

- A: Briefly review the module's Table of Contents, recalling the overall story of the module and analyzing the role of this lesson in the module.
- B: Read the Topic Overview related to the lesson, and then review the Problem Set and Exit Ticket of each lesson in the topic.
- C: Review the assessment following the topic, keeping in mind that assessments can usually be found midway through the module and at the end of the module.

Step 2: Find the ladder.

- A: Complete the lesson's Problem Set.
- B: Analyze and write notes on the new complexities of each problem as well as the sequences and progressions throughout problems (e.g., pictorial to abstract, smaller to larger numbers, single- to multi-step problems). The new complexities are the rungs of the ladder.
- C: Anticipate where students might struggle, and write a note about the potential cause of the struggle.
- D: Answer the Student Debrief questions, always anticipating how students will respond.



Step 3: Hone the lesson.

At times, the lesson and Problem Set are appropriate for all students and the day's schedule. At others, they may need customizing. If the decision is to customize based on either the needs of students or scheduling constraints, a suggestion is to decide upon and designate "Must Do" and "Could Do" problems.

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A: Select "Must Do" problems from the Problem Set that meet the objective and provide a coherent experience for students; reference the ladder. The expectation is that the majority of the class will complete the "Must Do" problems within the allocated time. While choosing the "Must Do" problems, keep in mind the need for a balance of calculations, various word problem types[2], and work at both the pictorial and abstract levels.

B: "Must Do" problems might also include remedial work as necessary for the whole class, a small group, or individual students. Depending on anticipated difficulties, those problems might take different forms as shown in the chart below.

Anticipated Difficulty	"Must Do" Customization Suggestion
The first problem of the Problem Set is too challenging.	Write a short sequence of problems on the board that provides a ladder to Problem 1. Direct the class or small group to complete those first problems to empower them to begin the Problem Set. Consider labeling these problems "Zero Problems" since they are done prior to Problem 1.
There is too big of a jump in complexity between two problems.	Provide a problem or set of problems that creates a bridge between the two problems. Label them with the number of the problem they follow. For example, if the challenging jump is between Problems 2 and 3, consider labeling the bridging problems "Extra 2s."
Students lack fluency or foundational skills necessary for the lesson.	Before beginning the Problem Set, do a quick, engaging fluency exercise, such as a Rapid White Board Exchange, Counting Exercise, or Sprint. Before beginning any fluency activity for the first time, assess that students are poised for success with the easiest problem in the set.
More work is needed at the concrete or pictorial level.	Provide manipulatives or the opportunity to draw solution strategies. Especially in Kindergarten, at times the Problem Set or pencil and paper aspect might be completely excluded, allowing students to simply work with materials.
More work is needed at the abstract level.	Hone the Problem Set to reduce the amount of drawing as appropriate for certain students or the whole class.

C: "Could Do" problems are for students who work with greater fluency and understanding and can, therefore, complete more work within a given time frame. Adjust the Exit Ticket and Homework to

[2] See the Progression documents "K, Counting and Cardinality" and "K–5, Operations and Algebraic Thinking" pp. 9 and 23, respectively.

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reflect the "Must Do" problems or to address scheduling constraints.

D: At times, a particularly tricky problem might be designated as a "Challenge!" problem. This can be motivating, especially for advanced students. Consider creating the opportunity for students to share their "Challenge!" solutions with the class at a weekly session or on video.

E: Consider how to best use the vignettes of the Concept Development section of the lesson. Read through the vignettes, and highlight selected parts to be included in the delivery of instruction so that students can be independently successful on the assigned task.

F: Pay close attention to the questions chosen for the Student Debrief. Regularly ask students, "What was the lesson's learning goal today?" Help them make observations, draw connections, and articulate the goal.

G: Adjust the balance of the lesson's components as necessary to support the work students are expected to do in the Problem Set or task (e.g., the Fluency Practice, Exit Ticket, Homework, Application Problem).

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Suggestions for Consolidation or Omissions

Module 1

If pacing is a challenge, consider the following modifications and omissions. Consolidate Lessons 9 and 10 because these lessons devote a day each to adding and subtracting with decimals. If students are fluent with addition and subtraction with whole numbers and their understanding of decimal place value is strong (from Grade 4 Module 6 and Grade 5 Module 1 Topic B), practicing both addition and subtraction with decimals can be done in one lesson. Begin assessing students' skill with addition and subtraction with whole numbers during the fluency activity of Lesson 5, and spend a series of days doing so.

Module 2

If pacing is a challenge, consider the following modifications and omissions. Depending on students' strengths, consider consolidating Lessons 5 and 6. In Lesson 5, omit Problem 1 of the Concept Development, and move directly into renaming with the algorithm after Problem 2. Use the Problem Set from Lesson 6 for independent student practice. Consider consolidating Lessons 7 and 8 as well. Ask students to estimate the product beginning with the Concept Development of Lesson 7, and then use the Problem Set from Lesson 8 for student practice. Similarly, Lessons 11 and 12 can also be consolidated. Use estimation from the outset, and have students practice with the Problem Set from Lesson 12.

It is not recommended to omit any lessons from Topic D as it is a foundation for work later in the year. Students convert measurement units from small to large and from large to small using multiplication. This significantly expedites their understanding of and fluency with conversion and fraction multiplication as the year continues. In Lesson 14, students multiply whole numbers by unit fractions, which they learned to do in Grade 4 Module 5. If necessary, consider moving the fluency activity, "Multiply Unit Fractions," from Lesson 14 to Topic C to provide a few extra days of practice prior to beginning Lesson 14.

Module 3

If pacing is a challenge, consider the following modifications and omissions. Omit Lesson 2 as it addresses a Grade 4 standard. In Lesson 3, omit the paper folding exercise, and consider it a remediation tool. Omit the Sprint in Lesson 12, and replace it with simple reasoning about fractions on the number line, such as "Is $\frac{3}{4}$ greater than or less than $\frac{1}{2}$? $\frac{3}{5}$? $\frac{3}{7}$?" In Lesson 15, choose two or three problems, and omit the others. Use the omitted problems as Application Problems in future lessons. Consider omitting Lesson 16 and using it in a center for early finishers, or have advanced students work the problems and present their solutions in a video or interactive demonstration. Consider asking the following questions to students, "Have you ever

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thought about what the whole would look like if this paper were one-half? What if it were one-third? What if this is three-fourths of the whole? What would the whole look like then?"

Note: In the first year of implementation, beginning in Lesson 5, be sure to include the fluency activities requiring students to subtract fractions less than one from a whole number (e.g., $4 - \frac{5}{8}$) in order to prepare students to subtract larger mixed numbers in Topics B and C. Model these fluency activities on the number line and with a tape diagram.

Module 4

If pacing is a challenge, consider the following modifications and omissions. Omit Lesson 4, and use tape diagrams to model fractions as division in Lesson 5. Lessons 11 and 12 are both word problem lessons involving addition, subtraction, and multiplication with fractions. Omit Lesson 11, but include Problems 1 and 4 as part of Lesson 12. In Lesson 12, use Problems 4 and 5 as an extension or challenge for early finishers, and omit Problems 5 and 6 from the Homework. If students have demonstrated success during Lesson 13, consider omitting Problems 1 and 2 of the Concept Development in Lesson 14. Similarly, in Lesson 15, omit Problems 2 and 3(c) from the Concept Development. Omit Lesson 21, and instead, provide regular practice with the "Write Fractions as Decimals" fluency activity, found in Lessons 23, 24, and 25. Lastly, omit Lesson 28.

Note: Looking ahead, Topic D of Module 5 includes drawing in 5 of the 6 geometry lessons. These drawings with the protractor are not included in the Grade 5 CCSS but *are* critical to the coherence of the geometry standards of Grade 4 and those of middle school. These drawings could be completed during Module 4 but at a different time of the day, such as art class or for morning work. It is best that drawing with the protractor be taught by the math teacher. This modification allows for the later consolidation of Lessons 16, 17, 18, and 19 in Module 5.

Module 5

If pacing is a challenge, consider the following modifications and omissions. Omit Lessons 8 and 9, in which students create sculptures out of multiple rectangular prisms. Instead, consider asking the art teacher to complete a similar project with students. Lessons 14 and 15 can be consolidated since they share the same objective. Use Problems 1 and 2 from Lesson 14 and Problems 1 and 2 from Lesson 15. Problem 3 from Lesson 15 can be an extension for early finishers. Omit Lesson 21, and instead, use it in a center or periodically as morning work.

Note: If the drawing for Module 5, Topic D was done during Module 4, as suggested above, consolidate Lessons 16, 17, 18, and 19.

Module 6

If pacing is a challenge, consider the following modifications and omissions. Lessons 5 and 6 share the same objective and can be consolidated. Lessons 11 and 12 are not part of the Grade 5 CCSS and therefore may be omitted.

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Topics E and F are optional. However, they afford students the opportunity to reflect on all the learning they have experienced in Grade 5 and throughout *A Story of Units*. These Topics serve as both an excellent culmination to elementary school and a meaningful bridge to middle school.

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Grade 5

Eureka Essentials

Contact: @rebeccacpoon ✉ rebeccacpoon@gmail.com

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Overview

How to Read **Eureka Essentials**

Module 7: Exploring Measurement with Multiplication

Definitions:

- **Customary length units:**
  - **Pound, ounce:** 1 pound = 16 ounces
- **Customary mass (weight) units:**
  - **Yard, foot, inch** (Grade 2 Module 7): 1 yard = 3 feet; 1 foot = 12 inches

Key Ideas:

- **Addition:** Because of the associative and commutative properties of addition, we can add numbers in *any order* and still keep the sum (total) the same
- **Subtraction:** We can subtract parts of the subtrahend in *any order* and from *any part* of the minuend (total) that is greater than or equal to the subtrahend part(s) and still keep the difference the same

Materials:

- Balance [Topic A]
- Measuring cups, jars, pitchers (borrow from Grade 5 manipulatives kit) [Topics A, C]
- Rulers, yardstick or measuring tape [Topics C-D]
- Protractors [Topic D]

Overview of module

Basic materials of module (see Teacher Edition for full list of suggested materials)

Module, Lesson, Concept

M3 L34 Multiplying Multiples of 10 by Two-Digit Number: Place Value

Goals:

- Build on **Lessons 4 and 7** and use properties of multiplication to multiply multiple of 10 by two-digit number

Connections to other lessons in **purple** text

Problem(s) to focus on from the Concept Development

Focus: Concept Development problem #3

50 × 31
= (5 × 10) × 31
= 10 × (5 × 31)
= 10 × 155
= 1,550

Key Ideas: Multiply in any order
← **Lesson 7:** 5 × 31 = 155
← **Lesson 4:** 10 × 155 = 1,550

Problem(s) suggested for checking understanding

Check: Problem Set problem #2b

M4 L5 Circular Protractors and Defining Angle Measure

Goals:

- Define how to measure angle with unlabelled circular protractor and labelled (degrees) circular protractor

Resources: Sample template for paper circular protractor

Link(s) to additional free resources for a lesson or topic

M5 L24 From Fraction to Mixed Number

Suggestions for omission or consolidation of lessons if pacing is a challenge

Cut/consolidate: Can consolidate with Lesson 25

M7 L2 Customary Capacity (Volume) Measurements

Goals:

- **Echo** Lesson 1 for capacity (volume) measurements:
  - Use definition of customary capacity (volume) units to calculate unit conversions

Like repeating the identified lesson (Lesson 1) for the new concept ("capacity measurements")

M5 L36 Multiplication of Whole Number and Fraction (Continued)

Goals:

- **Review/reinforce** Lesson 35

Review or reinforcement of identified lessons or skills

Check: Problem Set problems #3c, #5

How to Approach Pacing

- ➢ Cover Major Cluster Standards more thoroughly and move through other Standards more quickly
  - **Major Clusters**: Modules 1-4, 5 Topics A-C
  - **Additional/Supporting Clusters**: Modules 5 Topic D, 6
- ➢ Use lesson connections (in purple text) to foresee when and how certain concepts will be revisited and further developed in later lessons
- ➢ Embed "reteaching" into the next lesson's activities (Fluency Practice, Application Problems, Concept Development, etc.) rather than repeat a prior lesson when formative assessments indicate lack of student understanding
- ➢ Omit or differentiate lessons labelled ↻ **Review/reinforce** based on students' strengths and needs
- ➢ Follow suggestions for omission or consolidation of lessons labelled ✂ **Cut/consolidate** based on students' strengths and needs

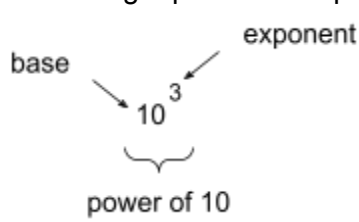
References

- Great Minds Eureka Math Teacher Edition version 3.0 (2015)
- California Common Core State Standards (2013)
- Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (2016)
- Wu, H. (2011). *Understanding numbers in elementary school mathematics*. Providence: American Mathematical Society.
- Wu, H. (2016). *Teaching school mathematics: Algebra*. Providence: American Mathematical Society.

Module 1: Place Value and Decimal Fractions

Definitions:

- **Multiplication of whole number and fraction (decimal)** (Grade 4 Module 5): "$2 \times \frac{3}{10}$" means "$\frac{3}{10} + \frac{3}{10}$" (2 copies of $\frac{3}{10}$)
- **Division of fraction (decimal) by whole number**: generalization of the partitive interpretation of division (Grade 4 Module 3)
  - The unknown size of each group when given the total and the number of equal groups (number of *parts* is known)
  - $\frac{3}{10} \div 2 = how\ much\ in\ each\ group\ when\ \frac{3}{10}\ is\ divided\ into\ 2\ groups$
- **Decimal fraction** (Grade 4 Module 6): a fraction with a denominator that is a product of 10's (positive power of 10)
  - Example: $\frac{487}{100} = \frac{487}{10 \times 10}$
- **Decimal number** (Grade 4 Module 6):
  - The number of zeros in the denominator of the decimal fraction corresponds to the number of digits to the right of the decimal point (**decimal digits**)
  - Decimal number is shorthand for expressing a decimal fraction: "It has been recognized since 1593 by the German Jesuit astronomer C. Clavius that a decimal fraction is easier to write if we abandon the fraction symbol: just use the numerator and then keep track of the number of zeros in the denominator by the use of a so-called decimal point…" (Wu, 2011, p. 187)
  - Example: 181/10000 = 0.0181 (4 zeros in denominator → 4 decimal digits)
- **Exponent**:
  - "10^3" means "10 × 10 × 10"
  - Exponent is shorthand for writing a product composed of the same factor



- **Equivalent** or **equal**, **greater than**, **less than** (Grade 4 Modules 5-6):

Word	*Symbolic*	*Meaning (Definition)*
1.30 is equivalent or equal to $\frac{13}{10}$	$1.30 = \frac{13}{10}$	• Geometric: 1.30 and $\frac{13}{10}$ have SAME length (area, volume) • Number line: 1.30 and $\frac{13}{10}$ are the SAME point
$\frac{13}{10}$ is greater than 0.31	$\frac{13}{10} > 0.31$	• Geometric: $\frac{13}{10}$ has MORE length (area, volume) than 0.31

		• Number line: $\frac{13}{10}$ is to the RIGHT of 0.31
0.31 is <u>less</u> than $\frac{13}{10}$	$0.31 < \frac{13}{10}$	• Geometric: 0.31 has LESS length (area, volume) than $\frac{13}{10}$ • Number line: 0.31 is to the LEFT of $\frac{13}{10}$

- **Rounding to the nearest tenth**: to round a number n to the nearest 0.1 means to replace n by the multiple of 0.1 which is <u>closest</u> to n; if two multiples of 0.1 (0, 0.1, 0.2, etc.) are equally close to n, the convention is to always choose the bigger number
- **Rounding to the nearest hundredth**: to round a number n to the nearest 0.01 means to replace n by the multiple of 0.01 which is <u>closest</u> to n; if two multiples of 0.01 (0, 0.01, 0.02, etc.) are equally close to n, the convention is to always choose the bigger number

Key Ideas:

- **Equivalent Fractions Theorem** (Grade 4 Module 5):
  - $\frac{a}{b} = \frac{a \times c}{b \times c}$
  - $\frac{a}{b} = \frac{a \div c}{b \div c}$ if a and b are multiples of c (or c is a factor of a and b)
- **Multiplication of whole number and fraction** (Grade 4 Module 5): $n \times \frac{a}{b} = \frac{n \times a}{b}$
  - Reasoning 1:

    $7 \times \frac{5}{4}$

    $= \frac{5}{4} + \frac{5}{4} + \frac{5}{4} + \frac{5}{4} + \frac{5}{4} + \frac{5}{4} + \frac{5}{4}$ ← <u>definition of multiplication of whole number & fraction</u>

    $= 7 \times 5$ copies of $\frac{1}{4}$ ← <u>definition of multiplication</u>

    $= \frac{7 \times 5}{4}$ ← <u>definition of fraction</u>
  - Reasoning 2:

    $7 \times \frac{5}{4}$

    $= 7 \times \left(5 \times \frac{1}{4}\right)$ ← <u>fraction as multiple of unit fraction</u>: $\frac{a}{b} = a \times \frac{1}{b}$

    $= (7 \times 5) \times \frac{1}{4}$ ← <u>multiply in any order</u>

    $= \frac{7 \times 5}{4}$ ← <u>fraction as multiple of unit fraction</u>: $a \times \frac{1}{b} = \frac{a}{b}$
- **Multiplication by power of 10**: when a number is *multiplied* by a power of 10 with n zeros, each digit in the number shifts to the *left* n spaces
- **Division by power of 10**: when a number is *divided* by a power of 10 with n zeros, each digit in the number shifts to the *right* n spaces

Topic A: Multiplicative Patterns on the Place Value Chart

M1 L1 Multiplying and Dividing by Powers of 10

Goals:

- Review definition of multiplication of whole number and fraction (decimal) and observe that *multiplying* by 10 shifts each digit to the *left* by one place

Focus: Concept Development problem #4

$$2.43 \times 10$$

$$= \textit{how much in } 10 \textit{ groups of } 2.43$$

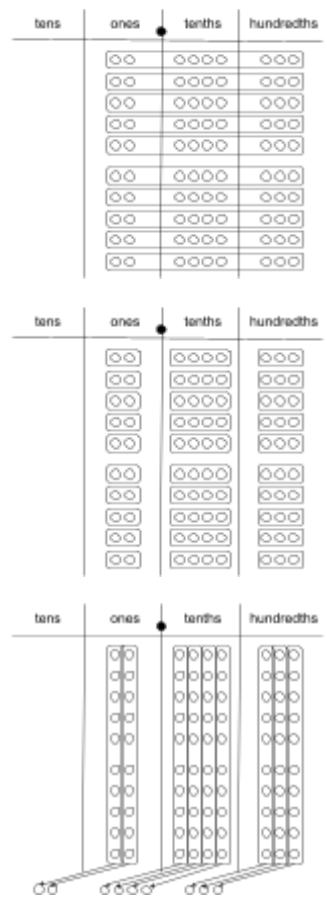
$$= (2 + 0.4 + 0.03) \times 10$$

$$= (2 \times 10) + \left(\frac{4}{10} \times 10\right) + \left(\frac{3}{100} \times 10\right)$$

$$= 20 + \frac{4\times10}{10} + \frac{3\times10}{10\times10} \leftarrow n \times \frac{a}{b} = \frac{n\times a}{b}$$

$$= 20 + 4 + \frac{3}{10} \qquad \leftarrow \text{Equivalent Fractions}$$

$$= 24.3$$



Check: Problem Set problem #1a

- Observe multiplication by power of 10

Focus: Concept Development problem #4

$$2.43 \times 1,000$$
$$= 2.43 \times 10 \times 10 \times 10$$
$$= 24.3 \times 10 \times 10$$
$$= 243 \times 10$$
$$= 2,430$$

Check: Problem Set problems #1b-c

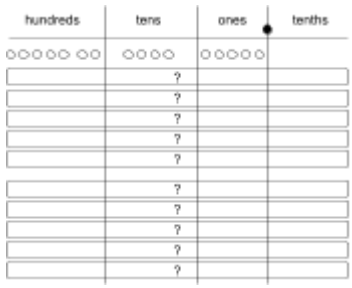
- Define division of fraction (decimal) by whole number and observe that *dividing* by 10 shifts each digit to the *right* by one place

Focus: Concept Development problem #5

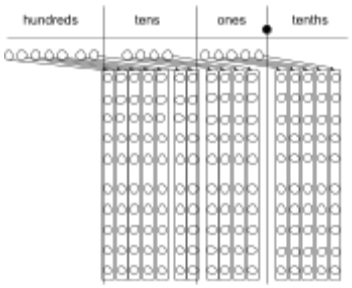
$745 \div 10$

$= \textit{how much in each group when } 745 \textit{ is divided into } 10 \textit{ groups}$

$= (700 + 40 + 5) \div 10$

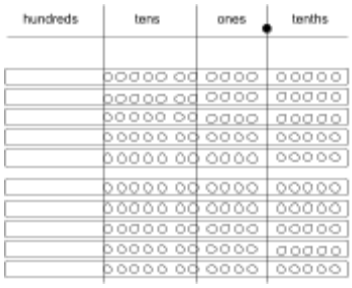


$= ((70 \times 10) + (40 \times 1) + (50 \times 0.1)) \div 10$



$= (7 \times 10) + (4 \times 1) + (5 \times 0.1)$

$= 74.5$



Check: Problem Set problem #2a

- Observe division by power of 10

Focus: Concept Development problem #5

$745 \div 1,000$

$= \textit{how much in each group when } 745 \textit{ is divided into } 1,000 \textit{ groups}$

$= \textit{how much in each group when } 745 \textit{ is divided into } (10 \times 10 \times 10) \textit{groups}$

$= \textit{how much in each final group when } 745 \textit{ is divided into } 10 \textit{ groups, then each group is}$

$\textit{is divided into } 10 \textit{ groups again, then each of those groups is divided into } 10 \textit{ groups}$

$= 745 \div 10 \div 10 \div 10$

$= 74.5 \div 10 \div 10$

$= 7.45 \div 10$

$= 0.745$

Check: Problem Set problems #2b-c

M1 L2 Multiplying and Dividing by Powers of 10 (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 1

  ✓ **Check**: Problem Set problems #1c-h

M1 L3 Exponent

Goals:

- Define exponent

  🔍 **Focus**: Concept Development problem #1

  ✓ **Check**: Problem Set problems #1b-e
- Build on **Lessons 1-2** to multiply and divide powers of 10 in exponent form

  🔍 **Focus**: Concept Development problems #4, #5

  $$\begin{aligned} & 3.4 \times 10^3 \\ = \; & 3.4 \times 10 \times 10 \times 10 \quad \text{or} \quad 3.4 \times 1,000 \\ = \; & 3,400 \end{aligned}$$

  ✓ **Check**: Problem Set problems #2b-c

M1 L4 Metric Conversions

Goals:

- Rename larger units (meters) as smaller units (centimeters, millimeters) by multiplying

  🔍 **Focus**: Concept Development problem #1

  $$\begin{aligned} & 1.37\ m \\ = \; & \textit{how much in } 1.37 \textit{ groups of } 100\ cm \\ = \; & 1.37 \times 100 && \leftarrow \text{Fraction of number (Module 4)} \\ = \; & 137\ cm && \leftarrow \text{Lessons 1-2} \end{aligned}$$

  ✓ **Check**: Problem Set problems #1c, #2b
- Rename smaller units (centimeters, millimeters) as larger units (meters) by dividing

  🔍 **Focus**: Concept Development problem #2

  $$\begin{aligned} & 1,370\ mm \\ = \; & \textit{how many groups of } 1,000\ mm \textit{ are in } 1,370\ mm \\ = \; & 1,370 \div 1,000 && \leftarrow \text{Division (Module 4)} \\ = \; & 1.37\ m && \leftarrow \text{Lessons 1-2} \end{aligned}$$

✓ **Check**: Problem Set problems #1d, #2c

Suggestions: For a visual representation of unit conversion, see use of a "double unit" number line in Eureka Essentials: Grade 4 Module 7 Topic C Lessons 12-13

Topic B: Decimal Fractions and Place Value Patterns

M1 L5 Different Forms of a Decimal Number

Goals:

- Represent a decimal fraction in standard form (decimal fraction or decimal number), word form, unit form, and expanded form

Focus: Concept Development problem #3

Standard form	$25.413 = 25\frac{413}{1{,}000} = \frac{25{,}413}{1{,}000}$
Word form	$Twenty - five\ and\ four\ hundred\ thirteen\ thousandths$ or $Twenty - five\ thousand\ four\ hundred\ thirteen\ thousan$
Unit form	$2\ tens\ 5\ ones\ 4\ tenths\ 1\ hundredth\ 3\ thousandths$
Expanded form	$(2 \times 10) + (5 \times 1) + (4 \times 0.1) + (1 \times 0.01) + (3 \times 0.($ $= (2 \times 10) + (5 \times 1) + \left(4 \times \frac{1}{10}\right) + \left(1 \times \frac{1}{100}\right) + \left(3 \times \frac{1}{10}\right.$

✓ **Check**: Problem Set problems #1d-e, #3c

M1 L6 Comparing Decimal Numbers

Goals:

- ↻ **Review/reinforce** Grade 4 Module 6 Topic C: comparing decimal numbers

Focus: Concept Development problems #2, #3

$0.299 < 0.3$ because $0.3 = \frac{3}{10} = \frac{3\times100}{10\times100} = \frac{300}{1000}$ (Equivalent Fractions Theorem) and $0.299 = \frac{299}{1000}$ is to the left of $\frac{300}{1000}$ on the number line so $\frac{299}{1000} < \frac{300}{1000}$ (definition of less than) and $0.299 < 0.3$

✓ **Check**: Problem Set problems #2c-e

Topic C: Place Value and Rounding Decimal Fractions

M1 L7 Rounding

Goals:

- ↻ **Review/reinforce** Grade 4 Module 1 Topic C: Round whole numbers to the nearest ten, hundred, etc. (power of 10)

  Focus: Concept Development problem #1
- Generalize definition of rounding to the nearest power of 10 (Grade 4 Module 1) to rounding to the nearest tenth and nearest hundredth

  Focus: Concept Development problems #2, #3

  Round 1.57 to the nearest tenth
  - 1.57 is between 1.5 and 1.6
  - 1.57 is 0.07 more than 1.5 and 0.03 less than 1.6 so 1.57 is closer to 1.6
  - 1.57 rounded to the nearest tenth is 1.6

  Check: Problem Set problem #3

Suggestions: Give students choice to show rounding with horizontal number line or vertical number line (see Suggestion for Grade 3 Module 2 Lesson 12)

M1 L8 Rounding (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 7

  Focus: Concept Development problem #2

  Check: Problem Set problem #1a

Suggestions: Omit or use as “challenge” tasks Concept Development problem #3, Problem Set problem #3, Homework problem #3 because finding the range (maximum and minimum) of a number when given the rounded value is not directly relevant to Grade 5 Standards

Topic D: Adding and Subtracting Decimals

M1 L9 Adding Decimals

Goals:

- ↻ **Review/reinforce** Grade 4 Module 6 Topic D

  Focus: Concept Development problems #7, #8, #9

$$7.44 + 0.774$$

$$= \frac{744}{100} + \frac{774}{1000}$$

$$= \frac{7440}{1000} + \frac{774}{1000} \qquad \leftarrow \frac{744}{100} = \frac{744\times10}{100\times10}$$

$$= \frac{8214}{1000} \qquad \leftarrow \frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$= 8.214$$

$$\begin{array}{r} 7.44 \\ +\ 0.774 \\ \hline \end{array}$$

$$\begin{array}{r} 7.440 \\ +\ 0.774 \\ \hline \end{array}$$

$$\begin{array}{r} 7.440 \\ +\ 0.774 \\ \hline 8.214 \end{array}$$

  Check: Problem Set problems #2a & c

M1 L10 Subtracting Decimals

Goals:

- Use key idea of subtracting fractions $\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$ and the Equivalent Fractions Theorem (Grade 4 Module 5) to subtract decimals

  Focus: Concept Development problems #4, #5

$$4.083 - 1.29$$

$$= \frac{4083}{1000} - \frac{129}{100}$$

$$= \frac{4083}{1000} - \frac{1290}{1000} \qquad \leftarrow \frac{129}{100} = \frac{129\times10}{100\times10}$$

$$= \frac{2793}{1000} \qquad \leftarrow \frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$$

$$= 2.793$$

$$\begin{array}{r} 4.083 \\ -\ 1.29 \\ \hline \end{array}$$

$$\begin{array}{r} 4.083 \\ -\ 1.290 \\ \hline \end{array}$$

$$\begin{array}{r} 4.083 \\ -\ 1.290 \\ \hline 2.793 \end{array}$$

  Check: Problem Set problems #2c-d

Topic E: Multiplying Decimals

M1 L11 Multiplication of Whole Number and Decimal

Goals:

- Build on Grade 4 Module 5 Topic G to multiply whole number with decimal number and show distributive property:

Focus: Concept Development problems #4, #8

2×0.43

$= 2 \times (0.4 + 0.03)$

$= 0.4 + 0.03 + 0.4 + 0.03$ ← def of multiplication of whole number & fraction

$= (0.4 + 0.4) + (0.03 + 0.03)$ **Key Ideas**: Add in any order

$= (2 \times 0.4) + (2 \times 0.03)$ ← def of multiplication of whole number & fraction

$= \frac{2\times4}{10} + \frac{2\times3}{100}$ ← $n \times \frac{a}{b} = \frac{n\times a}{b}$

$= 0.8 + 0.06$

$= 0.86$

$2 \times (0.4 + 0.03)$ $= (2 \times 0.4) + (2 \times 0.03)$

Check: Problem Set problem #2b

M1 L12 Estimating the Product of a Whole Number and Decimal

Goals:

- Build on **Lessons 7-8 and 11** to estimate products by rounding decimals to the nearest ones

Focus: Concept Development problems #5, #6

7.8×3

$\approx 8 \times 3$ ← Lessons 7-8: Rounding 7.8 to the nearest ones

$= 24$

Check: Problem Set problem #1c

Topic F: Dividing Decimals

M1 L13 Division of Decimal by One-Digit Whole Number

Goals:

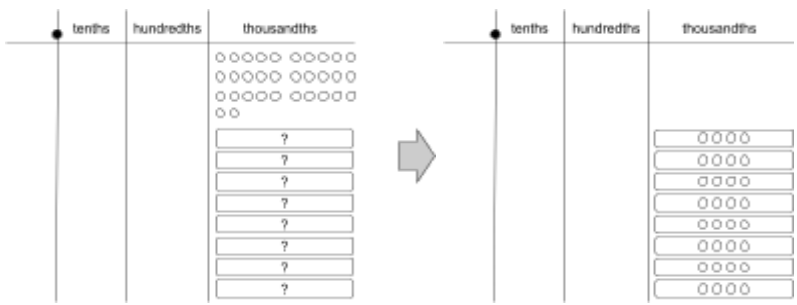
- Build on **Lesson 1** to divide decimals by one-digit whole number

Focus: Concept Development problems #3, #5

$$0.032 \div 8$$

$$= \textit{how much in each group when } \frac{32}{1000} \textit{ is divided into } 8 \textit{ groups}$$

$$= \frac{4}{1000}$$



Check: Problem Set problem #1c

M1 L14 Division with Remainder of Larger Unit

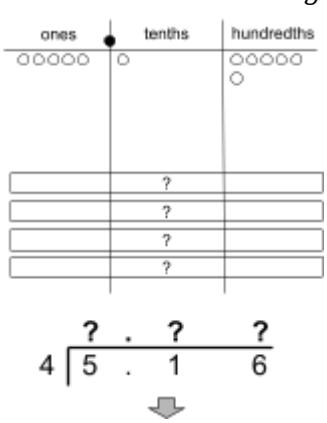
Goals:

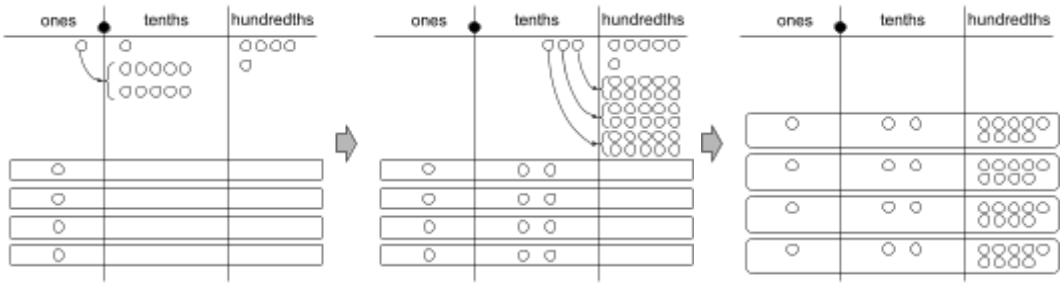
- Extend division algorithm (Grade 4 Module 3 Topics E, G) to decimals

Focus: Concept Development problem #1

$$5.16 \div 4$$

$$= \textit{how much in each group when } 5.16 \textit{ is divided into } 4 \textit{ groups}$$






```
      1                  1 . 2                1 . 2   9
4 | 5 . 1   6          4 | 5 . 1   6        4 | 5 . 1   6
  - 4                    - 4                  - 4
    1   1                  1   1                1   1
                         -     8              -     8
                              3   6                3   6
```

✔ **Check**: Problem Set problem #1a

M1 L15 Division with Remainder of Smallest Unit

Goals:

- Use the Equivalent Fractions Theorem to continue division when there is a remainder of the smallest unit

Focus: Concept Development problems #2, #3

$2.6 \div 4$

$= \frac{26}{10} \div 4$

$= \frac{260}{100} \div 4 \qquad \leftarrow \frac{26}{10} = \frac{26\times10}{10\times10}$

```
      ? . ?
4 | 2 . 6

      ? . ?   ?
4 | 2 . 6   0

      0 . 6   5
4 | 2 . 6   0
  - 2   4
        2   0
```

✔ **Check**: Problem Set problems #2a-b

M1 L16 Word Problems

Goals:

- Solve word problems that involve multiplication or division of decimal by one-digit whole number

Module 2: Multi-Digit Whole Number and Decimal Fraction Operations

Definitions:

- **Decimal fraction** (Grade 4 Module 6): a fraction with a denominator that is a product of 10's (positive power of 10)
  - Example: $\frac{487}{100} = \frac{487}{10\times10}$
- **Decimal number** (Grade 4 Module 6):
  - The number of zeros in the denominator of the decimal fraction corresponds to the number of digits to the right of the decimal point (**decimal digits**)
  - Example: 181/10000 = 0.0181 (4 zeros in denominator → 4 decimal digits)
- **Multiplication of whole number and fraction (decimal)** (Grade 4 Module 5): "$2 \times \frac{3}{10}$" means "$\frac{3}{10} + \frac{3}{10}$" (2 copies of $\frac{3}{10}$)
- **Division of fraction (decimal) by whole number**: generalization of the partitive interpretation of division (Grade 4 Module 3)
  - The unknown size of each group when given the total and the number of equal groups (number of *parts* is known)
  - $\frac{3}{10} \div 2 = how\ much\ in\ each\ group\ when\ \frac{3}{10}\ is\ divided\ into\ 2\ groups$
- **Division with remainder** (Grade 4 Module 3): $a \div b$ is the number Q(quotient) so that $Q \times b + R = a$ where $0 \leq R < b$ (remainder)
  - When we form b groups from a (partitive interpretation of division), then Q is the most number of items in each group and R is the leftover that is not enough to distribute evenly into b groups
  - When we form groups of b from a (measurement interpretation of division), then Q is the most number of groups we can make and R is the leftover that is not enough to form a group of b

Key Ideas:

- **Multiplication**: Because of the associative and commutative properties of multiplication, we can multiply numbers in *any order* and still keep the product (total) the same
- **Equivalent Fractions Theorem** (Grade 4 Module 5):
  - $\frac{a}{b} = \frac{a\times c}{b\times c}$
  - $\frac{a}{b} = \frac{a\div c}{b\div c}$ if a and b are multiples of c (or c is a factor of a and b)
- **Multiplication of whole number and fraction** (Grade 4 Module 5): $n \times \frac{a}{b} = \frac{n\times a}{b}$

Topic A: Mental Strategies for Multi-Digit Whole Number Multiplication

M2 L1 Multiplying Multiples of 10

Goals:

- Build on Module 1 **Lessons 1-2** to multiply multiples of 10

  Focus: Concept Development problems #5, #7

  $$\begin{aligned} & 60 \times 500 \\ &= (6 \times 10) \times (5 \times 100) \\ &= (6 \times 5) \times (10 \times 100) \\ &= 30 \times 1,000 \\ &= 30,000 \end{aligned}$$

  Key Ideas: Multiply in any order

  ← Module 1 Lessons 1-2

  Check: Problem Set problem #3c

- Build on Module 1 **Lessons 1-2 and** Grade 4 **Module 3** (multi-digit multiplication) to multiply multiples of 10

  Focus: Concept Development problems #9, #11

  $$\begin{aligned} & 4,510 \times 80 \\ &= (451 \times 10) \times (8 \times 10) \\ &= (451 \times 8) \times (10 \times 10) \\ &= 3,608 \times 100 \\ & 451 \times 8 = 3,608 \\ &= 360,800 \end{aligned}$$

  Key Ideas: Multiply in any order

  ← Grade 4 Module 3:

  ← Module 1 Lessons 1-2

  Check: Problem Set problem #3d

M2 L2 Estimating the Product of Multiples of 10

Goals:

- Build on **Lesson 1 and** Module 1 **Lesson 7** to estimate the product of multiples of 10
  - Observe that the *smaller* the unit we round to, the *closer* the estimated product is to the exact product but the more "work" it is to multiply the numbers
    - $1,320 \times 88$ rounded to $1,000 \times 90$ equals $90,000$
    - $1,320 \times 88$ rounded to $1,300 \times 90$ equals $117,000$
    - $1,320 \times 88 = 116,160$

  Focus: Concept Development problems #5, #6

  Check: Problem Set problems #1a-b

Topic B: The Standard Algorithm for Multi-Digit Whole Number Multiplication

M2 L3 Numerical Expressions

Goals:

- Write from word form to numerical expression, and vice versa

  Focus: Concept Development problems #2, #3, #5

  "$6\ times\ the\ difference\ between\ 60\ and\ 51$" is "$6 \times (60 - 51)$

  * Note: Use parentheses to show 6 multiplies with $60 - 51$ and not just 60

  Check: Problem Set problems #1b, #2d

- Use properties of operations (distributive property, commutative property of multiplication, etc.) to compare expressions in word and numerical forms

  Focus: Concept Development problem #9

  $30\ fifteens\ minus\ 1\ fifteen$

  $= (30 \times 15) - (1 \times 15)$

  $= (30 - 1) \times 15$ ← distributive property

  $= 29 \times 15$

  Check: Problem Set problems #3a & c

M2 L4 Distributive Property

Goals:

- Use distributive property (represented with area of rectangle or tape diagram) to identify or write equivalent numerical expressions

  Focus: Concept Development problems #4, #6

  12×98

  $= (10 + 2) \times 98 = (10 \times 98) + (2 \times 98) = etc.$ or $12 \times (100 - 2) = etc.$

  Check: Problem Set problems #2c-d

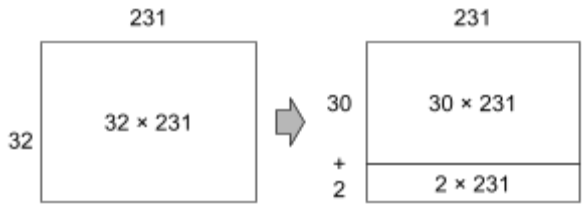
M2 L5 Multiplying Two-Digit Number by Two- or Three-Digit Number

Cut/consolidate: Can consolidate with Lesson 6; show both area models (decomposing one factor, decomposing both factors) for each problem discussed in class and then let students choose one model for independent work

Goals:

- Build on Grade 4 **Module 3 Topics C and H** to multiply two-digit number by two- or three-digit number using distributive property and decomposing one factor

Focus: Concept Development problem #3



$$\begin{array}{rl} 231 & \\ \times\ 32 & \\ \hline 462 & = 2 \times 231 \\ +\ 6930 & = 30 \times 231 = (3 \times 231) \times 10 \\ \hline = \quad 7392 & \end{array}$$

$32 \times 231 = (30 \times 231) + (2 \times 231)$

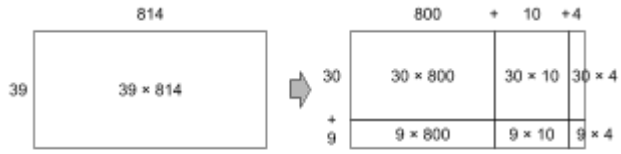
Check: Problem Set problem #1b

M2 L6 Multiplying Two-Digit Number by Two- or Three-Digit Number (Continued)

Goals:

- Build on **Lesson 5** to multiply two-digit number by two- or three-digit number using distributive property and decomposing both factors

Focus: Concept Development problem #2



$$\begin{array}{rl} 814 & \\ \times\ 39 & \\ \hline 7326 & = 9 \times 814 \\ +\ 24420 & = 30 \times 814 = (3 \times 814) \times 10 \\ \hline = \quad 31746 & \end{array}$$

$39 \times 814 = [(30 \times 800) + (30 \times 10) + (30 \times 4)] + [(9 \times 800) + (9 \times 10) + (9 \times 4)]$

Check: Problem Set problem #1b

M2 L7 Multiplying Three-Digit Number by Three- or Four-Digit Number

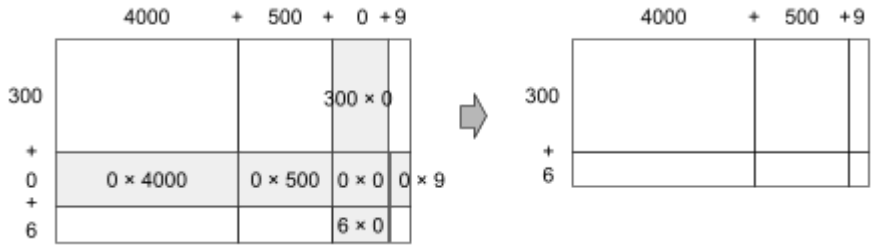
Goals:

- Build on **Lessons 5-6** to multiply three-digit number by three- or four-digit number

  Focus: Concept Development problem #2

  Check: Problem Set problem #1a
- Multiply numbers with zero(s) and observe that each zero results in one fewer column or row of partial products in the area model

  Focus: Concept Development problem #4



✓ **Check**: Problem Set problem #1b

M2 L8 Multiplying Three-Digit Number by Three- or Four-Digit Number (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 7 and round to estimate product

  🔍 **Focus**: Concept Development problem #2

  ✓ **Check**: Problem Set problem #1d

M2 L9 Word Problems

Goals:

- Solve multi-step word problems that involve multi-digit multiplication

  ✓ **Check**: Problem Set problems #3, #6

Topic C: Decimal Multi-Digit Multiplication

M2 L10 Multiplication of Whole Number and Decimal Fraction with Tenths

Goals:

- Build on **Lessons 5-8** and Module 1 **Lesson 11** to multiply whole number and decimal fraction with tenths, and round to estimate product

  🔍 **Focus**: Concept Development problem #2

$$3.5 \times 42$$
$$= \frac{35}{10} \times 42$$
$$= \frac{35 \times 42}{10} \qquad \leftarrow n \times \frac{a}{b} = \frac{n \times a}{b}$$
$$= \frac{1470}{10} \qquad \leftarrow 35 \times 42 = 1470$$
$$= \frac{147}{1} \qquad \leftarrow \frac{1470}{10} = \frac{1470 \div 10}{10 \div 10}$$
$$= 147$$

$$\begin{array}{rl} 35 & / 10 \\ \times\ 42 & \\ \hline 70 & \\ +\ 1{,}400 & / 10 \\ \hline \frac{1{,}470}{10} & = 147 \end{array}$$

✔ **Check**: Problem Set problem #2a

M2 L11 Multiplication of Whole Number and Decimal Fraction with Hundredths

Goals:

- Build on **Lesson 10** to multiply whole number and decimal fraction with hundredths, and round to estimate product

  🔍 **Focus**: Concept Development problem #3

  ✔ **Check**: Problem Set problem #2b

M2 L12 Multiplication of Whole Number and Decimal Fraction with Hundredths (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 11

  🔍 **Focus**: Concept Development problems #4, #5, #6

  ✔ **Check**: Problem Set problems #1b, #2d

Topic D: Measurement Word Problems with Whole Number and Decimal Multiplication

M2 L13 Measurement Conversion from Larger to Smaller Unit

Goals:

- Build on **Lessons 10-11,** Module 1 **Lesson 11, and** Grade 4 **Module 7** to rename larger units as smaller units by multiplying

  🔍 **Focus**: Concept Development problem #3

$$
\begin{aligned}
& 56.75\ lb \\
&= how\ much\ in\ 56.75\ groups\ of\ 1\ lb \\
&= 56.75 \times (1\ lb) && \leftarrow \text{Fraction of number (Module 4)} \\
&= 56.75 \times (16\ oz) && \leftarrow \text{Grade 4 Module 7} \\
&= 908\ oz && \leftarrow \text{Lesson 11}
\end{aligned}
$$

  ✔ **Check**: Problem Set problems #1d & f

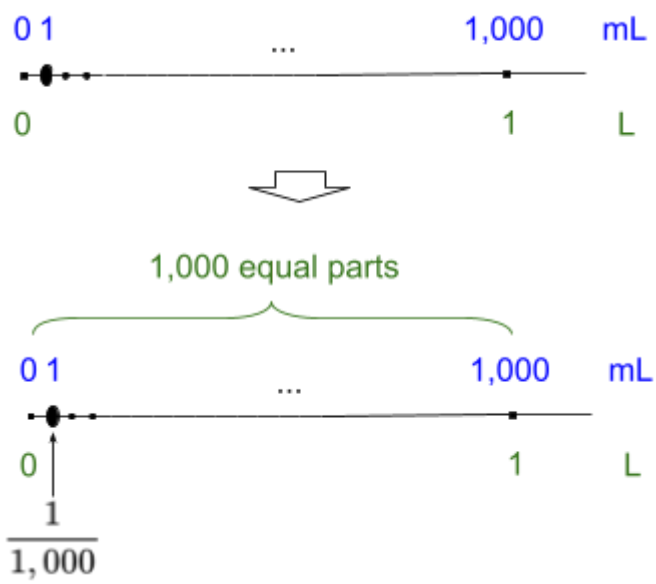
M2 L14 Measurement Conversion from Smaller to Larger Unit

Goals:

- Build on **Lesson 13,** Grade 4 **Module 5 Lessons 35-36 and Module 7** to rename smaller units as larger units by multiplying whole number and fraction
  - Example:

$$
\begin{aligned}
& 578\ mL \\
&= how\ much\ in\ 578\ groups\ of\ 1\ mL \\
&= 578 \times (1\ mL) \\
&= 578 \times \left(\frac{1}{1{,}000}\ L\right) \\
&= \frac{578 \times 1}{1{,}000}\ L && \leftarrow n \times \frac{a}{b} = \frac{n \times a}{b} \\
&= \frac{578}{1{,}000}\ L \\
&= 0.578\ L
\end{aligned}
$$

Suggestions: Use “double unit” number line to show relationship between units



Check: Problem Set problems #1c, #2b

M2 L15 Word Problems

Goals:

- Solve two-step word problems that involve measurement conversion with decimal or fraction

Focus: Concept Development (Problem Set) problems #2, #4

Topic E: Mental Strategies for Multi-Digit Whole Number Division

M2 L16 Dividing by Multiples of 10

Goals:

- Build on Module 1 **Lesson 1** to divide by multiples of 10

Focus: Concept Development problem #3

$24,000 \div 600$

$= \textit{how much in each group when } 24,000 \textit{ is divided into } 600 \textit{ groups}$

$= \textit{how much in each group when } 24,000 \textit{ is divided into } (100 \times 6) \textit{groups}$

$= \textit{how much in each final group when } 24,000 \textit{ is divided into } 100 \textit{ groups, then each group is divided into } 6 \textit{ groups}$

$= 24,000 \div 100 \div 6$

$= 240 \div 6$ ← Module 1 Lesson 1

$= 40$

Suggestions: Also show the following approach to preview Lessons 17-18

$24,000 \div 600 = ? \textit{ means}$

$? \times 600 = 24,000$ ← definition of division (Grade 4 Module 3)

$? \times 6 \times 100 = 240 \times 100$

$? \times 6 = 10 \times 24$

$? \times 6 = 10 \times 4 \times 6$

$? = 10 \times 4 = 40$

Check: Problem Set problem #2d

M2 L17 Estimating Quotients

Goals:

- Round divisor and then dividend to estimate quotient with three-digit dividend

Focus: Concept Development problem #2

"$149 \div 71 = ?$" $\textit{means}$ "$? \times 71 = 149$" ← definition of division (Grade 4 Module 3)

Estimate:

- Round divisor: $? \times 70 = 149$
- Round dividend: $? \times 7 \times 10 = 140$

  $? \times 7 \times 10 = 14 \times 10$

  $? \times 7 = 14$

$149 \div 71 \approx 2$

✓ **Check**: Problem Set problem #1e

M2 L18 Estimating Quotients (Continued)

Goals:

- Round divisor and then dividend to estimate quotient with four-digit dividend

Focus: Concept Development problem #2

"$2,691 \div 48 = \ ?$" *means* "$? \times 48 = 2,691$" ← definition of division

Estimate:

- Round divisor: $? \times 50 = 2,691$
- Round dividend: $? \times 5 \times 10 = 2,500$

  $? \times 5 \times 10 = 250 \qquad \times 10$

  $? \times 5 \qquad = 10 \times 5 \times 5$

$2,691 \div 48 \approx 50$

Check: Problem Set problem #1e

Topic F: Partial Quotients and Multi-Digit Whole Number Division

M2 L19 Division with Remainder: Multiples of 10 Divisors

Goals:

- Build on **Lessons 17-18 and** Grade 4 **Module 3 Topic E** (division with remainder) to do division with remainder with divisors that are multiples of 10

Focus: Concept Development problem #3

"572 ÷ 90" means "**Q** × 90 + R = 572" ← def of division with remainder

Estimate: **6** × 90 = 540 ≈ 572 ← Lesson 17

6 × 90 + R = 572

R = 572 - (**6** × 90) = 572 - 540 = 32

6 × 90 + 32 = 572, Quotient = **6**, Remainder = 32

```
      6
90 | 572
   - 540
      32
```

Check: Problem Set problem #1e

M2 L20 Division with Remainder: Two-Digit Divisors, Two-Digit Dividends

Goals:

- Build on **Lessons 17-19** to do division with remainder with two-digit divisors and use trial-and-error to make sure remainder is between 0 and divisor

Focus: Concept Development problem #3

"84 ÷ 23" means "**Q** × 23 + R = 84" ← def of division with remainder

Estimate: **4** × 20 = 80 ← Lesson 17

4 × 23 = 92 > 84, so "Quotient = **4**" is too big

3 × 23 + R = 84

R = 84 - (**3** × 23) = 84 - 69 = 15, which is between 0 and 23

3 × 23 + 15 = 84, Quotient = **3**, Remainder = 15

```
      3
23 | 8 4
   - 6 9
     1 5
```

✓ **Check**: Problem Set problem #1b

M2 L21 Division with Remainder: Two-Digit Divisors, Three-Digit Dividends

Goals:

- **Echo** Lesson 20 for three-digit dividends

Focus: Concept Development problem #4

"712 ÷ 94" means "**Q** × 94 + R = 712" ← def of division with remainder

Estimate: **7** × 100 = 700 ← Lesson 17

7 × 94 = 658 < 712, so "Quotient = **7**" is okay for now

7 × 94 + R = 712

R = 712 - (**7** × 94) = 712 - 658 = 54, which is between 0 and 94

7 × 94 + 54 = 712, Quotient = **7**, Remainder = 54

```
        7
94 | 7 1 2
   - 6 5 8
       5 4
```

✓ **Check**: Problem Set problem #1c

M2 L22 Division with Remainder: Two-Digit Quotients, Three-Digit Dividends

Goals:

- Build on **Lesson 21** to do division with remainder with two-digit quotients, starting with the highest place value (standard division algorithm)

Focus: Concept Development problems #1, #3

"590 ÷ 17" means "**Q** × 17 + R = 590"

Hundreds:

Can *5 hundreds* be divided into 17 groups without decomposing the hundreds into tens? No

```
17 | 5 9 0
```

Tens:

Can *59 tens* be divided into 17 groups without decomposing the tens into ones? Yes

```
17 | 5 9 0
```

Estimate: **?** × 20 = 60 tens

3 tens × 20 = 60 tens

3 tens × 17 = 51 tens < 59 tens

$$\begin{array}{r} \downarrow \\ 3\,0 \\ 17\overline{)590} \\ -\ 510 \\ \hline 80 \end{array}$$

3 tens × 17 + R_{tens} = 59 tens

R_{tens} = 59 tens - (**3 tens** × 17) = 59 tens - 51 tens = 8 tens

Can *8 tens* be divided into 17 groups without decomposing the tens into ones? No

Ones:

Q_{ones} × 17 + R_{ones} = 80

Estimate: **4** × 20 = 80

4 × 17 = 68 < 80

R_{ones} = 80 - (**4** × 17)

= 80 - 68

= 12, which is between 0 & 17

$$\begin{array}{r} \downarrow \\ 3\,4 \\ 17\overline{)590} \\ -\ 510 \\ \hline 80 \\ -\ 68 \\ \hline 12 \end{array}$$

(**3 tens** × 17) + (**4** × 17) + 12 = 590

34 × 17 + 12 = 590 ← distributive property

Quotient = **34**, Remainder = 12

✓ **Check**: Problem Set problem #1c

M2 L23 Division with Remainder: Two-Digit Quotients, Four-Digit Dividends

Goals:

- **Echo** Lesson 22 for four-digit dividends

Focus: Concept Development problems #2, #3

"6649 ÷ 63" means "**Q** × 63 + R = 6649"

Thousands:

Can *6 thousands* be divided into 63 groups without decomposing the thousands into hundreds? No

$$\begin{array}{r} \downarrow \\ 63\overline{)6649} \end{array}$$

Hundreds:

Can *66 hundreds* be divided into 63 groups without decomposing the hundreds into tens? Yes

$$\begin{array}{r} \downarrow \\ 1\,0\,0 \\ 63\overline{)6649} \\ -\ 6300 \\ \hline 349 \end{array}$$

1 hundred × 63 + $R_{hundreds}$ = 66 hundreds + 49

$R_{hundreds}$ = 66 hundreds + 4 tens + 9 ones - 63 hundreds

= 3 hundreds + 4 tens + 9 ones

Can *3 hundreds* be divided into 63 groups without decomposing the hundreds into tens? No

Tens:

Can *34 tens* be divided into 63 groups without decomposing the tens into ones? No

```
      1 0 0
63 | 6 6 4 9
   - 6 3 0 0
       3 4 9
```

Ones:

$Q_{ones} \times 63 + R_{ones} = 349$

Estimate: **5** × 60 = 300

5 × 63 = 315 < 349

R_{ones} = 349 - (**5** × 63) = 349 - 315 = 34

```
      1 0 5
63 | 6 6 4 9
   - 6 3 0 0
       3 4 9
     - 3 1 5
         3 4
```

(**1 hundred** × 63) + (**5** × 63) + 34 = 6649

105 × 63 + 34 = 6649 ← distributive property

Quotient = **105**, Remainder = 34

✓ **Check**: Problem Set problem #1c

Topic G: Partial Quotients and Multi-Digit Decimal Division

M2 L24

Dividing Decimals by Multiples of 10

Goals:

- **Echo** Lesson 16 for dividing decimals by multiples of 10

Focus: Concept Development problems #5, #6

$5.4 \div 90$

$= \textit{how much in each group when } 5.4 \textit{ is divided into } 90 \textit{ groups}$

$= \textit{how much in each group when } 5.4 \textit{ is divided into } (10 \times 9) \textit{groups}$

$= \textit{how much in each final group when } 5.4 \textit{ is divided into } 10 \textit{ groups, then each group is is divided into } 9 \textit{ groups}$

$= 5.4 \div 10 \div 9$

$= 0.54 \div 9$ ← Module 1 Lesson 1

$= 0.06$ ← Module 1 Lesson 13

✓ **Check**: Problem Set problem #1h

M2 L25 Estimating Quotients

Goals:

- Build on **Lessons 17-18 and 24** to estimate quotient when dividing decimal by two-digit divisor

Focus: Concept Development problems #2, #3

$63.6 \div 73$

Estimate:

- Round divisor: $63.6 \div 70$
- Round dividend: $63 \div 70$

$= 63 \div 10 \div 7$

$= 6.3 \div 7$

$= 0.9$

$63.6 \div 73 \approx 0.9$

Check: Problem Set problem #1b

M2 L26 Extension of the Standard Division Algorithm

Goals:

- Build on **Lessons 19-23 and 25** to extend the standard division algorithm and divide the remainder

Focus: Concept Development problem #1

```
     28
32 | 904
   -  64
     264
   - 256
       8
```

$"904 \div 32 = Q"\ means\ "Q \times 32 = 904"\ where\ Q\ may\ be\ a\ decimal$

$28 \times 32 + 8 = 904$ ← division with remainder

$28 \times 32 + 8 = \frac{9040}{10}$ ← $\frac{904}{1} = \frac{904 \times 10}{10}$

$28 \times 32 + 8 = 904.0$

```
     28.2
32 | 904.0
   -  64
     264
   - 256
       80
   -  64
       16
```

Tenths:

Can *80 tenths* be divided into 32 groups without decomposing the tenths into hundredths? Yes

Estimate: $8.0 \div 32$
$\approx 6.0 \div 30$
$= 0.2$ ← Lesson 25

$2\ tenths \times 32 + R_{tenths} = 80\ tenths$

$R_{tenths} = 80\ tenths - (2\ tenths \times 32) = 80\ tenths - 64\ tenths = 16\ tenths$

Can *16 tenths* be divided into 32 groups without decomposing the tenths into hundredths? No

```
      28.25
32 | 904.00
   -  64
      264
    - 256
         80
      -  64
         160
      - 160
           0
```

Hundredths:

Estimate: $1.60 \div 32$
$\approx 1.50 \div 30$
$= 0.05$ ← Lesson 25

$5\ hundredths \times 32 + R_{hundredths} = 160\ hundredths$

$R_{hundredths} = 160\ hundredths - (5\ hundredths \times 32)$
$= 160\ hundredths - 160\ hundredths$
$= 0$

$(28 \times 32) + (2\ tenths \times 32) + (5\ hundredths \times 32) = 904$

$28.25 \times 32 = 904$ ← distributive property

$904 \div 32 = 28.25$

- Build on **Lessons 19-23 and 25** to extend the standard division algorithm and divide decimals

Focus: Concept Development problem #3

"$834.6 \div 26 = Q$" *means* "$Q \times 26 = 834.6$"

$32 \times 26 + 2 = 834$ ← division with remainder

```
      32
26 | 834.6
   -  78
      54
    -  52
       2
```

$32 \times 26 + 2.6 = 834.6$

Tenths:

Can *26 tenths* be divided into 26 groups without decomposing the tenths into hundredths? Yes

$1\ tenth \times 26 + R_{tenths} = 26\ tenths$

```
      32.1
26 | 834.6
   -  78
      54
    -  52
        26
    -   26
           0
```

$$R_{tenths} = 26\ tenths\ -\ (1\ tenth \times 26)$$
$$= 26\ tenths\ -\ 26\ tenths$$
$$= 0$$

$(32 \times 26) + (1\ tenth \times 26) = 834.6$

$32.1 \times 26 = 834.6$ ← distributive property

$834.6 \div 26 = 32.1$

✓ **Check**: Problem Set problem #2a

M2 L27 Word Problems

Goals:

- Solve word problems that involve division of decimal by whole number using the extended standard division algorithm

  Focus: Concept Development problem #1

  Check: Problem Set problem #2

Topic H: Measurement Word Problems with Multi-Digit Division

M2 L28 Word Problems

Goals:

- Solve multi-step word problems that involve division of decimal by whole number using the extended standard division algorithm

  Focus: Concept Development (Problem Set) problem #2

M2 L29 Word Problems (Continued)

Goals:

- Solve multi-step measurement word problems that involve division of decimal by whole number using the extended standard division algorithm

  Focus: Concept Development (Problem Set) problem #1

  Suggestions: Save area problems (Problem Set problems #3, #4; Homework problems #3, #4, #5) for Module 5

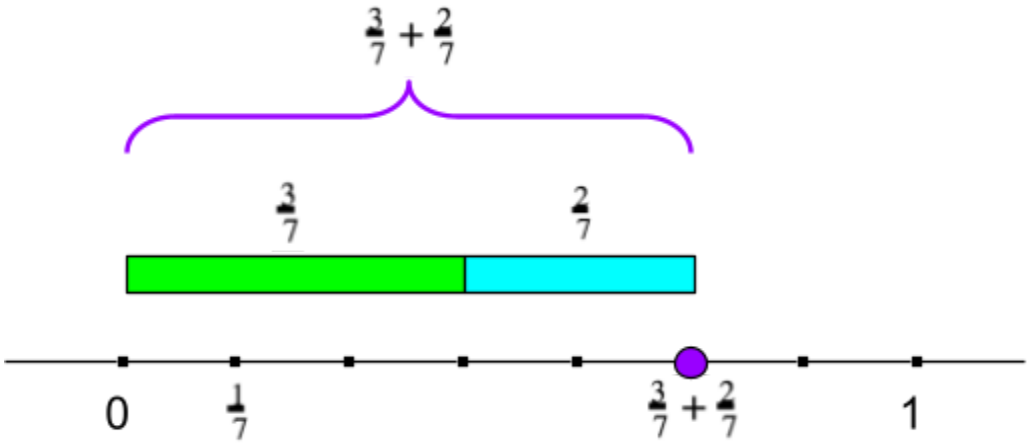
Module 3: Addition and Subtraction of Fractions

Definitions:

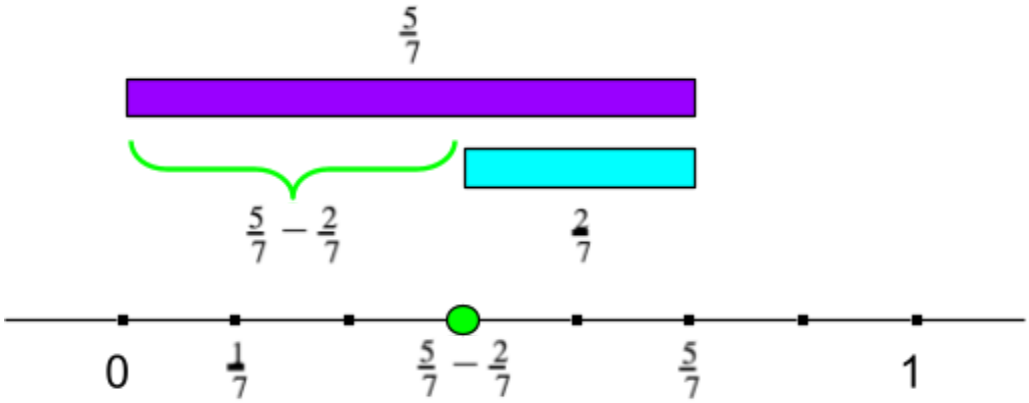
- **Equivalent** or **equal**, **greater than**, **less than** (Grade 3 Module 5):

Word	*Symbolic*	*Meaning (Definition)*
1 is equivalent or equal to $\frac{3}{3}$	$1 = \frac{3}{3}$	• Geometric: 1 and $\frac{3}{3}$ have SAME length (area, volume) • Number line:1 and $\frac{3}{3}$ are the SAME point
$\frac{3}{4}$ is greater than $\frac{1}{2}$	$\frac{3}{4} > \frac{1}{2}$	• Geometric: $\frac{3}{4}$ has MORE length (area, volume) than $\frac{1}{2}$ • Number line: $\frac{3}{4}$ is to the RIGHT of $\frac{1}{2}$
$\frac{4}{10}$ is less than $\frac{1}{2}$	$\frac{4}{10} < \frac{1}{2}$	• Geometric:$\frac{4}{10}$ has LESS length (area, volume) than $\frac{1}{2}$ • Number line: $\frac{4}{10}$ is to the LEFT of $\frac{1}{2}$

- **Addition of fractions** (Grade 4 Module 5):



- **Subtraction of fractions** (Grade 4 Module 5):



- **Mixed number** (Grade 4 Module 5): "$1\frac{3}{4}$" means "$1 + \frac{3}{4}$"
- **Multiplication of whole number and fraction**: "$2 \times \frac{3}{4}$" means "$\frac{3}{4} + \frac{3}{4}$" (2 copies of $\frac{3}{4}$)

Key Ideas:

- **Equivalent Fractions Theorem** (Grade 4 Module 5):
  - $\frac{a}{b} = \frac{a \times c}{b \times c}$
  - $\frac{a}{b} = \frac{a \div c}{b \div c}$ if a and b are multiples of c (or c is a factor of a and b)
- **Addition and subtraction of fractions**: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$, $\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$
- **Addition**: Because of the associative and commutative properties of addition, we can add numbers in *any order* and still keep the sum (total) the same
- **Subtraction**: We can subtract parts of the subtrahend in *any order* and from *any part* of the minuend (total) that is greater than or equal to the subtrahend part(s) and still keep the difference the same

Topic A: Equivalent Fractions

Cut/consolidate: Can consolidate Lessons 1-2 if students have strong foundation in Grade 4 fraction standards (4.NF.1, 4.NF.3-4)

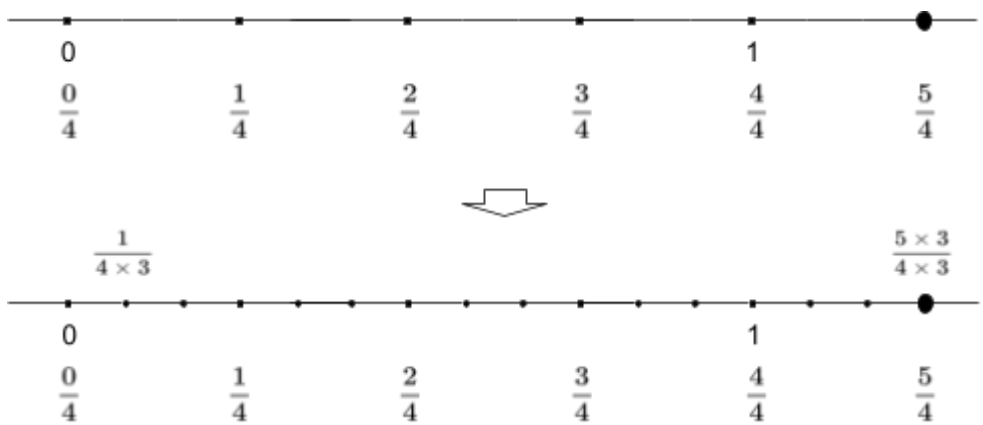
M3 L1 Equivalent Fractions Theorem

Goals:

- **Review/reinforce** definition of equivalent or equal numbers (fractions)
- Use number line (and area model) to show Equivalent Fractions Theorem (multiplication): $\frac{a}{b} = \frac{a \text{ groups of } c}{b \text{ groups of } c} = \frac{a \times c}{b \times c}$

Focus: Concept Development problem #4

$$\frac{5}{4} = \frac{5 \text{ groups of } 3}{4 \text{ groups of } 3} = \frac{5 \times 3}{4 \times 3} = \frac{15}{12}$$



Check: Problem Set problem #4

M3 L2 Adding Fractions with Same Denominator

Goals:

- **Review/reinforce** Grade 4 Module 5 Lessons 16 and 18: Add two or more fractions with same denominator

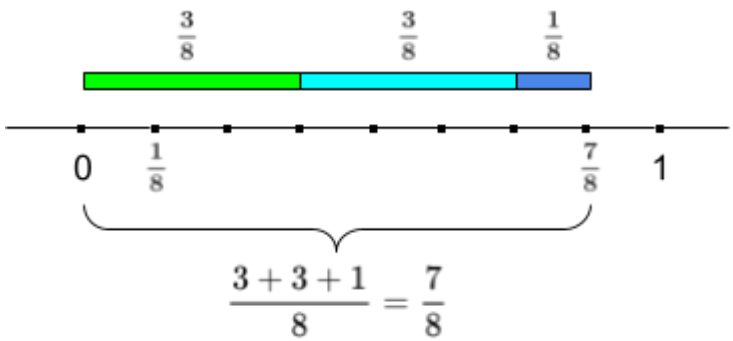
Focus: Concept Development problem #2

$$2 \times \frac{3}{8} + \frac{1}{8}$$

$$= \frac{3}{8} + \frac{3}{8} + \frac{1}{8} \qquad \leftarrow \text{definition of multiplication of whole number \& fraction}$$

$$= \frac{3+3+1}{8}$$

$= \frac{7}{8}$



✔ **Check**: Problem Set problem #1d

- ↻ **Review/reinforce** Grade 4 Module 5 Lesson 24: Write a fraction greater than 1 as a mixed number

  🔍 **Focus**: Concept Development problem #4

  $\frac{8}{5}$

  $= \frac{5+3}{5}$

  $= \frac{5}{5} + \frac{3}{5}$ 🔑 **Key Ideas**: $\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$

  $= 1 + \frac{3}{5}$

  $= 1\frac{3}{5}$ ← definition of mixed number

  ✔ **Check**: Problem Set problem #3c

Topic B: Making Like Units Pictorially

💡 **Suggestions**: Insert Lesson 9 between Lessons 4 and 5 to continue concept of adding fractions with different denominators

M3 L3 Adding Fractions: Sums Less Than 1

Goals:

- Use the Equivalent Fractions Theorem (multiplication) and addition of fractions to add fractions with different denominators

  🔍 **Focus**: Concept Development problems #2, #3

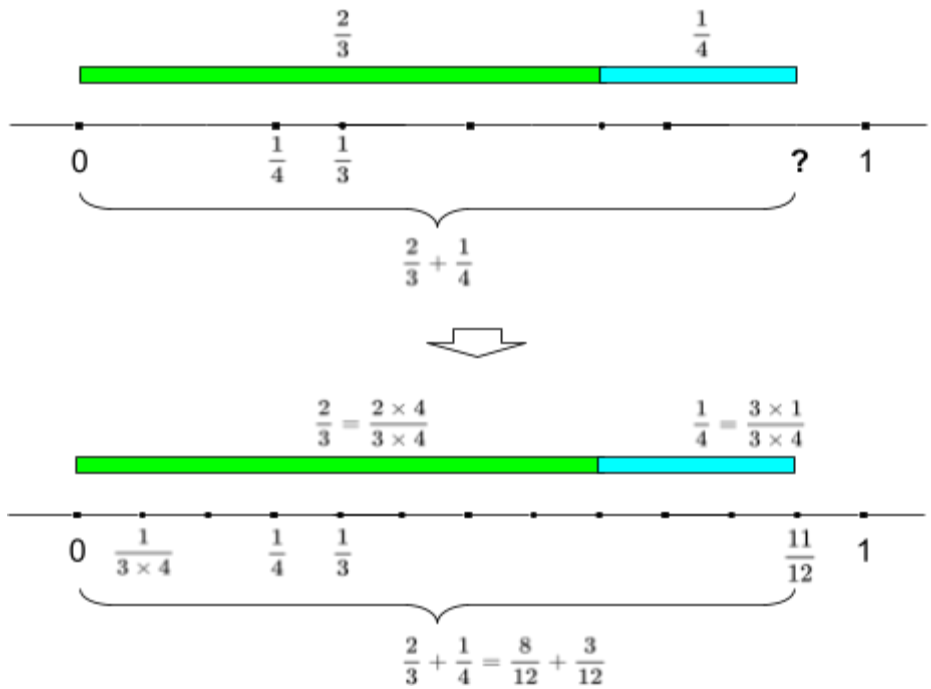
  $\frac{2}{3} + \frac{1}{4}$

  $= \frac{2\times4}{3\times4} + \frac{3\times1}{3\times4}$ 🔑 **Key Ideas**: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{8+3}{12}$

$= \frac{11}{12}$

Key Ideas: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$



Check: Problem Set problems #1d-e

M3 L4 Adding Fractions: Sums Between 1 and 2

Goals:

- Build on **Lessons 2-3** to find sums between 1 and 2

Focus: Concept Development problem #2

$\frac{4}{5} + \frac{1}{2}$

$= \frac{4\times2}{5\times2} + \frac{1\times5}{2\times5}$ Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{8+5}{10}$ Key Ideas: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

$= \frac{13}{10}$

$= 1\frac{3}{10}$ ← Lesson 2

Check: Problem Set problem #1b

M3 L5 Subtracting Fractions: Minuends Less Than 1

Goals:

- Use the Equivalent Fractions Theorem (multiplication) and subtraction of fractions to subtract fractions with different denominators

Focus: Concept Development problem #4

$\frac{1}{2} - \frac{2}{7}$

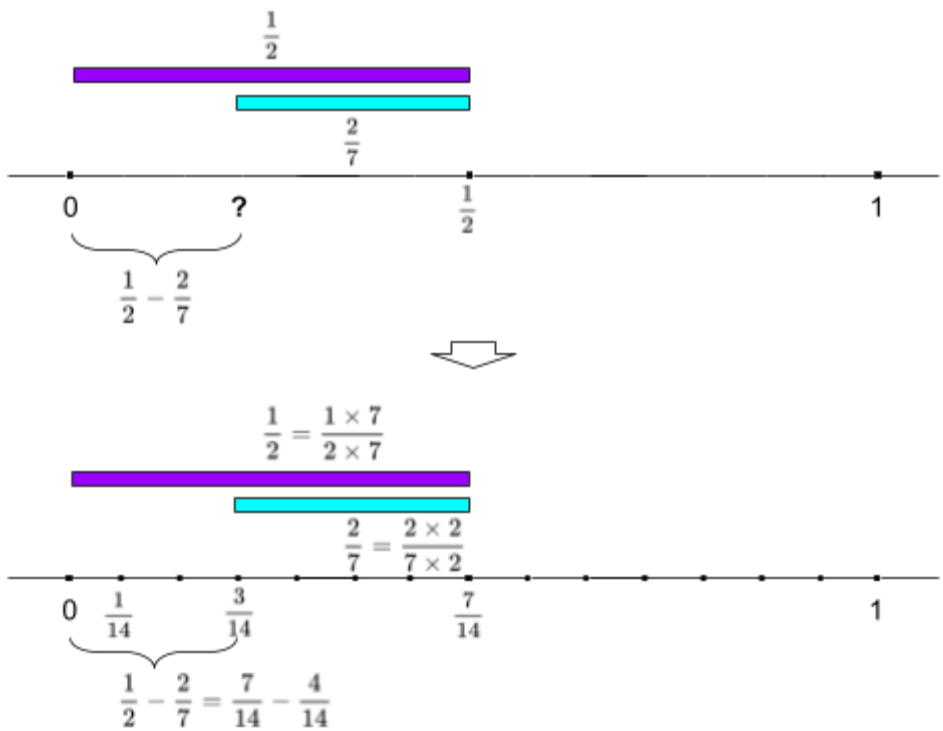
$= \frac{1\times7}{2\times7} - \frac{2\times2}{2\times7}$

$= \frac{7-4}{14}$

$= \frac{3}{14}$

Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

Key Ideas: $\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$



Check: Problem Set problem #1d

M3 L6 Subtracting Fractions: Minuends Between 1 and 2

Goals:

- Build on **Lesson 5 and** Grade 4 **Module 5 Lesson 32** (subtracting fraction from mixed number) to subtract from minuends between 1 and 2

Focus: Concept Development problem #4

- Method #1: Subtracting from any part of minuend

$1\frac{3}{4} - \frac{4}{5}$

$= 1 + \frac{3}{4} - \frac{4}{5}$ ← definition of mixed number

$= \frac{20}{20} + \frac{3\times5}{4\times5} - \frac{4\times4}{5\times4}$ Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{20}{20} + \frac{15}{20} - \frac{16}{20}$

$= \frac{15}{20} + \left(\frac{20}{20} - \frac{16}{20}\right)$ Key Ideas: Subtract from any part of the minuend

$= \frac{15}{20} + \frac{4}{20}$ Key Ideas: $\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$

$= \frac{19}{20}$ Key Ideas: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

- Method #2: Rewriting mixed number as fraction, then subtracting

$1\frac{3}{4} - \frac{4}{5}$

$= \frac{7}{4} - \frac{4}{5}$ ← Grade 4 Module 5 Lesson 25

$= \frac{7\times5}{4\times5} - \frac{4\times4}{5\times4}$ Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{35-16}{20}$ Key Ideas: $\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$

$= \frac{19}{20}$

Check: Problem Set problem #1d

M3 L7 Word Problems

Goals:

- Solve two-step word problems that involve addition and/or subtraction with 1

  Focus: Concept Development (Problem Set) problem #1
- Solve two-step word problems that involve addition with and/or subtraction from numbers greater than 1

  Focus: Concept Development (Problem Set) problem #4

Topic C: Making Like Units Numerically

M3 L8 Adding and Subtracting Mixed Numbers From Whole Numbers

Goals:

- Build on **Lesson 4** to add mixed numbers to whole numbers

  Focus: Concept Development problem #2

  $2\frac{3}{10} + 3$

$= 2 + \frac{3}{10} + 3$ ← definition of mixed number

$= (2 + 3) + \frac{3}{10}$ Key Ideas: Add in any order

$= 5 + \frac{3}{10}$

$= 5\frac{3}{10}$ ← definition of mixed number

Check: Problem Set problem #1e

- Build on **Lesson 6** to subtract mixed numbers from whole numbers

Focus: Concept Development problem #5

$3 - 1\frac{2}{3}$

$= 3 - \left(1 + \frac{2}{3}\right)$ ← definition of mixed number

$= (3 - 1) - \frac{2}{3}$ Key Ideas: Subtract subtrahend parts in any order

$= 2 - \frac{2}{3}$

$= 1 + \left(\frac{3}{3} - \frac{2}{3}\right)$ Key Ideas: Subtract from any part of the minuend

$= 1 + \frac{1}{3}$

$= 1\frac{1}{3}$ ← definition of mixed number

Check: Problem Set problem #1d

M3 L9 Adding Fractions with Different Denominators

Goals:

- Build on **Lessons 3-4** and Grade 4 **Module 5 Lesson 10** ("simplifying fractions") to add fractions with denominators that have a common factor

Focus: Concept Development problem #3

- Method #1: "Simplifying fraction" at the end

$\frac{5}{9} + \frac{5}{6}$

$= \frac{5\times6}{9\times6} + \frac{5\times9}{6\times9}$ Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{30+45}{54}$ Key Ideas: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

$= \frac{75}{54}$

$= \frac{25}{18}$ ← Grade 4 **Module 5 Lesson 10**: $\frac{75}{54} = \frac{75\div3}{54\div3}$

- Method #2: Finding smallest common denominator (least common multiple)

$\frac{5}{9} + \frac{5}{6}$

$= \frac{5\times2}{9\times2} + \frac{5\times3}{6\times3}$ Key Ideas: $\frac{a}{b} = \frac{a\times c}{b\times c}$

$= \frac{10+15}{18}$ Key Ideas: $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

$= \frac{25}{18}$

Check: Problem Set problem #1f

M3 L10 Adding Mixed Numbers

Goals:

- Build on **Lesson 8** to add mixed numbers

Focus: Concept Development problem #4

$3\frac{5}{7} + 6\frac{2}{3}$

$= 3 + \frac{15}{21} + 6 + \frac{14}{21}$

$= (3 + 6) + \left(\frac{15}{21} + \frac{14}{21}\right)$ Key Ideas: Add in any order

$= 9 + \frac{29}{21}$

$= 9 + 1 + \frac{8}{21}$ ← Lesson 2

$= 10\frac{8}{21}$

Check: Problem Set problem #1d

M3 L11 Subtracting from Mixed Numbers

Goals:

- Review/reinforce Lesson 6: Subtract fractions from mixed numbers

  Focus: Concept Development problem #3

  Check: Problem Set problem #1e
- Build on **Lesson 8** to subtract mixed numbers

  Focus: Concept Development problem #4

$3\frac{3}{5} - 2\frac{1}{2}$

$= 3 + \frac{6}{10} - 2 - \frac{5}{10}$

$= (3 - 2) + \left(\frac{6}{10} - \frac{5}{10}\right)$ Key Ideas: Subtract subtrahend parts in any order

$= 1 + \frac{1}{10}$

$= 1\frac{1}{10}$

✔ **Check**: Problem Set problem #1g

M3 L12 Subtracting Mixed Numbers (Continued)

Goals:

- Build on **Lesson 11 and** Grade 4 **Module 5 Lesson 33** (subtracting mixed numbers with same denominators) to subtract mixed numbers
  - Method 1: Subtracting subtrahend parts in any order

    $3\frac{1}{4} - 2\frac{1}{2}$

    $= 3 + \frac{1}{4} - 2 - \frac{2}{4}$

    $= (3 - 2) + \left(\frac{1}{4} - \frac{1}{4} - \frac{1}{4}\right)$

    $= 1 - \frac{1}{4}$ **Key Ideas**: Subtract subtrahend parts in any order

    $= \frac{4}{4} - \frac{1}{4}$

    $= \frac{3}{4}$
  - Method 2: Subtracting from any part of minuend

    $3\frac{1}{4} - 2\frac{1}{2}$

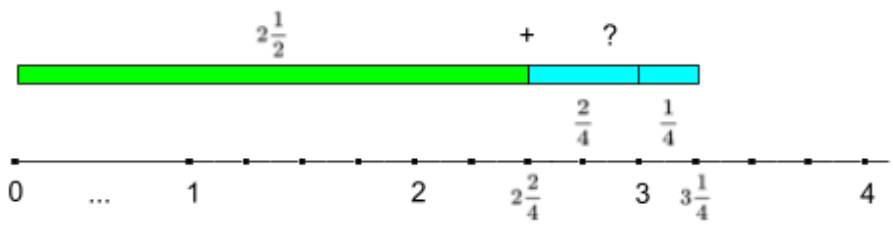
    $= 3 + \frac{1}{4} - 2 - \frac{2}{4}$

    $= 2 + \frac{4}{4} + \frac{1}{4} - 2 - \frac{2}{4}$

    $= (2 - 2) + \left(\frac{4}{4} + \frac{1}{4} - \frac{2}{4}\right)$ **Key Ideas**: Subtract from any part of the minuend

    $= \frac{3}{4}$
  - Method 3: "Counting up"

    "$3\frac{1}{4} - 2\frac{1}{2} = \ ?$" *means* "$2\frac{1}{2} + \ ? = 3\frac{1}{4}$"



✔ **Check**: Problem Set problem #1d

Topic D: Further Applications

M3 L13 Comparing Numerical Expressions

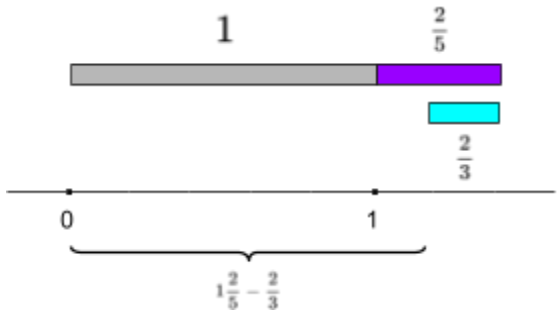
Goals:

- Compare a numerical expression to 1 or $\frac{1}{2}$ "to estimate mentally and assess the reasonableness of solutions" (5.NF.2)

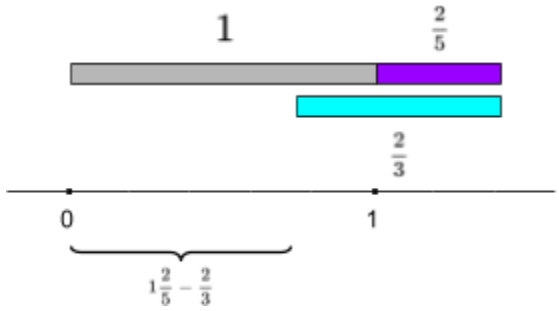
  Focus: Concept Development problems #2, #4

  $"Is\ 1\frac{2}{5} - \frac{2}{3}\ less\ than\ or\ greater\ than\ 1?"$

  - $1\frac{2}{5} - \frac{2}{3} = 1 + \frac{2}{5} - \frac{2}{3}$ (definition of mixed number)
    - If $\frac{2}{5}$ is a *longer* segment than $\frac{2}{3}$, then "$\frac{2}{5} - \frac{2}{3}$" will be *adding on to* 1 and the entire expression will be *greater than* 1



    - If $\frac{2}{5}$ is a *shorter* segment than $\frac{2}{3}$, then "$\frac{2}{5} - \frac{2}{3}$" will be *taking away from* 1 and the entire expression will be *less than* 1



  - Partitioning the unit segment (the unit or whole) into more parts makes the parts shorter (smaller), so $\frac{1}{5}$ is shorter than $\frac{1}{3}$ and, therefore, two copies of $\frac{1}{5}$ is *shorter than* two copies of $\frac{1}{3}$
  - $\frac{2}{5}$ is a *shorter* segment than $\frac{2}{3}$
  - "$\frac{2}{5} - \frac{2}{3}$" is *taking away from* 1
  - "$1\frac{2}{5} - \frac{2}{3}$" is shorter than 1

- $1\frac{2}{5} - \frac{2}{3} < 1$ (definition of less than)

Check: Problem Set problems #1c, #2a

Suggestions: Omit or use as "challenge" tasks Concept Development problems #7, #8, Problem Set problem #3, Homework problem #3 because comparing two mixed number expressions is not directly relevant to Grade 5 Standards

M3 L14 Adding and/or Subtracting Multiple Terms

Goals:

- Add and/or subtract to compose units (wholes)

Focus: Concept Development problem #3

$$2\frac{5}{6} - \frac{1}{3} + \frac{1}{6}$$
$$= 2 + \frac{5}{6} - \frac{1}{3} + \frac{1}{6}$$
$$= 2 + \left(\frac{5}{6} + \frac{1}{6}\right) - \frac{1}{3}$$
$$= 2 + 1 - \frac{1}{3}$$
$$= 2 + \frac{2}{3}$$
$$= 2\frac{2}{3}$$

Key Ideas: Add in any order

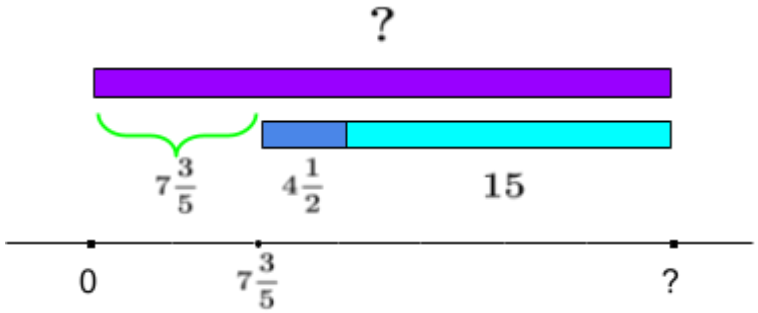
← Lesson 8

Check: Problem Set problem #1b

- Use definitions of addition of fractions and subtraction of fractions to rewrite equations and find an unknown term

Focus: Concept Development problem #5

"___ $- 15 - 4\frac{1}{2} = 7\frac{3}{5}$" means



$$___ = 7\frac{3}{5} + 15 + 4\frac{1}{2}$$
$$= 27\frac{1}{10}$$

← Lesson 10

Check: Problem Set problem #2b

M3 L15 Word Problems

Goals:

- Solve multi-step word problems that involve addition and subtraction of fractions

  Focus: Concept Development (Problem Set) problem #2

  Check: Problem Set problem #4

M3 L16 Fraction of Whole

Cut/consolidate: Omit lesson because it involves concepts from Module 4

Goals:

- Draw visual representations and solve word problems that involve “fraction of number” and the division interpretation of a fraction (Module 4)

Module 4: Multiplication and Division of Fractions and Decimal Fractions

Definitions:

- **Rounding to the nearest $\frac{1}{k}$**: to round a number n to the nearest $\frac{1}{k}$ means to replace n by the multiple of $\frac{1}{k}$ which is closest to n; if two multiples of $\frac{1}{k}$ (0, $\frac{1}{k}$, $\frac{2}{k}$, etc.) are equally close to n, the convention is to always choose the bigger number
- **Division of whole numbers (partitive interpretation)** (Grade 4 Module 3): "$a \div b$" means "the size of each group when a is divided into b equal groups"
  - "$a \div b = N$" means "$b \times N = a$"
- **Fraction of a number**: "$\frac{a}{b}$ of N" means "the number when N is partitioned into b equal parts (groups) and a parts (groups) are selected"
- **Multiplication by a fraction**: "$\frac{a}{b} \times N$" means "the number when N is partitioned into b equal parts (groups) and a parts (groups) are selected"
- **Division of whole number by unit fraction**:
  - Partitive interpretation:
    - The unknown size of each group when given the total and the number of equal groups (number of *parts* is known)
    - "$n \div \frac{1}{b} = Q$" means "$\frac{1}{b} \times Q = n$"
  - Measurement interpretation:
    - The unknown number of equal groups when given the total and the size of each group (how much to *measure* is known)
    - "$n \div \frac{1}{b} = Q$" means "$Q \times \frac{1}{b} = n$"
- **Division of unit fraction by whole number (partitive interpretation)**: "$\frac{1}{b} \div n$" means "the size of each group when $\frac{1}{b}$ is divided into n equal groups"
  - "$\frac{1}{b} \div n = Q$" means "$n \times Q = \frac{1}{b}$"

Key Ideas:

- **Division interpretation of a fraction**: $\frac{a}{b} = a \div b$
  - Reasoning:
    - Slides: Google Slides, Keynote, PowerPoint
    - Article: "Unpacking the Division Interpretation of a Fraction" *Teaching Children Mathematics* October 2015
      - 4th grade example includes methods used in Lesson 2
- **Equivalence of multiplication and "of"**: $\frac{a}{b} \times N = \frac{a}{b}$ of N

- Reasoning: " $\frac{a}{b}$ of N" and "$\frac{a}{b} \times N$" have the same meaning (definition)

- **Multiplication of fraction and whole number**: $\frac{a}{b} \times n = \frac{a \times n}{b}$
  - Reasoning:

    $\frac{a}{b} \times n$

    $= n \times \frac{a}{b}$ ← commutative property of multiplication

    $\frac{a}{b} \times n = n \times \frac{a}{b}$

    $= \frac{n \times a}{b}$ ← $n \times \frac{a}{b} = \frac{n \times a}{b}$

    $= \frac{a \times n}{b}$ ← commutative property of multiplication

    $m \times n = n \times m$

- **Product formula**: $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$
  - Reasoning: see Lesson 15

- **Multiplication with 1**: $\frac{a}{b} \times \frac{c}{c} = \frac{a}{b}$
  - Reasoning:

    $\frac{a}{b} \times \frac{c}{c}$

    $= \frac{a \times c}{b \times c}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

    $= \frac{a}{b}$ ← $\frac{a \times c}{b \times c} = \frac{a}{b}$

- **Scaling**:

If...	*then..*	*because...*
$\frac{a}{b} > 1$	$\frac{a}{b} \times N > N$	$\frac{a}{b} \times N$ means taking more than one copy of N
$\frac{a}{b} = 1$	$\frac{a}{b} \times N = N$	$\frac{a}{b} \times N$ means taking one copy of N
$\frac{a}{b} < 1$	$\frac{a}{b} \times N < N$	$\frac{a}{b} \times N$ means taking less than one copy of N

Topic A: Line Plots of Fraction Measurements

M4 L1 Measuring and Graphing Fraction Measurements

Goals:

- Generalize definition of rounding to the nearest tenth, hundredth (Module 1 Topic C) to rounding to the nearest $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ inch measurement
- ↻ **Review/reinforce** Grade 4 Module 5 Lessons 28 and 40: Make a line plot to display a data set of fraction measurements
- Observe that a smaller unit of measurement leads to
  - More precise measurement (closer to actual measurement)
    - Fractions allow us to be more precise with measurements
  - More spread-out line plot (in general)
    - Reasoning: there are more "choices" of values in each range (e.g., in the range of 1 to 2 inches, measuring to the nearest $\frac{1}{2}$ inch only gives us 3 choices of values $(1,\ 1\frac{1}{2},\ 2)$ whereas measuring to the nearest $\frac{1}{4}$ inch gives us 5 choices of values $(1,\ 1\frac{1}{4},\ 1\frac{2}{4},\ 1\frac{3}{4},\ 2)$)

✓ **Check**: Problem Set problems #5a & c

Topic B: Fractions as Division

M4 L2 Division Interpretation of a Fraction

Goals:

- Use definitions of division of whole numbers and fraction (Grade 4 Module 5) to conclude $1 \div b = \frac{1}{b}$

  🔍 **Focus**: Concept Development problem #1

  ✓ **Check**: Problem Set problem #1a
- Use definition of division of whole numbers to justify $a \div b = \frac{a}{b}$
  - Method 1: Concatenation of unit fractions
    - See "Method 1" in Google Slides

    🔍 **Focus**: Concept Development problem #1
  - Method 2: Equivalent fractions
    - See "Method 2" in Google Slides

Focus: Concept Development problem #2

- Method 3: Division with remainder (when $a > b$)

  Focus: Concept Development problem #3

  $5 \div 2$

  - By division with remainder, $2 \times 2 + 1 = 5$, meaning each of the 2 groups gets 2 wholes and there is a remainder of 1
  - By Concept Development problem #1 ($1 \div b = \frac{1}{b}$), $1 \div 2 = \frac{1}{2}$ so the remainder 1 gets divided into $\frac{1}{2}$ for each of the two groups
  - Therefore, each group gets $2 + \frac{1}{2} = 2\frac{1}{2} = \frac{5}{2}$
  - Thus, $5 \div 2 = \frac{5}{2}$

Check: Problem Set problems #1b-c

M4 L3 Division Interpretation of a Fraction (Continued)

Goals:

- Build on **Lesson 2** Method 3 division with remainder (when $a > b$) to
  - Observe that when the dividend is multiplied by a number k, then the quotient is multiplied by k: $(k \times a) \div b = k \times \frac{a}{b}$
    - Example: $(2 \times 4) \div 3 = 2 \times \frac{4}{3}$ because

      $(2 \times 4) \div 3$

      $= \frac{2\times4}{3}$

      $= 2 \times \frac{4}{3}$

      Key Ideas: $a \div b = \frac{a}{b}$

      $\leftarrow n \times \frac{a}{b} = \frac{n\times a}{b}$
  - Verify quotient with equivalent multiplication equation
    - Example: If $4 \div 3 = 1\frac{1}{3}$, then $3 \times 1\frac{1}{3}$ should equal 4

Focus: Concept Development problems #2, #3

Check: Problem Set problem #2

M4 L4 Word Problems

Goals:

- Solve word problems that involve the division interpretation of a fraction

Focus: Concept Development problems #2, #4

Check: Problem Set problems #3a, #4b

M4 L5 Word Problems (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 4
  - 🔍 **Focus**: Concept Development problems #2, #3
  - ✔ **Check**: Problem Set problem #7a

Topic C: Multiplication of a Whole Number by a Fraction

M4 L6 Fraction of a Number: Sets

Goals:

- Define "fraction of a number" and use sets (discrete objects) to conclude:
  - $\frac{1}{b}\ of\ n = n \div b$
    - Example: $\frac{1}{4}\ of\ 12 = 12 \div 4$ because
      $\frac{1}{4}\ of\ 12$
      $=$ the number when 12 is partitioned into 4 equal parts (groups) and 1 part (group) is selected
      $=$ the size of each group when 12 is divided into 4 equal groups
      $= 12 \div 4$
  - $\frac{a}{b}\ of\ n = a \times \left(\frac{1}{b}\ of\ n\right)$
    - Example: $\frac{3}{4}\ of\ 12 = 3 \times \left(\frac{1}{4}\ of\ 12\right)$ because
      $\frac{3}{4}\ of\ 12$
      $=$ the number when 12 is partitioned into 4 equal parts (groups) and 3 parts (groups) are selected
      $=$ 3 copies of 1 part when 12 is partitioned into 4 equal parts
      $= 3 \times \left(\frac{1}{4}\ of\ 12\right)$
  - 🔍 **Focus**: Concept Development problems #2, #4
  - ✔ **Check**: Problem Set problems #1b, #4

M4 L7 Fraction of a Number: Linear Diagrams

Goals:

- Build on **Lesson 6** to find fraction of a number when equal to a fraction by using number line or tape diagram

  Focus: Concept Development problem #3

  * Note: Must define multiplication by a fraction and address "$\frac{a}{b} \times n = \frac{a}{b}\ of\ n$" to do Problem Set and Homework

  Check: Problem Set problem #1h

- Use definition of "fraction of a number" and number line or tape diagram to find unknown total

  Focus: Concept Development problem #4

  Check: Problem Set problem #1j

M4 L8

Multiplication by a Fraction

Goals:

- Define multiplication by a fraction and verify the commutative property of multiplication $\frac{a}{b} \times n = n \times \frac{a}{b}$

  Focus: Concept Development problem #1

  $\frac{2}{3} \times 6 = 6 \times \frac{2}{3}$ because

  - $\frac{2}{3} \times 6 = \frac{2}{3}\ of\ 6 = 4$
  - $6 \times \frac{2}{3} = \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{6\times2}{3} = \frac{12}{3} = 4$

  Check: Problem Set problem #3b

- Use the commutative property of multiplication and $n \times \frac{a}{b} = \frac{n\times a}{b}$ to conclude $\frac{a}{b} \times n = \frac{a\times n}{b}$

  Focus: Concept Development problem #1

- Use $\frac{a}{b} \times n = \frac{a\times n}{b}$ and Equivalent Fractions Theorem to multiply (more efficiently)

  Focus: Concept Development problem #3

  $\frac{7}{6} \times 27$

  $= \frac{7\times27}{6}$ $\leftarrow \frac{a}{b} \times n = \frac{a\times n}{b}$

  $= \frac{7\times(27\div3)}{(6\div3)}$ $\leftarrow \frac{a\div c}{b\div c} = \frac{a}{b}$

  $= \frac{7\times9}{2}$

$= \frac{63}{2}$

✔ **Check**: Problem Set problem #4c

- Convert a fraction of a measurement from a larger unit to a smaller unit

🔍 **Focus**: Concept Development problem #4

$\frac{2}{3}\ hour$

$= \frac{2}{3}\ of\ 1\ hour$

$= \frac{2}{3}\ of\ 60\ minutes \quad \leftarrow 1\ hour\ =\ 60\ minutes$

$= \frac{2}{3} \times\ 60\ minutes \quad \leftarrow \frac{a}{b}\ of\ n = \frac{a}{b} \times n$

$= \frac{2\times60}{3}\ minutes \quad \leftarrow \frac{a}{b} \times n = \frac{a\times n}{b}$

$= \frac{2\times(60\div3)}{(3\div3)}\ minutes \quad \leftarrow \frac{a\div c}{b\div c} = \frac{a}{b}$

$= \frac{2\times20}{1}\ minutes$

$= 40\ minutes$

✔ **Check**: Problem Set problem #5c

M4 L9 Unit Conversions

Goals:

- ↻ **Review/reinforce** Lesson 8 Concept Development problem #4

  🔍 **Focus**: Concept Development problem #2

  ✔ **Check**: Problem Set problem #1c
- Solve word problems that involve unit conversion from a larger unit to a smaller unit

  🔍 **Focus**: Concept Development problem #3

  ✔ **Check**: Problem Set problem #2

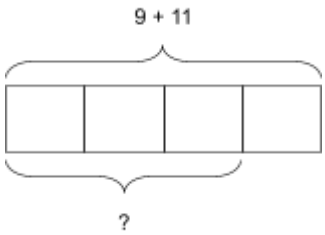
Topic D: Fraction Expressions and Word Problems

M4 L10 Equations and Expressions

Goals:

- Write and solve an equation given a visual (tape) diagram

  🔍 **Focus**: Concept Development problem #1a



- "9 + 11" is partitioned into 4 equal parts; when 3 parts are selected, the number is "?"
- $? = \frac{3}{4} \times (9 + 11)$ ← definition of multiplication by a fraction

  $= \frac{3 \times 20}{4}$ ← $\frac{a}{b} \times n = \frac{a \times n}{b}$

  $= \frac{3 \times (20 \div 4)}{(4 \div 4)}$ ← $\frac{a \div c}{b \div c} = \frac{a}{b}$

  $= \frac{3 \times 5}{1}$

  $= 15$

✔ **Check**: Problem Set problem #1

- Write and evaluate an expression from word form

  🔍 **Focus**: Concept Development problem #2

  "the product of 4 and 2, divided by 3"

  $= (4 \times 2) \div 3$

  $= \frac{4 \times 2}{3}$ ← Division interpretation of a fraction: $a \div b = \frac{a}{b}$

  $= \frac{8}{3}$

  * Note: Parentheses are not required because convention is to do multiplication, division left to right but parentheses make it clearer to do 4×2 first

  ✔ **Check**: Problem Set problems #2b-c

- Compare expressions in word and numerical forms

  🔍 **Focus**: Concept Development problem #4

  $\frac{1}{8}$ *the sum of* 6 *and* 14

  $= \frac{1}{8}$ *of* $(6 + 14)$

  $= (6 + 14) \div 8$ ← Lesson 6

  ✔ **Check**: Problem Set problem #4b

M4 L11 Word Problems

Goals:

- Solve word problems that involve multiplication and addition and/or subtraction with fractions

🔍 **Focus**: Concept Development (Problem Set) problem #2

- Create and solve word problems given an expression or visual (tape) diagram

🔍 **Focus**: Concept Development (Problem Set) problem #5

M4 L12 Word Problems (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 11

🔍 **Focus**: Concept Development (Problem Set) problems #2, #4

Topic E: Multiplication of a Fraction by a Fraction

💡 **Suggestions**: Use 1 by 1 unit square for area model instead of rectangular area model for consistency in dimensions ("1" horizontally is the same as "1" vertically) and consistency with area formula (area of $\frac{a}{b}$ by $\frac{c}{d}$ rectangle is $\frac{a}{b} \times \frac{c}{d}$, Module 5 Topic C)

M4 L13 Unit Fraction × Unit Fraction

Goals:

- Use definition of multiplication by a fraction and Equivalent Fractions Theorem to conclude $\frac{1}{b} \times \frac{1}{d} = \frac{1}{b \times d}$

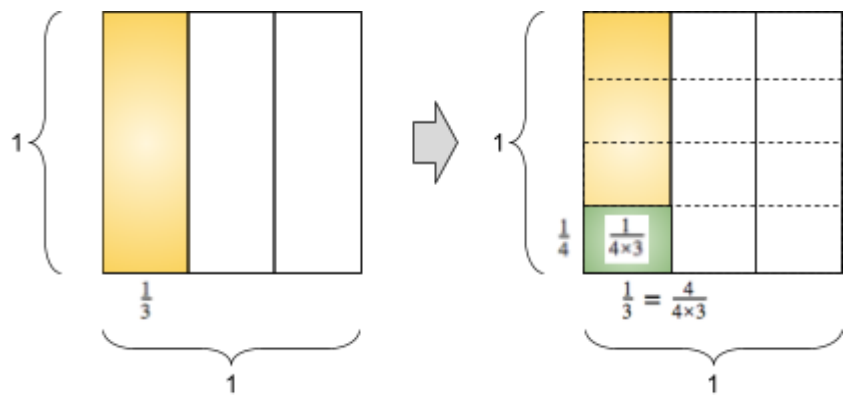
Focus: Concept Development problem #3

- Area model:

  $\frac{1}{4} \times \frac{1}{3}$

  $= \textit{the area when } \frac{1}{3} \textit{ is partitioned into 4 equal parts (areas) and 1 part is selected}$

  $= \frac{1}{4 \times 3}$

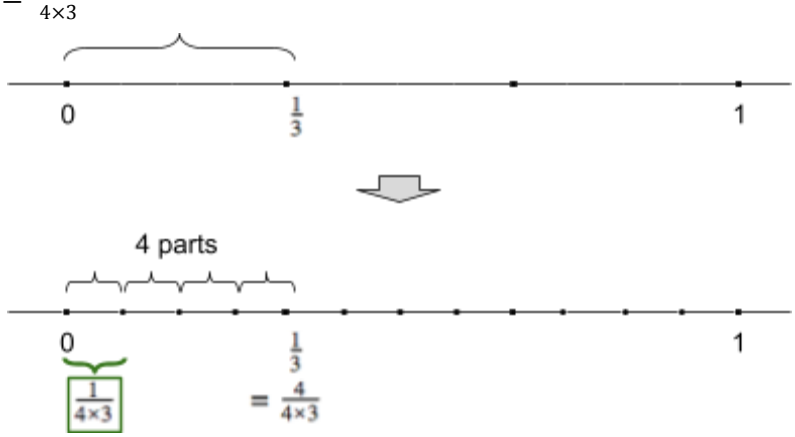


- Number line:

  $\frac{1}{4} \times \frac{1}{3}$

  $= \textit{the length when } \left[0, \frac{1}{3}\right] \textit{ is partitioned into 4 equal parts (lengths) and 1 part is selected}$

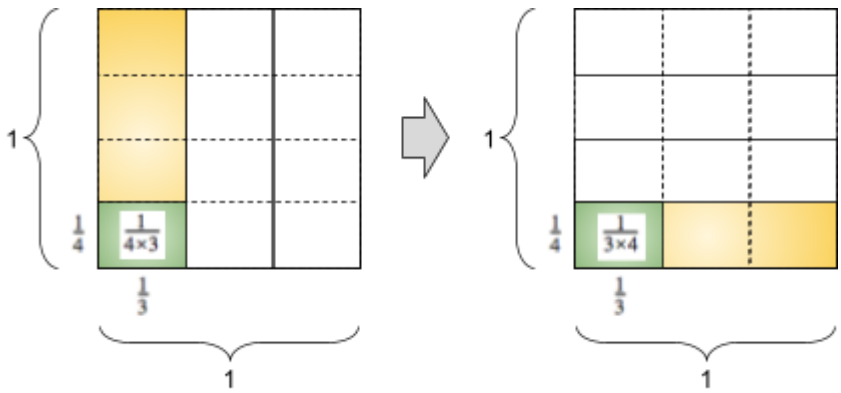
  $= \frac{1}{4 \times 3}$



Check: Problem Set problem #1e

- Use area model to verify commutative property of multiplication $\frac{1}{b} \times \frac{1}{d} = \frac{1}{d} \times \frac{1}{b}$

Focus: Concept Development problem #3



$\frac{1}{4} \times \frac{1}{3} \qquad = \frac{1}{4\times3} = \frac{1}{3\times4} = \qquad \frac{1}{3} \times \frac{1}{4}$

M4 L14 Unit Fraction × Fraction

Goals:

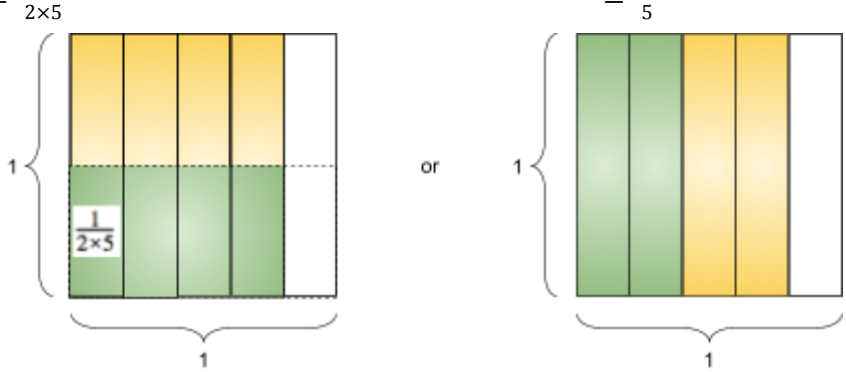
- Build on **Lesson 13** to find $\frac{1}{b} \times \frac{c}{d}$ when c is a multiple of b

Focus: Concept Development problem #3

$\frac{1}{2} \times \frac{4}{5}$

$= \textit{the area when } \frac{4}{5} \textit{ is partitioned into 2 equal parts (areas) and 1 part is selected}$

$= \frac{4}{2\times5} \qquad\qquad\qquad\qquad = \frac{2}{5}$



Check: Problem Set problem #3a

- Use definition of multiplication by a fraction and Equivalent Fractions Theorem to conclude $\frac{1}{b} \times \frac{c}{d} = \frac{c}{b\times d}$

Focus: Concept Development problem #4

✔ **Check**: Problem Set problem #1e

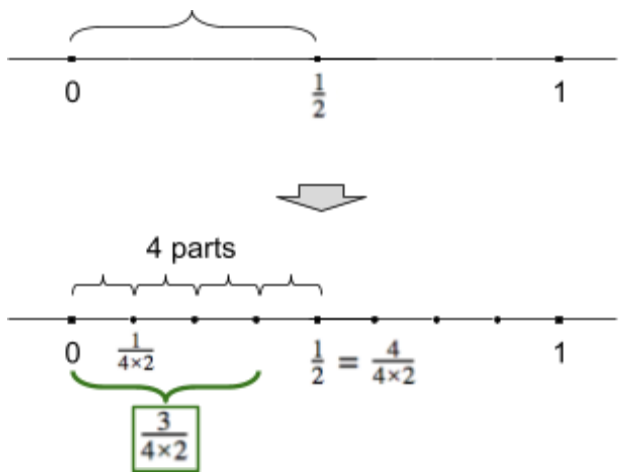
- Use definition of multiplication by a fraction and Equivalent Fractions Theorem to conclude $\frac{a}{b} \times \frac{1}{d} = \frac{a}{b \times d}$

🔍 **Focus**: Concept Development problem #5

$\frac{3}{4} \times \frac{1}{2}$

$= \textit{the length when } \left[0, \frac{1}{2}\right] \textit{ is partitioned into 4 equal parts (lengths) and 3 parts are selecte}$

$= \frac{3}{4 \times 2}$



✔ **Check**: Problem Set problem #1f

M4 L15 Fraction × Fraction

Goals:

- Build on **Lesson 14** to justify the product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

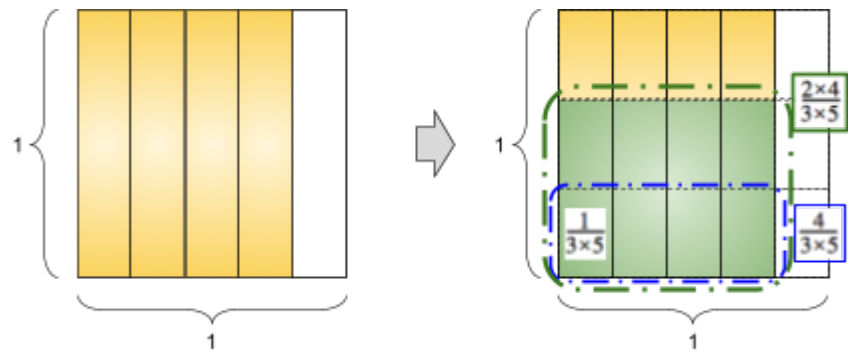
🔍 **Focus**: Concept Development problem #2 modified to $\frac{2}{3} \times \frac{4}{5}$

  - Area model:

    $\frac{2}{3} \times \frac{4}{5}$

    $= \textit{the area when } \frac{4}{5} \textit{ is partitioned into 3 equal parts (areas) and 2 parts are selected}$

    $= \frac{2 \times 4}{3 \times 5}$

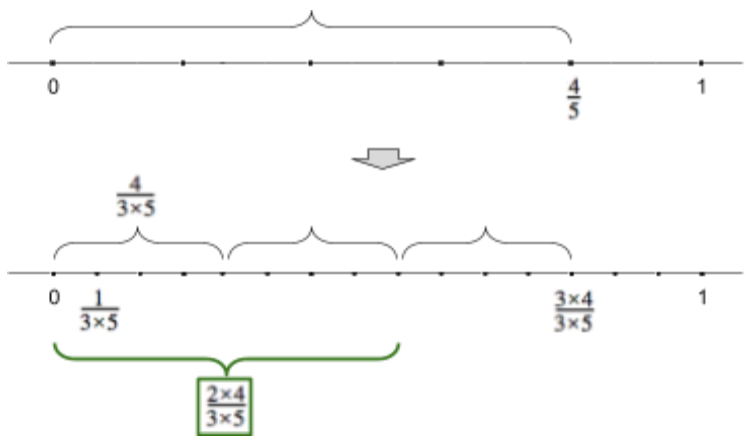


- Number line:

  $\frac{2}{3} \times \frac{4}{5}$

  $= \textit{the length when} \left[0, \frac{4}{5}\right] \textit{is partitioned into 3 equal parts (lengths) and 2 parts are selecte}$

  $= \frac{2\times4}{3\times5}$



✔ **Check**: Problem Set problem #1c

- Use the [product formula]() and [Equivalent Fractions Theorem]() to multiply and simplify fractions efficiently

🔍 **Focus**: Concept Development problem #3b

$\frac{3}{10} \times \frac{5}{9}$

$= \frac{3\times5}{10\times9}$ ← [product formula]() $\frac{a}{b} \times \frac{c}{d} = \frac{a\times c}{b\times d}$

$= \frac{(3\div3)\times(5\div5)}{(10\div5)\times(9\div3)}$ ← $\frac{a\div c}{b\div c} = \frac{a}{b}$

$= \frac{1}{2\times3}$

$= \frac{1}{6}$

✔ **Check**: Problem Set problem #2c

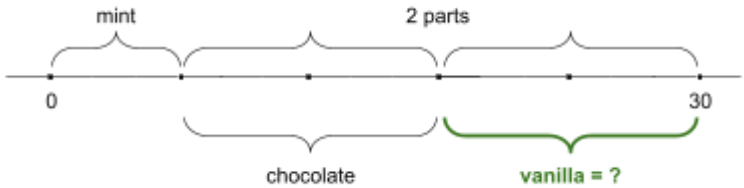
M4 L16

Word Problems

Goals:

- Solve multi-step word problems that involve multiplication of fractions

Focus: Concept Development problem #2



$$Number\ of\ vanilla$$

$$= \frac{1}{2} \times \left(\frac{4}{5} \times\ 30\right)$$

$$= \frac{4 \times 30}{2 \times 5} \qquad \leftarrow \text{product formula } \frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

$$= 2 \times 6 \qquad \leftarrow \frac{a \div c}{b \div c} = \frac{a}{b}$$

$$= 12$$

M4 L17 Decimal Multiplication

Goals:

- Use definition of decimal number and the product formula to multiply decimals

Focus: Concept Development problems #2b-c, #4c

0.07×0.2

$= \frac{7}{100} \times \frac{2}{10}$ ← definition of decimal number

$= \frac{7\times2}{100\times10}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a\times c}{b\times d}$

$= \frac{14}{1{,}000}$

$= 0.14$ ← definition of decimal number

Check: Problem Set problems #2f & h

M4 L18 Decimal Multiplication (Continued)

Goals:

- Build on **Lesson 17** to justify the standard algorithm for multiplying decimals

Focus: Concept Development problems #3a-b

0.31×1.4

$= \frac{31}{100} \times \frac{14}{10}$ ← definition of decimal number

$= \frac{31\times14}{100\times10}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a\times c}{b\times d}$

$= \frac{434}{1{,}000}$ ← 2 + 1 zeros means 2 + 1 decimal places

$= 0.434$

$$\begin{array}{r} 0.31 \\ \times\ 1.4 \\ \hline 124 \\ +\ 310 \\ \hline .434 \end{array}$$

Check: Problem Set problem #3c

M4 L19 Unit Conversions: Whole Number Measurement

Goals:

- Convert a whole number measurement from a smaller unit to a larger unit

Focus: Concept Development problems #3, #4

$15\ inches\ =\ __\ feet$

- Method 1: Symbolic

$15\ inches$

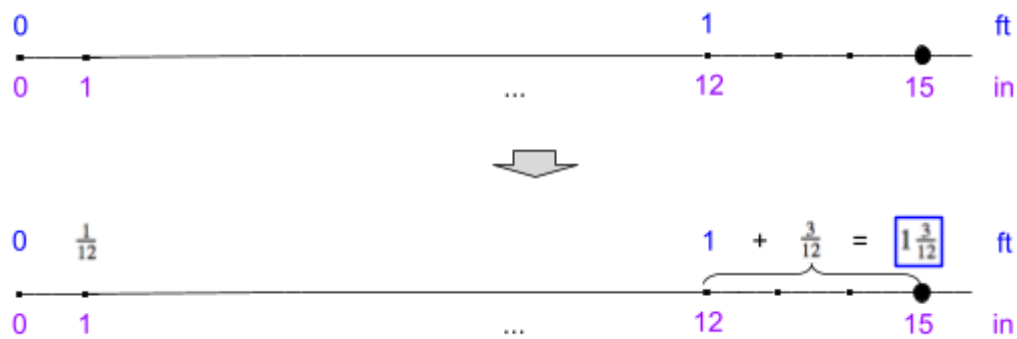
$= 15 \times 1\ inch$

$= 15 \times \frac{1}{12}\ feet$ ← $1\ inch = \frac{1}{12}\ feet$

$= \frac{15}{12}\ feet$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

$= \frac{5}{4}\ feet$ ← $\frac{a \div c}{b \div c} = \frac{a}{b}$

- Method 2: Visual (number line)



✔ **Check**: Problem Set problems #1c & f

M4 L20 Unit Conversions: Mixed Number Measurement

Goals:

- Build on **Lessons 8-9** to convert a mixed number measurement from a larger unit to a smaller unit

🔍 **Focus**: Concept Development problem #1

- Method 1: Rewriting mixed number as sum

$4\frac{1}{3}\ yd$

$= 4\frac{1}{3} \times 1\ yd$

$= 4\frac{1}{3} \times 3\ ft$ ←$1\ yard = 3\ feet$

$= \left(4 + \frac{1}{3}\right) \times 3\ ft$ ← definition of mixed number

$= (4 \times 3) + \left(\frac{1}{3} \times 3\right) ft$ ← distributive property

$= 13\ ft$

- Method 2: Rewriting mixed number as fraction

$4\frac{1}{3}\ yd$

$= 4\frac{1}{3} \times 1\ yd$

$= 4\frac{1}{3} \times 3\ ft$ ←$1\ yard = 3\ feet$

$= \left(\frac{13}{3}\right) \times 3\ ft$

$= \frac{13 \times 3}{3}\ ft$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

$= 13\ ft$ ← $\frac{a \div c}{b \div c} = \frac{a}{b}$

✔ **Check**: Problem Set problem #1e

- Build on **Lesson 19** to convert a mixed number measurement from a smaller unit to a larger unit

  🔍 **Focus**: Concept Development problem #2

  ✔ **Check**: Problem Set problem #1d
- Solve multi-step word problems that involve unit conversion

  🔍 **Focus**: Concept Development problem #3

  ✔ **Check**: Problem Set problem #3

Topic F: Multiplication with Fractions and Decimals as Scaling and Word Problems

M4 L21 Multiplication with 1; Fraction as Decimal

Goals:

- Use the product formula and Equivalent Fractions Theorem to justify $\frac{a}{b} \times \frac{c}{c} = \frac{a}{b}$

  🔍 **Focus**: Concept Development problem #1

  $\frac{2}{2} \times \frac{3}{4}$

  $= \frac{2\times3}{2\times4}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a\times c}{b\times d}$

  $= \frac{3}{4}$ ← $\frac{a\times c}{b\times c} = \frac{a}{b}$
- Express fraction as equivalent decimal number

  🔍 **Focus**: Concept Development problem #2

  $\frac{1}{4}$

  $= \frac{1\times25}{4\times25}$ ← $\frac{a\times c}{b\times c} = \frac{a}{b}$

  $= \frac{25}{100}$

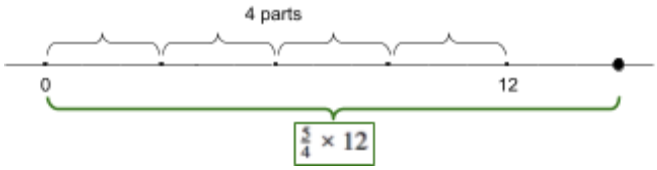
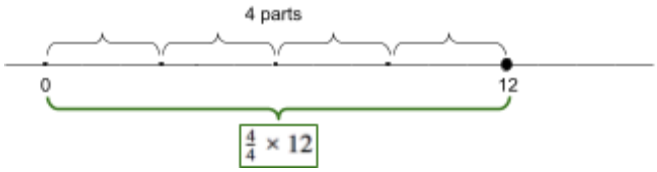
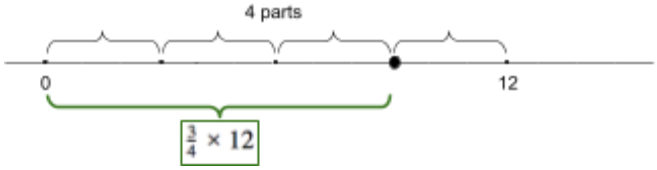
  $= 0.25$ ← definition of decimal number

  ✔ **Check**: Problem Set problems #2e & g

M4 L22 Scaling

Goals:

- Use definitions of multiplication by a fraction and equal, greater than, less than to conclude Scaling Key Ideas

Size of factor	*Size of product*	*Reasoning*
$\frac{5}{4} > 1$	$\frac{5}{4} \times 12 > 12$	$\frac{5}{4} \times 12$ is to the <u>right</u> of 12 
$\frac{4}{4} = 1$	$\frac{4}{4} \times 12 = 12$	$\frac{4}{4} \times 12$ is at the <u>same point</u> as 12 
$\frac{3}{4} < 1$	$\frac{3}{4} \times 12 < 12$	$\frac{3}{4} \times 12$ is to the <u>left</u> of 12 

Focus: Concept Development problems #1, #2

Check: Problem Set problems #3, #5

M4 L23 Scaling (Continued)

Goals:

- Extend Scaling Key Ideas to decimals and estimate extent of change based on how close the scaling factor is to 1 or 0

Focus: Concept Development problems #2, #3

Check: Problem Set problems #2, #3

M4 L24 Word Problems

Goals:

- Solve word problems that involve multiplication (and addition) with fractions or decimals

Focus: Concept Development (Problem Set) problem #2

Topic G: Division of Fractions and Decimal Fractions

M4 L25 Division of Whole Number by Unit Fraction

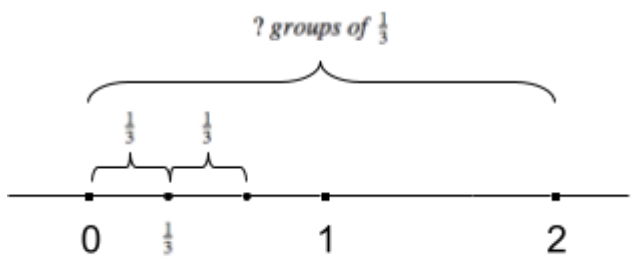
Goals:

- Define division of whole number by unit fraction (measurement interpretation) and find "$n \div \frac{1}{b} = Q$"

  Focus: Concept Development problem #1

  "Jenny buys 2 pounds of pecans. If she puts $\frac{1}{3}$ pound in each bag, how many bags can she make?"

  $Let\ ?\ =\ number\ of\ bags$



$$? \times \frac{1}{3} = 2$$
$$= \frac{2\times3}{3} \qquad \leftarrow \frac{a}{b} = \frac{a\times c}{b\times c}$$
$$= 6\ copies\ of\ \frac{1}{3}$$
$$= 6 \times \frac{1}{3}$$

$"2 \div \frac{1}{3} = \ ?"\ means\ "? \times \frac{1}{3} = 2",\ and\ because\ ? = 6,\ then\ 2 \div \frac{1}{3} = 6$

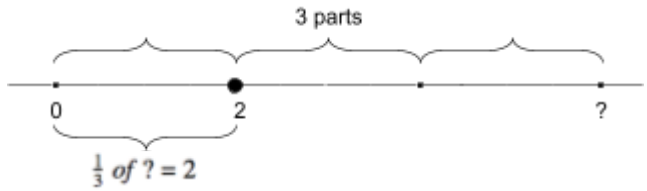
  Check: Problem Set problems #2c, #3

- Use the commutative property of multiplication $\frac{a}{b} \times n = n \times \frac{a}{b}$ to define division of whole number by unit fraction (partitive interpretation) and find "$n \div \frac{1}{b} = Q$"

  Focus: Concept Development problem #2

  "Jenny buys 2 pounds of pecans. If this is $\frac{1}{3}$ the number she needs to make pecan pies, how many pounds will she need?"

  $Let\ ?\ =\ number\ of\ pounds\ needed$



- Solution:

  $3\ parts \times 2 = ?$

  $6 = ?$

- Definition of division of whole number by unit fraction (partitive interpretation):
  - $\frac{1}{3} \times ? = 2$
  - $? \times \frac{1}{3} = 2$ by the commutative property of multiplication

    $\frac{a}{b} \times n = n \times \frac{a}{b}$
  - $2 \div \frac{1}{3} = ?$ by the division of whole number by unit fraction (measurement interpretation)
  - Therefore, "$2 \div \frac{1}{3} = ?$" $means$ "$\frac{1}{3} \times ? = 2$"(partitive interpretation)
- Conclusion:

  "$2 \div \frac{1}{3} = ?$" $means$ "$\frac{1}{3} \times ? = 2$", $and\ because\ ? = 6,\ then\ 2 \div \frac{1}{3} = 6$

✔ **Check**: Problem Set problem #5

M4 L26 Division of Unit Fraction by Whole Number

Goals:

- Define division of unit fraction by whole number (partitive interpretation) and find "$\frac{1}{b} \div n = Q$"

🔍 **Focus**: Concept Development problem #1

"Nolan gives $\frac{1}{2}$ pan of brownies to his 3 friends to share equally. How much of a pan of brownies will each friend receive?"

$Let\ ? = amount\ of\ pans\ of\ brownies\ for\ each\ friend$

$3 \times ? = \frac{1}{2}$ $\qquad$ $\frac{1}{3} \times \frac{1}{2} = ?$

"$\frac{1}{2} \div 3 = ?$" $means$ "$3 \times ? = \frac{1}{2}$", $and\ because\ ? = \frac{1}{6}\ (product\ formula),\ then\ \frac{1}{2} \div 3 =$

✔ **Check**: Problem Set problems #1b, #3

M4 L27 Word Problems

Goals:

- Solve word problems that involve division of whole number and unit fraction

Focus: Concept Development (Problem Set) problems #3a, #5a

M4 L28 Word Problems (Continued)

Goals:

- Create and solve word problems given an expression or visual (tape) diagram

Focus: Concept Development (Problem Set) problems #1, #3c

M4 L29 Division by a Unit Decimal

Goals:

- Extend definition of division of whole number by unit fraction (measurement interpretation) to division of decimal by unit decimal

Focus: Concept Development problem #3

"$7.4 \div 0.01 = n$" *means* "$n \times 0.01 = 7.4$"(how many 0.01 are in 7.4)

$n \times \frac{1}{100} = \frac{74}{10}$ ← definition of decimal number

$n \times \frac{1}{100} = \frac{740}{100}$ ← $\frac{a}{b} = \frac{a \times c}{b \times c}$

$\frac{n}{100} = \frac{740}{100}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

$n = 740$

Check: Problem Set problems #2b & d

M4 L30 Division of Decimals

Goals:

- Build on **Lesson 29** to divide decimals

Focus: Concept Development problem #2

"$1.6 \div 0.04 = n$" *means* "$n \times 0.04 = 1.6$"(how many 0.04 are in 1.6)

$n \times \frac{4}{100} = \frac{16}{10}$ ← definition of decimal number

$n \times \frac{4}{100} = \frac{160}{100}$ ← $\frac{a}{b} = \frac{a \times c}{b \times c}$

$\frac{n \times 4}{100} = \frac{160}{100}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

$n \times 4 = 160$

$n = 160 \div 4$
$= 40$

✓ **Check**: Problem Set problems #1d & e

M4 L31 Division of Decimals (Continued)

Goals:

- Build on **Lesson 30** to estimate and find quotient of decimals

🔍 **Focus**: Concept Development problem #1

"$34.8 \div 0.6 = n$" *means* "$n \times 0.6 = 34.8$"(how many 0.6 are in 34.8)

$n \times \frac{6}{10} = \frac{348}{10}$ ← definition of decimal number

$\frac{n \times 6}{10} = \frac{348}{10}$ ← product formula $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$

$n \times 6 = 348$

$n = 348 \div 6$

Estimate (using mental math): $n \approx 360 \div 6 = 60$

Exact (using division algorithm): $n = 58$

✓ **Check**: Problem Set problem #1b

Topic H: Interpretation of Numerical Expressions

M4 L32 Expressions

Goals:

- Build on **Lesson 10** to write and evaluate an expression from word form

  Focus: Concept Development problem #1

  Check: Problem Set problems #3a, #7a & c
- Write numerical expressions in word form

  Focus: Concept Development problem #2

  Check: Problem Set problems #5a-b

M4 L33 Word Problems

Goals:

- Solve word problems that involve multiplication and division of fractions or decimals

  Focus: Concept Development (Problem Set) problem #3
- Create and solve word problems given an expression or visual (tape) diagram

  Focus: Concept Development (Problem Set) problem #5

Module 5: Addition and Multiplication with Volume and Area

Definitions:

- **Volume**, **area**:

	Volume	**Area**
General meaning	amount of space that a three-dimensional figure takes up	amount of flat space that a shape takes up
To measure with specified unit	to count the number of units that fit 1. side by side (no overlap or extra space between) and 2. between all the sides of the object	
Standard method of measuring	measure area with **unit cube** (cube with side length 1 unit) **volume of unit cube** = 1 cubic unit "volume of object = *n* cubic units" means it takes *n* unit cubes to fill up the object	measure area with **unit square** (square with side length 1 unit) **area of unit square** = 1 square unit "area of object = *n* square units" means it takes *n* unit squares to fill or cover the object

- **Polygon**: a closed two-dimensional shape that
  - Consists of three or more points in the plane and the same number of segments
  - Is arranged so that the segments intersect only at their endpoints
  - Has no two adjacent segments that are collinear
- **Quadrilateral**: a polygon with four sides (four points and four segments)
- **Trapezoid**: a quadrilateral in which *at least one* pair of opposite sides is parallel
- **Parallelogram**: a quadrilateral in which *both* pairs of opposite sides are parallel
- **Rhombus**: a parallelogram with four equal sides
- **Rectangle**: a parallelogram with four right angles
- **Square**: a parallelogram with four equal sides and four right angles (rhombus and rectangle)
- **Kite**: a quadrilateral with two pairs of equal adjacent sides

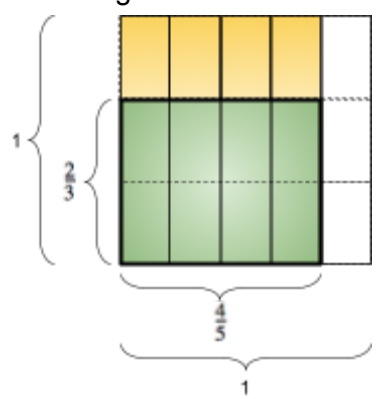
Key Ideas:

- **Volume of rectangular prism**:
  - **Formula**: volume of rectangular prism = (length of side 1) × (length of side 2) × (height)

- Reasoning:
  Volume of right rectangular prism
  = (number of cubes in base layer) × (number of layers)
  = (base area) × (height)
  = (length of side 1) × (length of side 2) × (height)

- **Volume as additive**: decompose a figure into smaller non-overlapping right rectangular prisms and add the volumes of the parts to find the volume of the whole figure

- **Cubic centimeter and milliliter**: $1\ cm^{3} = 1\ mL$
- **Area of rectangle** (with fraction or mixed number side lengths):
  - **Formula**: area of rectangle = (length of side 1) × (length of side 2)
    - Reasoning:



Area of $\frac{2}{3}$ by $\frac{4}{5}$ rectangle
$= \frac{2}{3}\ of\ \frac{4}{5}$ (of the unit square)
$= \frac{2}{3} \times \frac{4}{5}$

  - **Area as additive** (Grade 3 Module 4): decompose a rectilinear figure into smaller non-overlapping rectangles and add the areas of the parts to find the area of the whole rectilinear figure

Topic A: Concepts of Volume

M5 L1 Building Solids with Unit Cubes

Cut/consolidate: Can consolidate Lesson 1's Concept Development problem #2 with Lesson 2's Concept Development problem #1b

Goals:

- Define volume and cubic unit; find volume of solid figures built with unit cubes

  Focus: Concept Development problem #2

  Check: Problem Set problem #1B
- Draw figures made of cubes on isometric dot paper

  Focus: Concept Development problem #3

  Check: Problem Set problem #2b

M5 L2 Filling Right Rectangular Prisms with Unit Cubes

Goals:

- Form a right rectangular prism from a net copied onto grid paper and find its volume by counting the number of unit cubes that fit inside

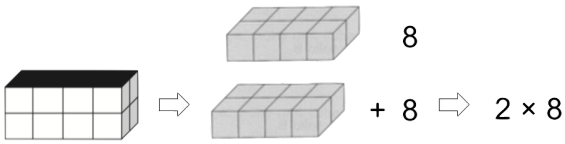
  Focus: Concept Development (Problem Set) problem #1b

  Check: Problem Set problem #2c

M5 L3 Layering Right Rectangular Prisms

Goals:

- Find the volume of a right rectangular prism by decomposing it into (congruent) layers and adding volumes of the layers



Volume of right rectangular prism = (number of layers) × (volume of a layer)

Check: Problem Set problem #1b

Topic B: Volume and the Operations of Multiplication and Addition

M5 L4 Volume of Right Rectangular Prism Formula

Goals:

- Build on **Lesson 3** to develop the formula for the volume of a right rectangular prism:
  - **Volume of base layer**
    = number of unit cubes in base layer ← definition of volume
    = number of unit squares in base
    = area of base ← definition of area
  - **Volume of right rectangular prism**
    = (volume of base layer) × (number of layers) ← **Lesson 3**
    = (base area) × (number of layers)
    = (base area) × (height)
    = (length of side 1) × (length of side 2) × (height) ← area of rectangle formula

✔ **Check**: Problem Set problems #1b, #2b, #3a

M5 L5 Cubic Centimeter and Milliliter

Goals:

- Observe that $1\ cm^3 = 1\ mL$ by
  - Measuring the volume of a container in cubic centimeters (by counting centimeter cubes, or measuring and multiplying dimensions) and milliliters (by filling with liquid/beans/rice and then measuring liquid/beans/rice with measuring jar/pitcher), and then seeing the measurement values are equal
  - Filling measuring jar/pitcher to X mL, dropping in Y cm cubes, and then seeing liquid level rise by Y mL

  🔍 **Focus**: Concept Development problem #1 (Problem Set problems #1 - #4)

- Use $1\ cm^3 = 1\ mL$ to calculate volume of right rectangular prism in cubic centimeters and milliliters or liters

  🔍 **Focus**: Concept Development problem #3

  ✔ **Check**: Problem Set problem #6

M5 L6 Non-Overlapping Right Rectangular Prisms

Goals:

- Use volume as additive to find the volume of a figure composed of two non-overlapping right rectangular prisms

🔍 **Focus**: Concept Development problem #4

✔ **Check**: Problem Set problem #1b

- Use volume as additive to solve real-word problems (5.MD.5c)

🔍 **Focus**: Concept Development problem #5

✔ **Check**: Problem Set problem #4

M5 L7 Word Problems

Goals:

- Solve word problems that involve finding the volume of right rectangular prisms

🔍 **Focus**: Concept Development (Problem Set) problems #2, #4

M5 L8 Sculpture Project

Goals:

- ↻ **Review/reinforce** Lessons 4, 6-7

M5 L9 Sculpture Project (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 4, 6-7

Topic C: Area of Rectangular Figures with Fractional Side Lengths

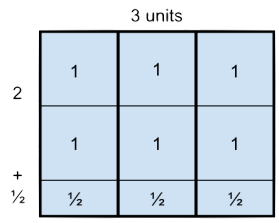
🔗 **Resources**: Large Grid Paper Template for drawing rectangles

M5 L10 Whole Number Side Length by Mixed Number or Fractional Side Length

Goals:

- Develop the formula for the area of a rectangle with a whole number side length and a mixed number or fractional side length

🔍 **Focus**: Concept Development (Problem Set) problems #2 (Rectangle B), #5 (Rectangle E)



$Area\ of\ 3\ by\ 2\frac{1}{2}\ rectangle$

$= (column\ 1's\ area) + (column\ 2's\ area) + (column\ 3's\ area)$ ← Area as additive

$= \left(2 + \frac{1}{2}\right) + \left(2 + \frac{1}{2}\right) + \left(2 + \frac{1}{2}\right)$ ← definition of area

$= \left(2\frac{1}{2}\right) + \left(2\frac{1}{2}\right) + \left(2\frac{1}{2}\right)$ ← definition of mixed number

$= 3 \times 2\frac{1}{2}$ ← definition of multiplication of whole number and fraction

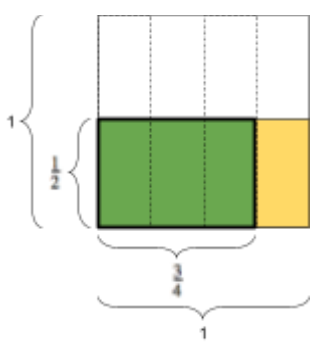
✔ **Check**: Problem Set problem #4 (Rectangle D)

M5 L11 Mixed Number or Fractional Side Lengths

Goals:

- Build on **Lesson 10** to develop the formula for the area of a rectangle with mixed number side lengths or fractional side lengths

🔍 **Focus**: Concept Development (Problem Set) problems #3 (Rectangle C), #4 (Rectangle D), $2\frac{3}{4}$ by $3\frac{1}{2}$ rectangle



$Area\ of\ \frac{3}{4}\ by\ \frac{1}{2}\ rectangle$

$= \frac{3}{4}\ of\ \frac{1}{2}\ (of\ the\ unit\ square)$

$= \frac{3}{4} \times \frac{1}{2}$

✔ **Check**: Problem Set problem #2 (Rectangle B)

💡 **Suggestions**:

- Do Rectangle D ($\frac{3}{4}\ by\ \frac{1}{2}$) first because finding the area of a rectangle with mixed number side lengths requires finding the area of a rectangle with fractional side lengths
- Include a rectangle with dimensions $2\frac{3}{4}\ by\ 3\frac{1}{2}$ to prepare for Homework (mixed numbers with *different* fractions)

M5 L12 Decomposition into Smaller Rectangles

Goals:

- Use a ruler to measure the side lengths of a rectangle and decompose into smaller rectangles to find area

  Focus: Concept Development (Problem Set) problems #1a & b

  Check: Problem Set problem #1d
- Sketch a rectangle with given dimensions and decompose into smaller rectangles to find area

  Check: Problem Set problem #2c

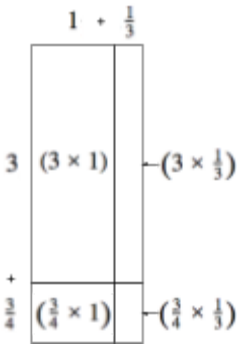
M5 L13 Distributive Property and the Area Model

Goals:

- Build on **Lesson 12** to relate the distributive property to the areas of a decomposed rectangle with mixed number side lengths

  Focus: Concept Development problem #1

$$\begin{aligned}
&\textit{Area of } 3\tfrac{3}{4} \textit{ by } 1\tfrac{1}{3} \textit{ rectangle}\\
&= 3\tfrac{3}{4} \times 1\tfrac{1}{3}\\
&= \left(3 + \tfrac{3}{4}\right) \times \left(1 + \tfrac{1}{3}\right)\\
&= 3 \times \left(1 + \tfrac{1}{3}\right) + \tfrac{3}{4} \times \left(1 + \tfrac{1}{3}\right)\\
&= (3 \times 1) + \left(3 \times \tfrac{1}{3}\right) + \left(\tfrac{3}{4} \times 1\right) + \left(\tfrac{3}{4} \times \tfrac{1}{3}\right)
\end{aligned}$$



  Check: Problem Set problem #1c

M5 L14 Word Problems

Cut/consolidate: Can consolidate with Lesson 15

Goals:

- Solve word problems that involve finding areas of figures composed of rectangles with fractional side lengths

  Focus: Concept Development (Problem Set) problems #1, #2

M5 L15 Word Problems (Continued)

Goals:

- Solve word problems that involve finding areas of figures composed of rectangles with fractional side lengths

  Focus: Concept Development (Problem Set) problems #1, #2

Topic D: Drawing, Analysis, and Classification of Two-Dimensional Shapes

M5 L16 Trapezoids

Goals:

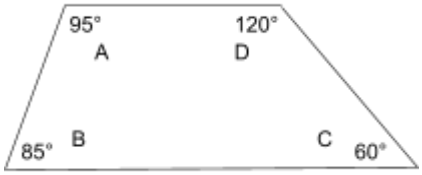
- Sort polygons based on definitions and attributes

  Focus: Concept Development problem #1
- Construct a trapezoid with a straightedge (ruler) and right angle template

  Focus: Concept Development problem #2

  Check: Problem Set problem #1b
- Measure a trapezoid's interior angles and observe that interior angles sharing the same non-parallel side add up to 180°

  Focus: Concept Development problem #2



m∠A + m∠B = 180°; m∠C + m∠D =180°

Check: Problem Set problem #2

M5 L17 Parallelograms

Goals:

- Construct a parallelogram with a straightedge (ruler) and right angle template

  Check: Problem Set problem #1b
- Measure a parallelogram's interior angles, sides, and diagonals, and observe the following properties of a parallelogram:
  - Opposite sides have equal length

- Interior angles sharing the same side add up to 180°
- Opposite angles have equal measure
- Diagonals bisect each other (cut each other into two equal parts)

✓ **Check**: Problem Set problems #2, #3

M5 L18 Rectangles and Rhombuses

Goals:

- Construct a rhombus with a ruler and right angle template (construct a parallelogram with four equal sides), measure the angles formed by the intersecting diagonals, and observe the following properties of a rhombus:
  - All of the properties of a parallelogram (**Lesson 17**):
    - Opposite sides have equal length
    - Interior angles sharing the same side add up to 180°
    - Opposite angles have equal measure
    - Diagonals bisect each other (cut each other into two equal parts)
  - Diagonals form 90° angles (so diagonals are perpendicular bisectors)

  🔍 **Focus**: Concept Development problem #1

  ✓ **Check**: Problem Set problem #3
- Construct a rectangle with a straightedge (ruler) and right angle template (construct a parallelogram with four right angles), measure the diagonals, and observe the following properties of a rectangle:
  - All of the properties of a parallelogram (**Lesson 17**):
    - Opposite sides have equal length
    - Interior angles sharing the same side add up to 180°
    - Opposite angles have equal measure
    - Diagonals bisect each other (cut each other into two equal parts)
  - Diagonals have equal length

  🔍 **Focus**: Concept Development problem #2

  ✓ **Check**: Problem Set problem #3

M5 L19 Kites and Squares

🔗 **Resources**: Correct Hierarchy of Quadrilaterals; Lesson 19 Templates 1-2 have errors in relating kites to trapezoids and parallelograms (the only time a kite can be a trapezoid or parallelogram is when it is a rhombus) and in relating squares, rhombuses, and rectangles (the only time rhombuses and rectangles can intersect is in the square)

Goals:

- Construct a square with a ruler and right angle template (construct a parallelogram with four equal sides and right angles), measure the angles and segments formed by the intersecting diagonals, and observe the following properties of a square:
  - All of the properties of a parallelogram (**Lesson 17**):
    - Opposite sides have equal length
    - Interior angles sharing the same side add up to 180°
    - Opposite angles have equal measure
    - Diagonals bisect each other (cut each other into two equal parts)
  - Additional properties of a rhombus (**Lesson 18**): Diagonals form 90° angles (so diagonals are perpendicular bisectors)
  - Additional properties of a rectangle (**Lesson 18**): Diagonals have equal length

  Focus: Concept Development problem #1

  Check: Problem Set problem #3a
- Construct a kite with a ruler, measure the interior angles and the angles and segments formed by the intersecting diagonals, and observe the following properties of a kite:
  - One pair of opposite angles have equal measure
  - One of the diagonals bisects both opposite angles and bisects the other diagonal
  - Diagonals form 90° angles (diagonals are perpendicular)

  Focus: Concept Development problem #2

  Check: Problem Set problems #1d, #2

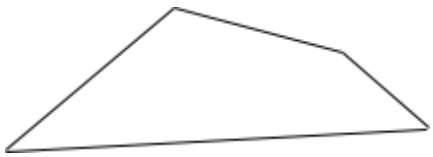
M5 L20 Classification of Quadrilaterals

Goals:

- Build on **Lessons 16-19** to justify a statement is true or false by using definitions or properties (and counter-examples where appropriate)

  Focus: Concept Development Part 1

  "Quadrilaterals are always trapezoids."
  False because the figure below is a quadrilateral (four sides) but not trapezoid (at least one pair of parallel sides).



  Check: Problem Set problems #1c-d

Suggestions: Use Correct Hierarchy of Quadrilaterals as a supporting tool

- Use definitions, properties, and given measurements to find unknown length and angle measurements

  Check: Problem Set problem #2b

M5 L21 Classification of Quadrilaterals (Continued)

Goals:

- Draw and classify quadrilaterals based on given attributes

Suggestions: Use Correct Hierarchy of Quadrilaterals as a supporting tool

Module 6: Problem Solving with the Coordinate Plane

Definitions:

- **Coordinate system in the plane**: associating to each point of the plane a unique ordered pair of numbers (and vice versa) by choosing two perpendicular lines in the plane which intersect at a point *O*

Feature	*Definition or convention*
***x*-axis**	the horizontal line
***y*-axis**	the vertical line
origin	the point *O* where the perpendicular lines (*x*-axis, *y*-axis) intersect and coincide with 0 on each line

- **Coordinates of a point**: the unique ordered pair of numbers (***x*-coordinate**, ***y*-coordinate**) that associates a point's location relative to the chosen coordinate axes

Suggestions: Prioritize Lessons 1-10, 19-20 over Lessons 11-18, which go beyond Grade 5 Standards

Topic A: Coordinate Systems

M6 L1 Coordinate System on a Line

Goals:

- Identify or locate whole numbers and fractions on a number line, and observe that a positive number's location on the number line is equal to its distance from 0

  Focus: Concept Development problem #3

  Check: Problem Set problems #1c, #2a

Suggestions:

- Omit problems with non-standard number lines (increasing right to left): Problem Set problems #2c, #3, #4; Homework problems #2 (bottom two sub-problems), #3
- Inform students that in middle school they will learn about the numbers to the left of 0 on the number line (negative numbers)

M6 L2 Coordinate System in a Plane

Goals:

- Construct a coordinate system in a plane

  Focus: Concept Development problem #1

  Check: Problem Set problem #1
- Identify coordinates of a point or locate a point given its coordinates

  Focus: Concept Development problem #2

  Check: Problem Set problems #3a & c-d

M6 L3 Coordinate System in a Plane (Continued)

Goals:

- **Review/reinforce** Lesson 2

  Check: Problem Set problems #1, #2f-g & j

M6 L4 Coordinate System in a Plane (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 2 by playing "Battleship"

M6 L5 Horizontal and Vertical Lines

Goals:

- Observe that points on a *horizontal* line have the same *y*-coordinate
  - **Reasoning**: points on a horizontal line stay the same distance away from the *x*-axis (parallel to *x*-axis), and the *y*-coordinate coincides with the distance above the *x*-axis, so the *y*-coordinate is the same for all points on a horizontal line

  🔍 **Focus**: Concept Development problem #1

  ✓ **Check**: Problem Set problem #1
- Observe that points on a *vertical* line have the same *x*-coordinate
  - **Reasoning**: points on a vertical line stay the same distance away from the *y*-axis (parallel to *y*-axis), and the *x*-coordinate coincides with the distance to the right of the *y*-axis (0 of the *x*-axis), so the *x*-coordinate is the same for all points on a vertical line

  🔍 **Focus**: Concept Development problem #2

  ✓ **Check**: Problem Set problem #2

M6 L6 Distances and Points Relative to Horizontal, Vertical Lines

Goals:

- Observe that a point's *y*-coordinate corresponds to the point's (shortest) distance from the *x*-axis and a point's *x*-coordinate corresponds to the point's (shortest) distance from the *y*-axis

  🔍 **Focus**: Concept Development problem #1
- Construct lines that are parallel or perpendicular to the axes through given points

  🔍 **Focus**: Concept Development problem #2

  ✓ **Check**: Problem Set problems #1a-c
- Observe that points
  - To the LEFT of the <u>vertical</u> line through (p, 0) have <u>x</u>-coordinate LESS than p
  - To the RIGHT of the <u>vertical</u> line through (p, 0) have <u>x</u>-coordinate GREATER than p

- BELOW the horizontal line through (0, q) have y-coordinate LESS than q
- ABOVE the horizontal line through (0, q) have y-coordinate GREATER than q

Focus: Concept Development problem #3

Check: Problem Set problem #3

Topic B: Patterns in the Coordinate Plane and Graphing Number Patterns from Rules

Suggestions: Inform students that the rules in this module (following Lesson 7) correspond to lines but in later grades students will learn other rules that correspond to other graphs (such as "curves")

M6 L7 Points and Rules of Lines

Goals:

- Plot points of a line and identify the rule that describes the relationship between each x-coordinate and its corresponding y-coordinate (what to do to the x-coordinate to get the y-coordinate)

  Check: Problem Set problems #2a-b
- Identify the coordinates of a point on a given line or the line that contains a given point

  Check: Problem Set problems #2c, #3f(ii)

M6 L8 Points and Rules of Lines (Continued)

Goals:

- Generate coordinate pairs that follow a given linear rule

  Focus: Concept Development problem #2

  Check: Problem Set problem #1
- **Review/reinforce** Lesson 7

M6 L9 Comparison of Lines and their Rules

Goals:

- Plot the lines corresponding to the rules "y is **b** more than x" ($y = x + \mathbf{b}$) for different values of **b**, and observe that the lines:
  - Appear to be parallel
  - Intersect the y-axis at **b** (the point (0, **b**))

🔍 **Focus**: Concept Development problem #1

✔ **Check**: Problem Set problem #1a-b

- Plot the lines corresponding to the rules "*y* is **m** times as much as *x*" ($y = \mathbf{m} \times x$) or "*y* is *x* times **m**" for different values of **m**, and observe that the lines:
  - Have different degrees of steepness
  - Intersect at the origin (the point (0, 0))

🔍 **Focus**: Concept Development problem #2

✔ **Check**: Problem Set problem #2a-b

M6 L10 Comparison of Lines and their Rules (Continued)

Goals:

- Construct the line through a given point that is parallel to the line corresponding to the rule "*x* and *y* are equal" ($y = x$), and identify its rule "*y* is b more or less than *x*" ($y = x + b$ or $y = x - b$) for $b > 0$

🔍 **Focus**: Concept Development problem #1

✔ **Check**: Problem Set problem #1a-d

- Construct the line through the origin (0, 0) and a given point, and identify its rule "*y* is m times as much as *x*" ($y = m \times x$) or "*y* is *x* times m" for $m > 0$

🔍 **Focus**: Concept Development problem #2

✔ **Check**: Problem Set problem #3a-d

M6 L11 Linear Rules with Addition/Subtraction and Multiplication

Goals:

- Find coordinate pairs that follow a rule with two operations "*y* is m times *x*, then add or subtract b" ($y = m \times x + b$, $y = m \times x - b$), and observe that its line appears to be parallel to the line corresponding to "*y* is m times *x*" ($y = m \times x$)

🔍 **Focus**: Concept Development problem #1

✔ **Check**: Problem Set problem #1

- Identify points (coordinate pairs) that satisfy a given rule

🔍 **Focus**: Concept Development problem #2

✔ **Check**: Problem Set problem #2a

M6 L12 Linear Rules with Addition/Subtraction and/or Multiplication

Goals:

- Identify the rule with one operation for a line that goes through one or two given points

  Focus: Concept Development problems #1, #2

  Check: Problem Set problem #1, #3a
- Identify the rule with two operations for a line that goes through a given point

  Focus: Concept Development problem #3

  Check: Problem Set problem #3e

Topic C: Drawing Figures in the Coordinate Plane

M6 L13 Parallel Line Segments

Goals:

- Construct and identify parallel line segments by translating a “right triangle template” vertically or horizontally with a straightedge (the underlying concept is slope)

  Check: Problem Set problems #2, #3c-d

M6 L14 Parallel Line Segments (Continued)

Goals:

- Build on **Lesson 13** to construct and identify parallel line segments by translating (sliding) a “right triangle template” vertically and/or horizontally, and observe the following changes to coordinate values:
  - When translating **horizontally** right or left by *n* units, the ***x***-coordinates increase or decrease by *n* units
  - When translating **vertically** up or down by *n* units, the ***y***-coordinates increase or decrease by *n* units

  Check: Problem Set problems #2b-e

M6 L15 Perpendicular Line Segments

Goals:

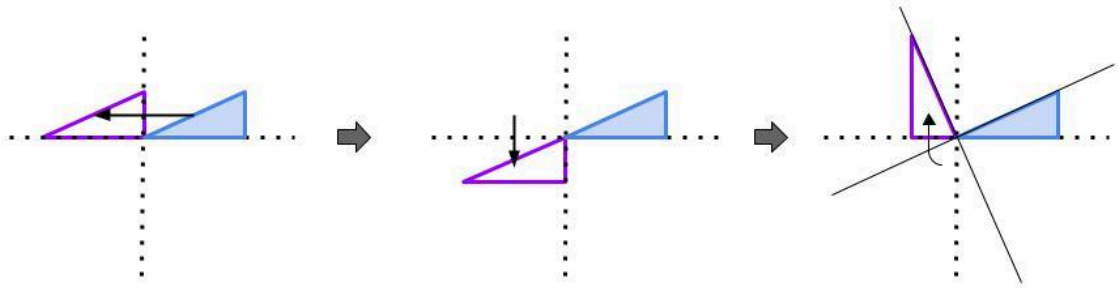
- Observe that the non-right angles of a right triangle “fit” into its right angle, meaning the non-right angles add up to 90°

Focus: Concept Development problem #2

- Construct perpendicular line segments by translating twice and rotating about one of the two non-right angle vertices

Focus: Concept Development problems #3, #4

Check: Problem Set problems #2, #3a



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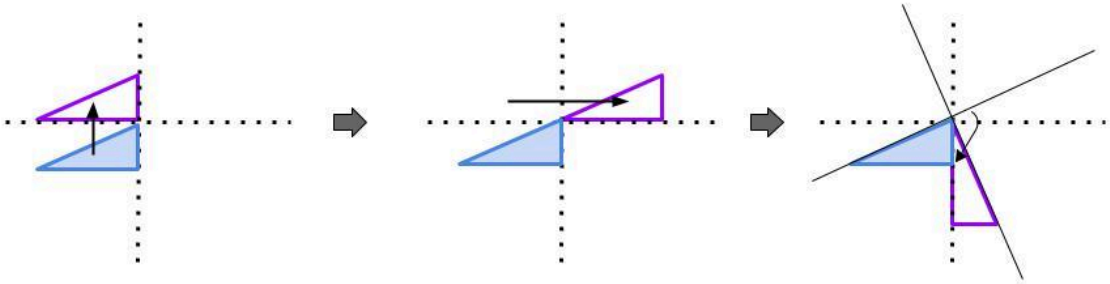

M6 L16 Perpendicular Line Segments (Continued)

Goals:

- Build on **Lesson 15** to verify perpendicular line segments by translating twice and rotating about one of the two non-right angle vertices

Focus: Concept Development problem #1

Check: Problem Set problem #2a-d

- Observe that the magnitudes of the differences between x-coordinates and y-coordinates of two points switch for the perpendicular segment

  $Example$:

  - $\overline{AB} \perp \overline{AC}$ $where\ A\ is\ (3,1),\ B\ is\ (8,3),\ C\ is\ (1,6)$
  - $For\ \overline{AB},\ x-coordinates\ change\ by\ 5\ and\ y-coordinates\ change\ by\ 2$
  - $For\ \overline{AC},\ x-coordinates\ change\ by\ 2\ and\ y-coordinates\ change\ by\ 5$

Focus: Concept Development problem #2

Check: Problem Set problem #2e-g

M6 L17

Symmetric Figures

Goals:

- Reflect a point across a line of symmetry and observe that the line segment connecting the two points is
  - Perpendicular to the line of symmetry
  - Bisected by the line of symmetry (each point is the same point from the line of symmetry)

  Focus: Concept Development problem #1
- Reflect a figure (of line segments) by reflecting its vertices or endpoints and then connecting the points to form the reflected image's line segments

  Focus: Concept Development problem #2

  Check: Problem Set problem #2

Topic D: Problem Solving in the Coordinate Plane

M6 L18

Symmetric Figures (Continued)

Goals:

- Build on **Lesson 17** to reflect a figure (of line segments) across a vertical or horizontal line of symmetry

  Focus: Concept Development problems #1, #2

  Check: Problem Set problems #1a-c

Suggestions: Reserve Concept Development problem #3, Problem Set problem #3, and Homework problem #2 as an optional challenge for students

M6 L19

Line Graphs

Goals:

- Read and interpret line graph

  Check: Problem Set problems #1a-b

M6 L20

Line Graphs (Continued)

Goals:

- Build on **Lesson 19** to read and interpret line graph with axes that start above 0

  ✓ **Check**: Problem Set problems #1a-b

Great Minds
100 M Street SE, Suite 500
Washington, DC 20003

Phone: 844.853.1010
Email: info@eureka-math.org
Web: eureka-math.org
Twitter: eureka_math

EUREKA MATH™

Grade 2 Pacing and Preparation Guide

Grade 2 Pacing and Preparation Guide

This guide includes three components. The first section, Preparing to Teach a Module, outlines a process for understanding the instructional sequences of the module—a vital foundation for making decisions about pacing. Next, Preparing to Teach a Lesson outlines a process for customizing a lesson to fit the daily time constraints and unique needs of the students.

The final section of this guide, Suggestions for Consolidation or Omissions, is intended to provide guidance in the event that educators need to reduce the number of days in the 180-day curriculum. Keep in mind that Grade 2 is comprised of 152 daily lessons. The remaining 28 instructional days are devoted to the 14 assessments. Assessments are typically allotted half a day to administer the assessment, half a day to return and review the assessment, and one day for remediation or enrichment. The 14 embedded remediation/enrichment days are intended to provide some built-in flexibility for teachers. However, in the event that even more flexibility is needed, these suggestions for consolidation or omissions will free up additional days. These suggestions should not be viewed as a mandate to omit or consolidate lessons, but as guidance for how to do so wisely when the need arises.

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Preparing to Teach a Module

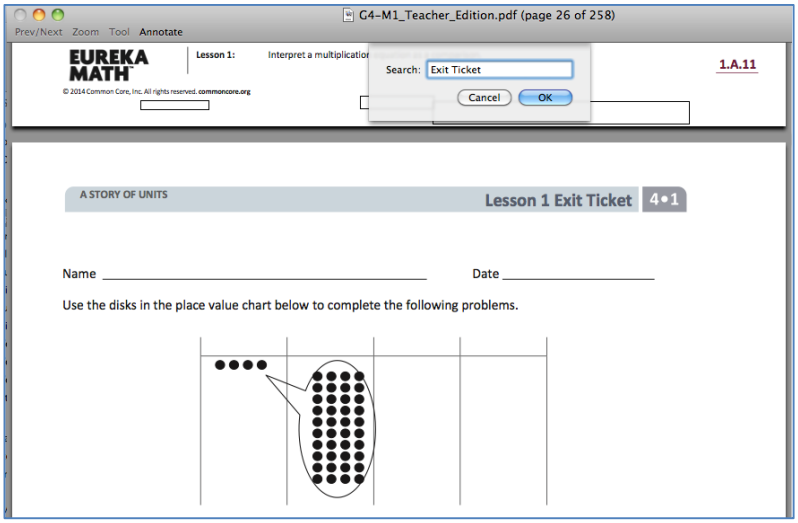
Preparation of lessons will be more effective and efficient if there has been an adequate analysis of the module first. Each module in *A Story of Units* can be compared to a chapter in a book. How is the module moving the plot, the mathematics, forward? What new learning is taking place? How are the topics and objectives building on one another? The following is a suggested process for preparing to teach a module.

Step 1: Get a preview of the plot.

A: Read the Table of Contents. At a high level, what is the plot of the module? How does the story develop across the topics?

B: Preview the module's Exit Tickets[1] to see the trajectory of the module's mathematics and the nature of the work students are expected to be able to do.

Note: When studying a PDF file, enter "Exit Ticket" into the search feature to navigate from one Exit Ticket to the next.



Step 2: Dig into the details.

A: Dig into a careful reading of the Module Overview. While reading the narrative, liberally reference the lessons and Topic Overviews to clarify the meaning of the text—the lessons demonstrate the strategies, show how to use the models, clarify vocabulary, and build understanding of concepts.

[1] A more in-depth preview can be done by searching the Problem Sets rather than the Exit Tickets. Furthermore, this same process can be used to preview the coherence or flow of any component of the curriculum, such as Fluency Practice or Application Problems.

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Consider searching the video gallery on *Eureka Math*'s website to watch demonstrations of the use of models and other teaching techniques.

B: Having thoroughly investigated the Module Overview, read through the chart entitled Overview of Module Topics and Lesson Objectives to further discern the plot of the module. How do the topics flow and tell a coherent story? How do the objectives move from simple to complex?

Step 3: Summarize the story.

Complete the Mid- and End-of-Module Assessments. Use the strategies and models presented in the module to explain the thinking involved. Again, liberally reference the work done in the lessons to see how students who are learning with the curriculum might respond.

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Preparing to Teach a Lesson

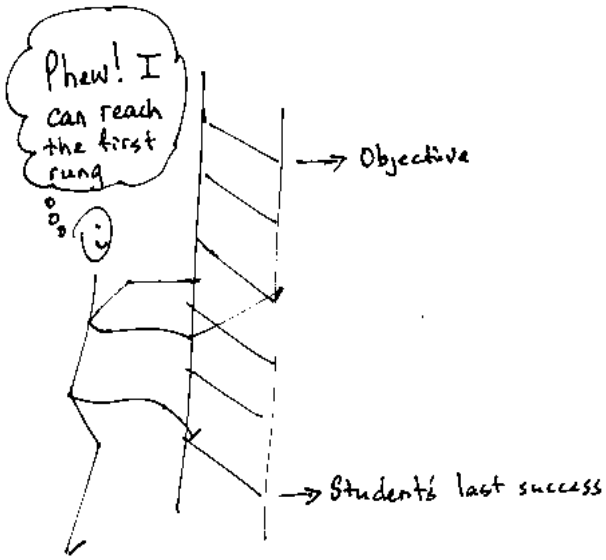
A three-step process is suggested to prepare a lesson. It is understood that at times teachers may need to make adjustments (customizations) to lessons in order to fit the time constraints and unique needs of their students. The recommended planning process is outlined below. Note: The ladder of Step 2 is a metaphor for the teaching sequence. The sequence can be seen not only at the macro level in the role that this lesson plays in the overall story, but also at the lesson level, where each rung in the ladder represents the next step in understanding or the next skill needed to reach the objective. To reach the objective, or the top of the ladder, all students must be able to access the first rung and each successive rung.

Step 1: Discern the plot.

- A: Briefly review the module's Table of Contents, recalling the overall story of the module and analyzing the role of this lesson in the module.
- B: Read the Topic Overview related to the lesson, and then review the Problem Set and Exit Ticket of each lesson in the topic.
- C: Review the assessment following the topic, keeping in mind that assessments can usually be found midway through the module and at the end of the module.

Step 2: Find the ladder.

- A: Complete the lesson's Problem Set.
- B: Analyze and write notes on the new complexities of each problem as well as the sequences and progressions throughout problems (e.g., pictorial to abstract, smaller to larger numbers, single- to multi-step problems). The new complexities are the rungs of the ladder.
- C: Anticipate where students might struggle, and write a note about the potential cause of the struggle.
- D: Answer the Student Debrief questions, always anticipating how students will respond.



Step 3: Hone the lesson.

At times, the lesson and Problem Set are appropriate for all students and the day's schedule. At others, they may need customizing. If the decision is to customize based on either the needs of students or scheduling constraints, a suggestion is to decide upon and designate "Must Do" and "Could Do" problems.

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A: Select "Must Do" problems from the Problem Set that meet the objective and provide a coherent experience for students; reference the ladder. The expectation is that the majority of the class will complete the "Must Do" problems within the allocated time. While choosing the "Must Do" problems, keep in mind the need for a balance of calculations, various word problem types[2], and work at both the pictorial and abstract levels.

B: "Must Do" problems might also include remedial work as necessary for the whole class, a small group, or individual students. Depending on anticipated difficulties, those problems might take different forms as shown in the chart below.

Anticipated Difficulty	"Must Do" Customization Suggestion
The first problem of the Problem Set is too challenging.	Write a short sequence of problems on the board that provides a ladder to Problem 1. Direct the class or small group to complete those first problems to empower them to begin the Problem Set. Consider labeling these problems "Zero Problems" since they are done prior to Problem 1.
There is too big of a jump in complexity between two problems.	Provide a problem or set of problems that creates a bridge between the two problems. Label them with the number of the problem they follow. For example, if the challenging jump is between Problems 2 and 3, consider labeling the bridging problems "Extra 2s."
Students lack fluency or foundational skills necessary for the lesson.	Before beginning the Problem Set, do a quick, engaging fluency exercise, such as a Rapid White Board Exchange, Counting Exercise, or Sprint. Before beginning any fluency activity for the first time, assess that students are poised for success with the easiest problem in the set.
More work is needed at the concrete or pictorial level.	Provide manipulatives or the opportunity to draw solution strategies. Especially in Kindergarten, at times the Problem Set or pencil and paper aspect might be completely excluded, allowing students to simply work with materials.
More work is needed at the abstract level.	Hone the Problem Set to reduce the amount of drawing as appropriate for certain students or the whole class.

C: "Could Do" problems are for students who work with greater fluency and understanding and can, therefore, complete more work within a given time frame. Adjust the Exit Ticket and Homework to

[2] See the Progression documents "K, Counting and Cardinality" and "K–5, Operations and Algebraic Thinking" pp. 9 and 23, respectively.

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reflect the "Must Do" problems or to address scheduling constraints.

D: At times, a particularly tricky problem might be designated as a "Challenge!" problem. This can be motivating, especially for advanced students. Consider creating the opportunity for students to share their "Challenge!" solutions with the class at a weekly session or on video.

E: Consider how to best use the vignettes of the Concept Development section of the lesson. Read through the vignettes, and highlight selected parts to be included in the delivery of instruction so that students can be independently successful on the assigned task.

F: Pay close attention to the questions chosen for the Student Debrief. Regularly ask students, "What was the lesson's learning goal today?" Help them make observations, draw connections, and articulate the goal.

G: Adjust the balance of the lesson's components as necessary to support the work students are expected to do in the Problem Set or task (e.g., the Fluency Practice, Exit Ticket, Homework, Application Problem).

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Suggestions for Consolidation or Omissions

Module 1

It is not recommended to modify or omit any lessons in Module 1. The concepts learned in this module serve as the foundation for all other lessons in Grade 2.

Module 2

If pacing is a challenge, consider the following modifications and omissions. If students show conceptual understanding of iterated length units in Lesson 1, consider consolidating Lessons 2 and 3. If consolidated, students can apply the "mark and move forward" strategy to making a ruler.

Consider consolidating Lesson 4, which provides practice measuring the lengths of various objects using rulers and meter sticks, with Lesson 5, if a chart of benchmarks is created while measuring. Lesson 8 could be omitted unless students demonstrate a need to use the number line to solve addition and subtraction problems.

Module 3

If pacing is a challenge, consider the following modifications and omissions. Omit the Application Problem in Lesson 7 in order to give more time to practice the multiple segments in the Concept Development.

Reduce the Concept Development of Lesson 9 by omitting the empty number line. Instead, have students draw the bills used to count up from one amount to the next as was done in Lesson 3 but with bundles. If the empty number line is omitted in Lesson 9, then the component following the Problem Set of Lesson 13, "Estimating Numbers on the Empty Number Line," should also be omitted along with related questions from the Debrief and Problem 2 of the Exit Ticket. Consider using the empty number line as an extension.

Omit Lesson 10, and use it instead as an extension for early finishers or as a center activity during a different time of day (e.g., RTI time, economics, morning work, or problem of the week).

Reduce Lesson 11 by omitting the use of Dienes blocks in the Concept Development. Distribute bills instead. Omit the discussion about the difference between modeling with the blocks and the bills. Have students only model with bills and place value disks in the Problem Set.

Omit, or move to morning work, the Application Problems in Lessons 12 and 14 to allow more time for the Concept Developments. Consolidate Lessons 17 and 18, or perhaps use Lesson 18 as an activity for centers to allow students continued practice comparing numbers when represented in different forms.

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Consider using Lesson 21 as either a center activity or morning work.

Module 4

If pacing is a challenge, consider the following modifications and omissions. Consider pacing more quickly the lessons that follow Topic A in Module 4 as students readily grasp renaming different hundreds, tens, and ones. Spend additional instructional minutes with word problems, unknowns in different places (e.g., 27 + ____ = 350 or 281 = ____ – 99), and mental math. Note that this same adjustment in pacing can also be made in looking ahead to the lessons that follow Topic A in Module 5.

Consider omitting Lessons 29 and 30. Instead, introduce the concept of "Totals Below" in Lesson 21. Continue to embed "Totals Below" in the Concept Development or in the Debrief of subsequent lessons.

Module 5

If pacing is a challenge, consider the following modifications. The lessons that follow Topic A in Module 5 could be paced more quickly as students readily grasp the concepts.

Module 6

If pacing is a challenge, consider consolidating Lessons 1 and 2. Omit Lessons 3, 8, and 11. Use Lesson 3's Problem Set and Homework as a center activity for early finishers or for a future date when additional review homework is needed. Consider moving Lesson 16, which guides students through a tessellation project with 1-inch tiles, to art class.

Module 7

If pacing is a challenge, consider consolidating Lessons 1 and 2, Lessons 3 and 4, Lessons 11 and 12, and Lessons 14 and 15. Omit Lesson 26, or consolidate it with Lesson 25.

Module 8

If pacing is a challenge, consider consolidating Lessons 9 and 10.

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Grade 2

Eureka Essentials

Contact: @rebeccacpoon ✉ rebeccacpoon@gmail.com

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Overview

How to Read **Eureka Essentials**

Module 2: Addition and Subtraction of Length Units

Summary:

- Measure (using different tools & units) and compare lengths (exactly & approximately/visually)
  - Key lesson: Lesson 6
- Apply understanding to solve word problems involving adding or subtracting lengths
  - Building on addition and subtraction from Module 1

Definitions:

- **To measure length** with (or using) a specified **length unit**: to count the number of length units that fit
  (1) side by side (no overlap or extra space between) and
  (2) from one endpoint to the other endpoint of the object
- **To estimate (approximate) length**: to find the number of units that is closest to the actual length of the object

Materials:

- Centimeter cubes [Topic A]
- Rulers [Topics A-C]

Overview of module

Basic materials of module (see Teacher Edition for full list of suggested materials)

Module, Lesson, Concept

M7 L3 Bar Graph

Suggestions for omission or consolidation of lessons if pacing is a challenge

Cut/consolidate: Can consolidate with Lesson 4 (*Eureka Math's Notes on Pacing*)

Goals:

- Build on **Lesson 2** by representing categorical data as (vertical and horizontal) bar graphs
- Observe that the category count equals the length (or height) of the bar measured by the count axis (number line)

Check: Problem Set problem #2a

Problem(s) suggested for checking understanding

Additional materials to consider

Materials: Lesson 3 Template 2 (p. 62 of Teacher Edition)

M4 L16 Word Problems (Continued)

Goals:

Like repeating the identified lesson (Lesson 5) for the new concept ("place value" strategies)

- **Echo** Lesson 5 with "place value" addition and subtraction strategies:
  - Solve one- and two-step word problems using tape diagrams and addition and subtraction strategies from **Lessons 7-8 and 12-13**

Focus: Concept Development problems #1, #2, #4

Check: Problem Set problem #3, #5

Problem(s) to focus on from the Concept Development

M4 L23 Subtracting Multiples of 10

Goals:

Connections to other lessons in **purple** text

- Build on **Lesson 2** to subtract multiples of 10 from three-digit numbers
  - Example:
    127 - 70
    = 100 + 27 - 70
    = (100 - 70) + 27
    = 30 + 27
    = 57

Key Ideas: Subtract from any part of the minuend

Key idea(s) to highlight in lesson

M7 L5 Word Problems

Goals:

Review or reinforcement of identified lessons or skills

- **Review/reinforce** Lesson 3

Check: Problem Set problems #2a-b

How to Approach Pacing

- Cover Major Cluster Standards more thoroughly and move through other Standards more quickly
  - **Major Clusters**: Modules 1, 3-5
    - *If student learning of Module 4 is solid, move through Module 5 more quickly because it applies the same ideas to larger numbers*
  - **Additional/Supporting Clusters**: Modules 2, 6-8
    - *If pacing is a challenge, save Module 6 to the end of the year because Grade 3 starts with multiplication*
- Use lesson connections (in purple text) to foresee when and how certain concepts will be revisited and further developed in later lessons
- Embed "reteaching" into the next lesson's activities (Fluency Practice, Application Problems, Concept Development, etc.) rather than repeat a prior lesson when formative assessments indicate lack of student understanding
- Omit or differentiate lessons labelled ↻ **Review/reinforce** based on students' strengths and needs
- Follow suggestions for omission or consolidation of lessons labelled ✂ **Cut/consolidate** based on students' strengths and needs

References

- Great Minds Eureka Math Teacher Edition version 3.0 (2015)
- California Common Core State Standards (2013)
- Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (2016)

Module 1: Sums and Differences to 100 (Grade 1 Reviewed & Continued)

Summary:

- Decomposition of two-digit numbers [Lessons 1-2]
- Addition of two-digit numbers [Lessons 3-5]
- Subtraction of two-digit numbers [Lessons 3, 6-8]

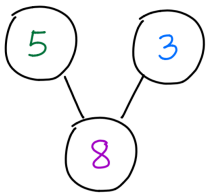
Definitions:

- **Addition** (Grade 1 Module 1):

$$\underbrace{\text{(\# of things start with) + (\# of things add on)}}_{\text{\# of things all together}}$$

  - Word sentences & equations
    - "8 = 5 + 3" means "8 is the same number as 5 and 3 all together"
  - Number bonds & equations
    - Part + Part = Whole

$$5 + 3 = 8$$

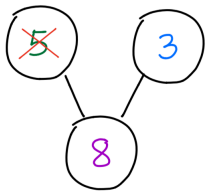


- **Subtraction** (Grade 1 Module 1):

$$\underbrace{\text{(\# of things start with) - (\# of things take away)}}_{\text{\# of things leftover}}$$

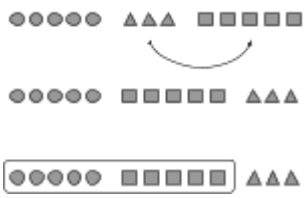
  - Word sentences & equations
    - "8 - 5 = 3" means "the leftover of 8 take away 5 is the same number as 3"
  - Number bonds & equations
    - Whole - Part = Part

$$8 - 5 = 3$$



Key Ideas:

- **Addition** (Grade 1 Modules 2, 4, & 6): Because of the associative and commutative properties of addition, we can add numbers in *any order* and still keep the sum (total) the same
    - Example:



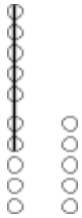
5 + **3 + 5**

= 5 + **5 + 3** ← commutative property of addition

= (5 + 5) + 3 ← associative property of addition
= 10 + 3
= 13

- **Subtraction** (Grade 1 Module 2): We can subtract parts of the subtrahend in *any order* and from *any part* of the minuend (total) that is greater than or equal to the subtrahend part(s) and still keep the difference the same
    - Example:

15 - 7
= 10 + 5 - 7
= (10 - 7) + 5
= 3 + 5
= 8



Topic A: Foundations for Fluency with Sums and Differences Within 100

M1 L1 Decomposition of 10-19

Goals:

- Represent decompositions of 10 with number bond and addition equation (e.g., 7 + 3 = 10) or subtraction equation (e.g., 10 - 3 = 7)

  ✓ **Check**: Problem Set problem #1
- Decompose 11-19 into ten and ones (e.g., 17 = 10 + 7)

M1 L2 Decomposition of Two-Digit Numbers

Goals:

- Decompose two-digit numbers into tens and ones (e.g., 57 = 50 + 7, 57 is 5 tens and 7 ones)

  ✓ **Check**: Problem Set problem #4

Topic B: Initiating Fluency with Addition and Subtraction Within 100

Suggestions: Write continuous equations (see examples below) rather than separate equations to keep track of all parts of the expression

M1 L3 Adding and Subtracting: Common Units (Place Value Strategy)

Goals:

- Use addition key idea to add common units (tens, ones)
  - Example:

    51 + 20

    = 50 + 1 + 20

    = (50 + 20) + 1

    = 70 + 1

    = 71

  Key Ideas: Add in any order

  ✓ **Check**: Problem Set problems #2a-b
- Use subtraction key idea to subtract common units (tens, ones)
  - Example:

    71 - 20

    = 70 + 1 - 20

= (70 - 20) + 1 **Key Ideas**: Subtract from any part of the minuend
= 50 + 1
= 51

Check: Problem Set problems #2c-d

M1 L4 Adding Within 20: Making 10

Goals:

- Decompose an addend to make 10 with the other addend (strategy to develop mental fluency for addition within 20)
  - Example:
    9 + 3

    = (9 + 1) + 2 **Key Ideas**: Add in any order
    = 10 + 2
    = 12

Check: Problem Set problems #2, #4

M1 L5 Adding Within 100: Making Multiple of 10

Goals:

- Build on **Lesson 4** to add within 100:
  - Decompose an addend to make multiple of 10 with the other addend
    - Example:
      39 + 4

      = (39 + 1) + 3 **Key Ideas**: Add in any order
      = 40 + 3
      = 43

Check: Problem Set problems #1d & f

M1 L6 Subtracting from Multiple of 10: Taking from 10

Goals:

- Decompose minuend (total) to take from 10
  - Example:
    40 - 9
    = 30 + **10** - 9

    = 30 + (**10 - 9**) **Key Ideas**: Subtract from any part of the minuend
    = 30 + 1

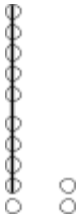
= 31

✓ **Check**: Problem Set problems #1e-f

M1 L7 Subtracting Within 20: Taking from 10

Goals:

- Build on **Lesson 6** to subtract within 20:
  - Decompose minuend (total) into ten and ones to take from 10 (strategy to develop mental fluency for subtraction within 20)
    - Example:



12 - 9
= **10** + 2 - 9
= (**10 - 9**) + 2 **Key Ideas**: Subtract from any part of the minuend
= 1 + 2
= 3

✓ **Check**: Problem Set problems #1c-d

M1 L8 Subtracting Within 100: Taking from 10

Goals:

- Build on **Lessons 6-7** to subtract within 100:
  - Decompose minuend (total) to take from 10
    - Example:

42 - 9
= 32 + **10** - 9
= 32 + (**10 - 9**) **Key Ideas**: Subtract from any part of the minuend
= 32 + 1
= 33

✓ **Check**: Problem Set problems #1c & f

Notes to teacher:

- Grade 1 only covered subtraction within 40 (Module 4) and subtraction of tens from multiples of 10 (Module 6 Lesson 10)

Module 2: Addition and Subtraction of Length Units

Summary:

- Measure (using different tools & units) and compare lengths (exactly & approximately/visually)
  - Key lesson: Lesson 6
- Apply understanding to solve word problems involving adding or subtracting lengths
  - Building on addition and subtraction from Module 1

Definitions:

- **To measure length** with (or using) a specified **length unit**: to count the number of length units that fit
  (1) side by side (no overlap or extra space between) and
  (2) from one endpoint to the other endpoint of the object
- **To estimate (approximate) length**: to find the number of units that is closest to the actual length of the object
- **Meter**, **centimeter**: 1 meter = 100 centimeter
  - There are a hundred (cent) centimeters in a meter.

Key Ideas:

- **Relationship between comparing and measuring lengths**:

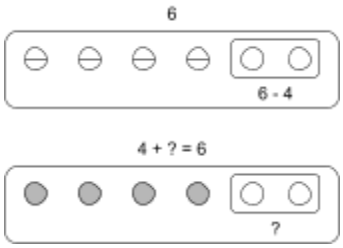
How much …	means how many …
longer is A than B	*more* centimeters (units) is the length of A than the length of B
shorter is A than B	*fewer* centimeters (units) is the length of A than the length of B

- **Relationship between measurement units and values**:

Measuring with a …	yields a …
larger unit	*smaller* value
smaller unit	*larger* value

Reasoning: one larger unit takes more space so fewer can fit in a given space; one smaller unit takes less space so it takes more to fit in a given space

- **Subtraction as addition with unknown addend**: “6 - 4 = __” also means “4 + __ = 6”



Materials:

- Centimeter cubes [Topic A]
- Rulers [Topics A-C]
- Meter stick [Topic B, D]
- Meter tape [Topic B, D]

Topic A: Understand Concepts About the Ruler

Cut/consolidate: Can consolidate Lesson 2 with Lesson 1 or 3 (*Eureka Math's Notes on Pacing*)

M2 L1 Measuring with Multiple Centimeter Cubes

Goals:

- Use centimeter cubes to measure and estimate length (Grade 1 Module 3) of linear objects (e.g., crayons) and their parts (e.g., pen cap)

  Check: Problem Set problem #2
- For Problem Set problem #6b and Homework problem #7: Use the relationship between comparing and measuring lengths to find difference in lengths

  Suggestions: Assign Problem Set problem #6b and Homework problem #7 as "challenge"problems; **Lesson 6** will revisit and focus on this concept

M2 L2 Measuring with One Centimeter Cube

Goals:

- Use "mark and move forward" (iteration) technique to measure length with only one centimeter cube

  Check: Problem Set problem #2

M2 L3 Measuring with Ruler

Goals:

- Create and use centimeter ruler to measure length of objects
- Observe features and functions of ruler:
  - We label the "hash marks" (*not* the space between hash marks) with numbers to easily read length without counting spaces
  - The number under a hash mark tells the number of units between the leftmost hash mark or edge (0) and that hash mark

Check: Problem Set problem #2

Materials: See p. 34 of Teacher Edition for instructions to make ruler

Topic B: Measure and Estimate Length Using Different Measurement Tools

Cut/consolidate: Can consolidate Lessons 4 and 5 (*Eureka Math's Notes on Pacing*)

M2 L4 Measuring with Appropriate Tool

Goals:

- Define meter
- Measure large or long object (e.g., white board) with larger unit like meter stick (more efficient than with centimeter ruler)
- Measure round object (e.g., globe) with meter tape (soft tool)

Check: Problem Set problems #2, #3

M2 L5 Estimating with Mental Benchmarks

Goals:

- Use "mental benchmarks" by "picturing them in your head to estimate the length of an object":
  - pinky: about 1 cm
  - 3-ring binder (long side): about 30 cm
  - floor to doorknob: about 1 m

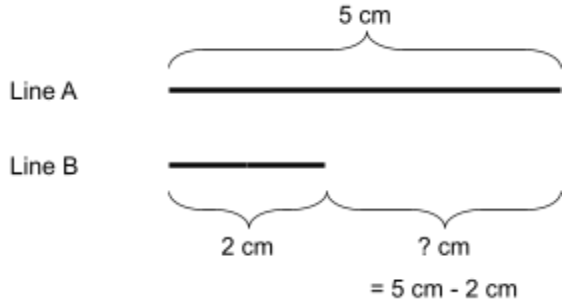
Check: Problem Set problems #2, #6a

Topic C: Measure and Compare Lengths Using Different Length Units

M2 L6 Comparing Lengths

Goals:

- Use the relationship between comparing and measuring lengths and definition of subtraction (or addition with unknown addend) to find difference in lengths
  - Example:



✓ **Check**: Problem Set problems #1, #2

Suggestions: If objects can be physically moved and aligned, students may just directly measure the length of the difference, so include an example that requires measuring each object (e.g., sides of desktop) and *calculating* the difference

M2 L7 Measuring with Different Units

Goals:

- Measure objects with units of different size (e.g., small and large paper clips) and observe the relationship between measurement units and values
- Recognize that:
  - Measurement needs to be done with a unit of one size (e.g., cannot use both large and small paper clips together to measure length by paper clips)
  - Measurement values can only be compared for the same unit (e.g., 7 small paper clips > 5 small paper clips but 7 small paper clips ≯ 5 large paper clips)
- ↻ **Review/reinforce** Lesson 6: Find difference in lengths

✓ **Check**: Problem Set problem #1

- For Problem Set problem #3 and Homework problem #3: Draw a line segment of given length

Topic D: Relate Addition and Subtraction to Length

M2 L8 Adding and Subtracting Lengths

Goals:

- Find total length of a “bending” path (e.g., the length of ribbon to frame a door, the length of Christmas lights to string along steps) by adding the lengths of the parts

  ✓ **Check**: Problem Set problem #4
- For Problem Set and Homework: Find final length or location on ruler by adding and subtracting lengths

  ✓ **Check**: Problem Set problem #2
- For Concept Development and Exit Ticket: Find length when the left endpoint of the object is above zero by subtracting the length between zero and the left endpoint

M2 L9 Measuring Curves

Goals:

- Build on **Lesson 4** by measuring curve with string (e.g., lay string on top of zig-zag tape and then mark end of curve on string and measure length of (straightened) string with ruler)

  ✓ **Check**: Problem Set problem #2
- Build on **Lessons 6 and 8** by using tape diagram (or number line) to represent and compare lengths

  ✓ **Check**: Problem Set problem #2c

Materials: string (about 50 cm) per student

M2 L10 Two-Step Word Problems

Goals:

- Build on **Lesson 9** to use tape diagram (or number line) to find an unknown length and then the sum of two or more lengths

  ✓ **Check**: Problem Set problem #2

Module 3: Place Value, Counting, and Comparison of Numbers to 1,000 (Grade 1 Module 6 Continued)

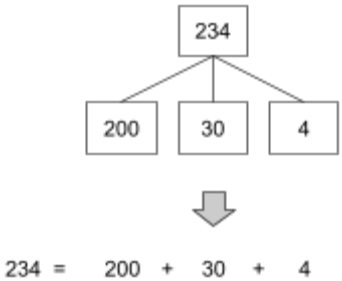
Summary:

- Counting [Lessons 1-15]
  - Place value
  - How to count to a number
  - How to count from one number to another number
  - Counting ten or more of a unit
  - Different forms of a number (standard form or base-ten numeral, word form or number name, expanded form, unit form)
- Comparing [Lessons 16-18]
  - Greater than, less than, equal
- Increasing/decreasing by 1, 10, and 100 [Lessons 19-21]
  - "1, 10, 100 more" and "less"

Definitions:

- **Unit form of a number**: "unit form of 234" is "2 hundreds 3 tens 4 ones"

  - Note to teacher: Reading/writing numbers in "unit form" is not a state standard but is central to Eureka Math's theme of units and serves as a bridge between the standard form (base-ten numeral) and expanded form
- **Word form of a number (number name*)**: "word form (or number name) of 234" is "two hundred thirty-four"
- **Number form of a number (base-ten numeral*)**: "standard form (or base-ten numeral) of 234" is "234"
- **Expanded form of a number**: "expanded form of 243" is "200 + 40 + 3"



* State standard's terminology

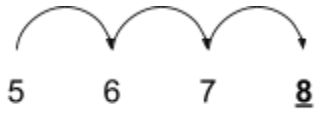
- **Greater than, less than, equals**:

Word form	*Symbolic form*	*Meaning (Definition)*
3 is greater (bigger, more) than 2	3 > 2	3 comes after 2 when counting
2 is less (smaller, fewer) than 3	2 < 3	2 comes before 3 when counting
3 + 0 equals 2 + 1	3 + 0 = 2 + 1	3 + 0 counts to the same number as 2 + 1

- **"1 (or 10 or 100) more than"**: "1 (or 10 or 100) more than 429" means "429 + 1 (or 10 or 100)"
- **"1 (or 10 or 100) less than"**: "1 (or 10 or 100) less than 429" means "429 - 1 (or 10 or 100)"

Key Ideas:

- **Place value**:
  In our number system (base ten), we only have **ten** symbols (the digits 0 to 9) to represent **zero to nine** ones, tens, hundreds, etc. (a unit) so to represent **ten** ones, tens, hundreds, etc. we use the next "place" to the left and make it 1 of that larger unit (e.g., ten 1s = 10, ten 10s = 100, ten 100s = 1000)
- **Counting to a number**: begin with largest base-ten unit (left-most digit)
  - Example: 476
    1. Count from 0 to 400 by hundreds
    2. Count from 400 to 470 by tens
    3. Count from 470 to 476 by ones
- **Counting from one number to another number**: begin with smallest base-ten unit (right-most nonzero digit) of starting number
  - Example: 476 to 600
    1. Count from 476 to 480 by ones
    2. Count from 480 to 500 by tens
    3. Count from 500 to 600 by hundred(s)
- **"Count on" method**: "5 + 3" is the same number as (equals) "starting at 5 and counting on 3 (6, 7, 8)"



- "1 more" or "less" changes the ones digit
- "10 more" or "less" changes the tens digit
- "100 more" or "less" changes the hundreds digit

Materials:

- Base ten units (e.g., Dienes base ten blocks, bundled straws/sticks) [Topics A-C]
- Dollar bills: $1, $10, $100 [Topic D]
- Place value disks [Topics E-F]

Suggestions: Incorporate place value chart in Lessons 1-3 (then Lesson 4 can be omitted or used as review)

Resources: Alternative approach to Lessons 1-4

Topic A: Forming Base Ten Units of Ten, a Hundred, and a Thousand

M3 L1 Counting to 1,000

Goals:

- Use place value to form base ten units (ten, hundred, thousand) and count to a number up to 1,000

Topic B: Understanding Place Value Units of One, Ten, and a Hundred

M3 L2 Counting between Numbers with Ones and Tens

Goals:

- Use place value to count to a number and count from one number to another with ones and tens

  Check: Problem Set problem #2

M3 L3 Counting between Numbers with Ones, Tens, and Hundreds

Goals:

- Use place value to count to a number and count from one number to another with ones, tens, and hundreds

  Check: Problem Set problems #1, #3

Topic C: Three-Digit Numbers in Unit, Standard, Expanded, and Word Forms

M3 L4 Counting between Numbers with Ones, Tens, and Hundreds (Continued)

Goals:

- Build on **Lessons 2-3** with the place value chart

  Check: Problem Set problem #3

Notes to teacher:

- Will revisit/reinforce counting between numbers in **Lessons 9 and 12** with dollar bills, empty number line, and place value disks

M3 L5 Unit Form, Word Form, Standard Form

Goals:

- Say, write, and/or match numbers in unit form, word form, and number form

M3 L6 Expanded Form

Goals:

- Use "count on" method of addition to write a number in expanded form and vice versa

  ✓ **Check**: Problem Set problems #4, #5, #9

M3 L7 Different Forms of a Number

Goals:

- ↻ **Review/reinforce** Lessons 5-6

  ✓ **Check**: Problem Set "Match Part 1" problems C & D
- Use place value and unit form of a number to count ten or more of a unit
  - Example: 120
    If counting by tens and not bundling 10 tens into 100, then 120 is 12 tens.

  ✓ **Check**: Problem Set "Match Part 2" problem F

Notes to teacher:

- Will revisit/reinforce counting ten or more of a unit in **Lesson 14**

Topic D: Modeling Base Ten Numbers Within 1,000 with Money

M3 L8 Representing Numbers with Dollar Bills

Goals:

- Represent numbers to 1,000 using $1, $10, and $100 bills
- ↻ **Review/reinforce** Lessons 5-7 by representing value of money in different number forms (number, expanded, unit)

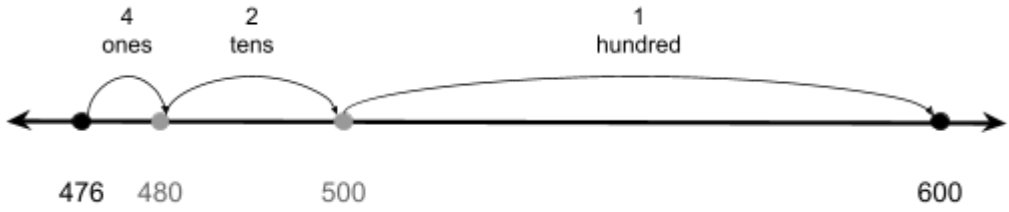
✓ **Check**: Problem Set problem #2

M3 L9

Counting between Numbers with Dollar Bills and Empty Number Line

Goals:

- Build on **Lessons 2-4** by counting between numbers with dollar bills and an empty number line
  - Example: 476 to 600



✓ **Check**: Problem Set problems #3, #5

Notes to teacher:

- Counting between numbers with an empty number line lays groundwork for addition/ subtraction strategies ("the arrow way", counting on) in **Modules 4-5**

M3 L10

Decomposition of $1,000 into $10 bills

✂ **Cut/consolidate**: Can omit lesson or use as "challenge" task

Goals:

- Build on **Lesson 7** to find how many $10 bills make $1,000 (answer: 100)

Topic E: Modeling Numbers Within 1,000 with Place Value Disks

Suggestions: Incorporate drawing place value disks in Lessons 11-12 (then Lesson 13 can be omitted or used as review)

M3 L11

Representing Numbers with Place Value Disks

✂ **Cut/consolidate**: Can omit use of Dienes base ten blocks

Goals:

- Represent numbers to 1,000 using place value disks

✓ **Check**: Problem Set problems #2a-b

M3 L12

Counting between Numbers with Place Value Disks

Goals:

- Build on **Lessons 2-4 and 9** by counting between numbers with place value disks
  - Example:
    Count from 186 to 300 by counting
    - 4 ones disks from 186 to 190
    - 1 ten disk from 190 to 200
    - 1 hundred disk from 200 to 300

Suggestions: Omit the Problem Set and Homework if the language is confusing

M3 L13

Representing Numbers with Place Value Disks (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 5-7 and 11 by drawing place value disks

✓ **Check**: Problem Set problems #1, #2

M3 L14

Counting Ten or More of a Unit

Goals:

- Build on **Lesson 7** by counting ten or more ones or tens with place value disks
  - Example: 140
    If counting by tens disks and not exchanging 10 tens disks for a hundred disk, then 140 is 14 tens disks

✓ **Check**: Problem Set problems #1a & c, #2a & c

M3 L15

Word Problems with Counting Tens

Goals:

- Build on **Lessons 2-4, 7, 9, 12 and 14** to solve word problems that involve counting tens and counting between numbers

Topic F: Comparing Two Three-Digit Numbers

Suggestions: Use a 0-999 chart or 0-99, 100-199, …, 900-999 charts to help compare numbers (determine which number comes before or after when counting)

M3 L16

Comparing Numbers

Goals:

- Review definitions of greater than, less than, equals (Grade 1 Modules 4 & 6)
- Use above definitions to compare and order numbers
  - Example:
    Compare 105 and 135
    - To count to 105, we count from 0 to 100 by hundred, then count by ones to 105
    - To count to 135, we count from 0 to 100 by hundred, then count by tens (past 105) to 130, then count by ones to 135
    - 105 comes before 135 when counting so 105 < 135

✓ **Check**: Problem Set problem #2g, #3d

Suggestions: Represent numbers with Dienes base ten blocks or bundled straws/sticks if students need to "see" how a number is greater or less

M3 L17 Comparing Numbers (Continued)

Cut/consolidate: Can consolidate with Lesson 18 (*Eureka Math's Notes on Pacing*)

Goals:

- Build on **Lesson 16** to compare numbers expressed as ten or more of a unit

  ✓ **Check**: Problem Set problems #2a & e

M3 L18 Ordering Numbers in Different Forms

Goals:

- ↻ **Review/reinforce** Lessons 5-7, 16-17

  ✓ **Check**: Problem Set problems #2b-d

Topic G: Finding 1, 10, and 100 More or Less Than a Number

M3 L19 Patterns with 1, 10, and 100 More or Less

Goals:

- Review definitions of "1 (or 10 or 100) more than","1 (or 10 or 100) less than" (Grade 1 Modules 4 & 6)
- Use above definitions to observe:

Key Ideas:

- “1 more” or “less” changes the ones digit
- “10 more” or “less” changes the tens digit
- “100 more” or “less” changes the hundreds digit

Check: Problem Set problems #2b-d, g-h

M3 L20 Patterns with 1, 10, and 100 More or Less (Continued)

Goals:

- Build on **Lesson 19** to observe:
  - “1 more” than a number with 9 in the ones place changes the ones digit to 0 and makes the tens digit increase by 1 (e.g., 1 more than 59 is 60)
  - “10 more” than a number with 9 in the tens place changes the tens digit to 0 and makes the hundreds digit increase by 1 (e.g., 10 more than 90 is 100)
  - “1 less” than a number with 0 in the ones place makes the tens digit decrease by 1 and changes the ones digit to 9 (e.g., 1 less than 230 is 229)
  - “10 less” than a number with 0 in the tens place makes the hundreds digit decrease by 1 and changes the tens digit to 9 (e.g., 10 less than 503 is 493)

Check: Problem Set problems #1a-b, #2a & d

Notes to teacher:

- Will revisit/reinforce 1 and 10 more or less in **Module 4 Lesson 1**

M3 L21 Skip-Counting Patterns

Cut/consolidate: Can omit lesson or use as “challenge” task

Goals:

- Find skip-counting pattern to fill in missing numbers

Check: Problem Set problems #2a-c

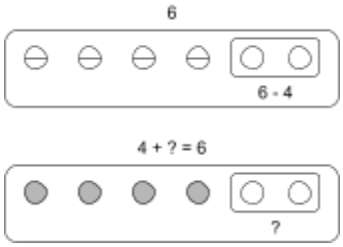
Module 4: Addition and Subtraction Within 200 with Word Problems to 100

Summary:

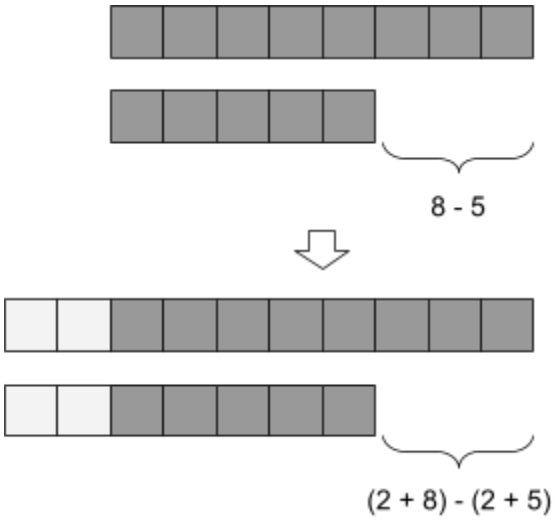
Strategy [Lesson(s)]	Addition	Subtraction	Key Ideas/Notes
Place value (Common units) [Lessons 2, 6 and on]	26 + 30 = **20** + 6 **+ 30** = **20 + 30** + 6 = 50 + 6 = 56 35 + 26 = (30 + **5**) + (20 + **6**) = 30 + 20 + (**5 + 6**) = 30 + 20 + **11** = 30 + 20 + **10 + 1** = 60 + 1 = 61	56 - 30 = **50** + 6 **- 30** = **50 - 30** + 6 = 20 + 6 = 26 46 - 18 = 40 + **6** - 10 **- 8** = 40 - 10 + **6 - 8** = 30 + **10** - 10 + **6 - 8** = 30 - 10 + **10 + 6 - 8** = 30 - 10 + (**16 - 8**) = 20 + 8 = 28	● Addition and subtraction key ideas ● Basis for vertical form (standard algorithms)
Make multiple of 10 [Lesson 4]	28 + 36 = **28** + 34 **+ 2** = **28 + 2** + 34 = 30 + 34 = 64	78 - 39 = **78** - 30 **- 8** - 1 = **78 - 8** - 30 - 1 = 70 - 30 - 1 = 39	● Addition (and subtraction) key ideas
In parts, method 1 ("The arrow way") [Lessons 2-3]	19 + 32 = **19 + 30** + 2 = 49 + 2 = 51	90 - 51 = **90 - 50** - 1 = 40 - 1 = 39	● Use arrows or number line
In parts, method 2 [Lesson 3]	19 + 29 = **19 + 30** - 1 = 49 - 1 = 48	90 - 39 = **90 - 40** + 1 = 50 + 1 = 51	● Use number line
Count on [Lesson 2]		56 - 30 = __ → 30 + __ = 56 → 30 + 20 + 6 = 56 → 56 - 30 = 26	● Subtraction as addition with unknown addend ● Use (empty) number line (Module 3 Lesson 9)
Compensation [Lesson 4]		34 - 28 = (34 **+ 2**) - (28 **+ 2**) = 36 - 30	● Show simple case with linking cubes ● Use tape diagram

Key Ideas:

- **Addition**: Because of the associative and commutative properties of addition, we can add numbers in *any order* and still keep the sum (total) the same
- **Subtraction**: We can subtract parts of the subtrahend in *any order* and from *any part* of the minuend (total) that is greater than or equal to the subtrahend part(s) and still keep the difference the same
- **Subtraction as addition with unknown addend**: “6 - 4 = __” also means “4 + __ = 6”



- **Compensation**: Addition (or subtraction) of the same number to the minuend and subtrahend keeps the difference the same
    - Example:
      8 - 5 = (2 + 8) - (2 + 5)



Materials:

- Linking/snap cubes [Topic A]
- Place value disks [Topics B-E]

Topic A: Sums and Differences Within 100

M4 L1 Sequences of 1 or 10 More or Less

Goals:

- Build on Module 3 **Lessons 19-20** to:
  - Identify rule in sequence as +1, -1, +10, or -10
  - Determine next number in sequence based on given rule

✓ **Check**: Problem Set problems #2a, #3b

M4 L2 Adding and Subtracting Multiples of 10

Goals:

- Build on Module 1 to develop strategies for adding multiples of 10
  - "Place value" (common units) strategy

    26 + 30
    = 20 + 6 + 30
    = (20 + 30) + 6 **Key Ideas**: Add in any order
    = 50 + 6
    = 56
  - "In parts" method 1 ("the arrow way") strategy

    26 + 30
    = (26 + 10) + 10 + 10 **Key Ideas**: Add in any order
    = (36 + 10) + 10
    = 46 + 10
    = 56

  ✓ **Check**: Problem Set problem #1c
- Build on Module 1 to develop strategies for subtracting multiples of 10
  - "Place value" (common units) strategy

    56 - 30
    = 50 + 6 - 30
    = (50 - 30) + 6 **Key Ideas**: Subtract from any part of the minuend
    = 20 + 6
    = 26
  - "In parts" method 1 ("the arrow way") strategy

    56 - 30
    = (56 - 10) - 10 - 10 **Key Ideas**: Subtract subtrahend parts in any order

= (46 - 10) - 10
= 36 - 10
= 26

- "Count on" strategy
  56 - 30 = __
  - 30 + __ = 56 Key Ideas: Subtraction as addition of unknown addend
  - 30 + 20 + 6 = 56
  - so 56 - 30 = 26

Check: Problem Set problem #2b

M4 L3 Adding and Subtracting Two-Digit Numbers

Goals:

- Build on **Lesson 2** to add two-digit numbers
  - "In parts" method 1 ("the arrow way") strategy
    48 + 21
    = 48 + (20 + 1)
    = (48 + 20) + 1 Key Ideas: Add in any order
    = 68 + 1 **Lesson 2**: 48 + 20 = 40 + 20 + 8
    = 69
  - "In parts" method 2 strategy
    48 + 19
    = 48 + (20 - 1)
    = (48 + 20) - 1 Key Ideas: Add (subtract from minuend) in any order
    = 68 - 1 **Lesson 2**: 48 + 20 = 40 + 20 + 8
    = 67

  Check: Problem Set problem #1b
- Build on **Lesson 2** to subtract two-digit numbers
  - "In parts" method 1 ("the arrow way") strategy
    68 - 21
    = 68 - 20 - 1
    = (68 - 20) - 1 Key Ideas: Subtract subtrahend parts in any order
    = 48 - 1 **Lesson 2**: 68 - 20 = 60 - 20 + 8
    = 47
  - "In parts" method 2 strategy
    68 - 19
    = 68 - 20 + 1 ← subtracting 20 is too much by 1 so we add back 1
    = (68 - 20) + 1 Key Ideas: Subtract from minuend (add) in any order

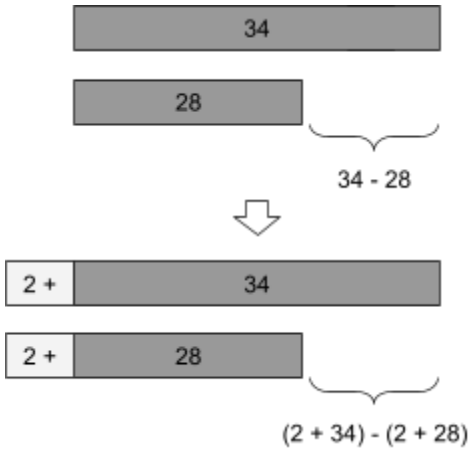
= 48 + 1 **Lesson 2**: 68 - 20 = 60 - 20 + 8
= 49

✓ **Check**: Problem Set problem #1c

M4 L4 Adding and Subtracting Two-Digit Numbers (Continued)

Goals:

- Observe compensation (with linking/snap cubes) and use compensation to subtract two-digit numbers
  - Compensation strategy
    34 - 28
    = (2 + 34) - (2 + 28)
    = 36 - 30 **Lesson 2**: 36 - 30 = 30 - 30 + 6



✓ **Check**: Problem Set problem #1b

- Build on Module 1 **Lessons 4-5** ("make 10" strategy) to add two-digit numbers
  - "Make multiple of 10" strategy
    28 + 36
    = 28 + (34 + 2)
    = (28 + 2) + 34 **Key Ideas**: Add in any order
    = 30 + 34 **Lesson 2**: 30 + 34 = 30 + 30 + 4
    = 64

✓ **Check**: Problem Set problem #2b

M4 L5 Word Problems

Goals:

- Solve one- and two-step word problems using tape diagrams and addition and subtraction strategies from **Lessons 2-4**

Focus: Concept Development problems #1, #4

Check: Problem Set problems #3, #4

Notes to teacher:

- Will revisit/reinforce one- and two-step word problems in **Lesson 16** with "place value" strategies

Topic B: Strategies for Composing a Ten

Suggestions: Incorporate drawing place value disks in Lessons 6-7 (then Lesson 8 can be omitted or used as review)

M4 L6 Adding Two-Digit Numbers: Disks

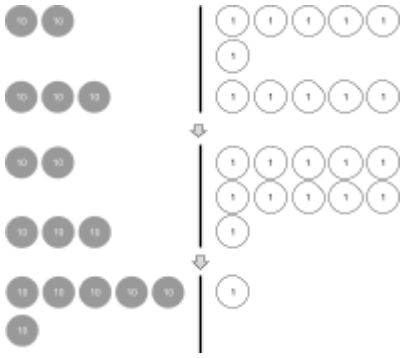
Goals:

- Build on **Lesson 2** (and Grade 1 Modules 4 & 6) by using place value disks to add two two-digit numbers involving composing a ten
  - Example:

    26 + 35
    = (20 + **6**) + (30 + **5**)

    = 20 + 30 + (**6 + 5**)
    = 20 + 30 + **11**

    = <u>20 + 30 + **10**</u> **+ 1**
    = <u>60</u> + 1
    = 61

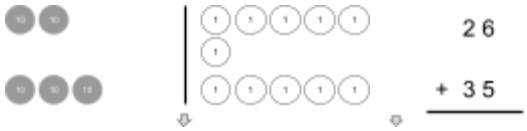


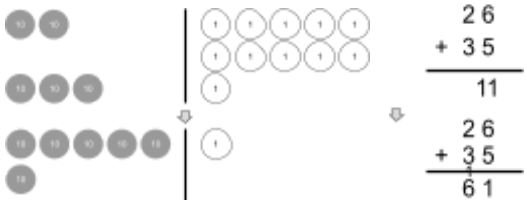
Check: Problem Set problem #2c

M4 L7 Adding Two-Digit Numbers: Disks and Written Vertical Form

Goals:

- Build on **Lesson 6** by using place value disks and written vertical form to add two two-digit numbers involving composing a ten
  - Example:





✔ **Check**: Problem Set problem #1c

M4 L8 Adding Two-Digit Numbers: Drawings and Written Vertical Form

Goals:

- ↻ **Review/reinforce** Lesson 7 by drawing place value disks

  ✔ **Check**: Problem Set problem #1a

M4 L9 Adding Two-Digit Number to Three-Digit Number

Goals:

- Build on **Lessons 7-8** by using place value disk drawings and written vertical form to add a two-digit number to a three-digit number involving composing a ten

  🔍 **Focus**: Concept Development problem #2

  ✔ **Check**: Problem Set problem #1c

M4 L10 Adding Two-Digit Number to Three-Digit Number (Continued)

Goals:

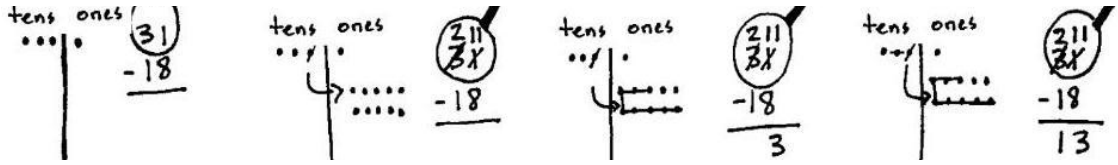
- ↻ **Review/reinforce** Lesson 9

  ✔ **Check**: Problem Set problem #1d

Topic C: Strategies for Decomposing a Ten

💡 **Suggestions**:

- Incorporate drawing place value disks in Lessons 11-12 (then Lesson 13 can be omitted or used as review)
- Use / for exchange (decomposition) and -- for subtraction in place value drawings

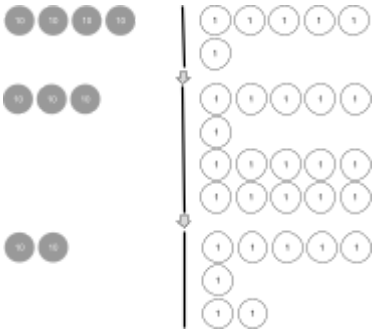


M4 L11 Subtracting Two-Digit Numbers: Disks

Goals:

- **Echo** Lesson 6 for subtraction:
  - Build on **Lesson 2** (and Grade 1 Modules 4 & 6) by using place value disks to subtract two-digit numbers involving decomposing a ten
    - Example:

      46 - 18
      = 40 + **6** - 10 - 8
      = <u>40</u> - 10 + **6** - 8 ← not enough to subtract
      = <u>30 + **10**</u> - 10 + **6** - 8
      = 30 - 10 + **10 + 6** - 8
      = 30 - 10 + (**16** - 8)
      = 20 + 8
      = 28



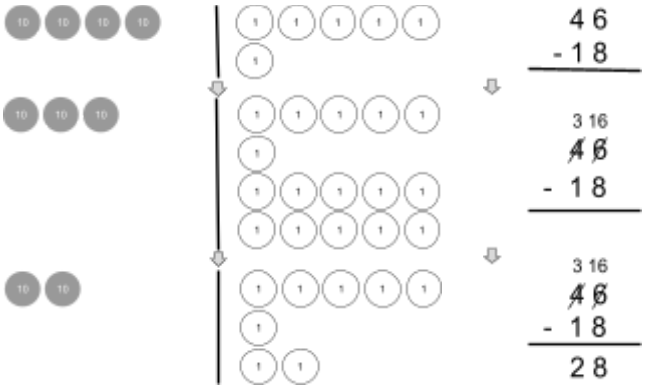
Focus: Concept Development problem #1 or #2

Check: Problem Set problem #2c-d

M4 L12 Subtracting Two-Digit Numbers: Disks and Written Vertical Form

Goals:

- **Echo** Lesson 7 for subtraction:
  - Build on **Lesson 11** by using place value disks and written vertical form to subtract two-digit numbers involving decomposing a ten
    - Example:



Focus: Concept Development problem #2

Check: Problem Set problem #1d-e

M4 L13 Subtracting Two-Digit Numbers: Drawings and Written Vertical Form

Goals:

- Echo Lesson 8 for subtraction:
  - Review/reinforce Lesson 12 by drawing place value disks

    Focus: Concept Development problem #1

    Check: Problem Set problem #1c

M4 L14 Subtracting Two-Digit Number from Three-Digit Number

Goals:

- Echo Lesson 9 for subtraction:
  - Build on **Lessons 12-13** by using place value disk drawings and written vertical form to subtract a two-digit number from a three-digit number involving decomposing a ten

    Check: Problem Set problem #1c

M4 L15 Subtracting Two-Digit Number from Three-Digit Number (Continued)

Goals:

- Review/reinforce Lesson 14

  Check: Problem Set problem #1c
- For Concept Development: Use subtraction as addition with unknown addend to "check" answer (e.g., to check 172 - 48 = 124, see if 48 + 124 = 172)

M4 L16 Word Problems (Continued)

Goals:

- Echo Lesson 5 with "place value" addition and subtraction strategies:
  - Solve one- and two-step word problems using tape diagrams and addition and subtraction strategies from **Lessons 7-8 and 12-13**

    Focus: Concept Development problems #1, #2, #4

    Check: Problem Set problem #3, #5

Notes to teacher:

- Will revisit/reinforce two-step word problems in **Lesson 31**

Topic D: Strategies for Composing Tens and Hundreds

Suggestions:

- Embed Lesson 29's subtotals ("Totals Below") into Lessons 19-21 as an intermediate step to transitioning to the vertical form (then Lessons 29-30 can be omitted)
- Incorporate drawing place value disks in Lessons 18-19 (then Lessons 20-21 can be omitted or used as review)

M4 L17 Composing Ten or Hundred when Adding Ones or Tens

Goals:

- Use place value and addition within 20 (Module 1 Lesson 4) to compose ten when adding ones and compose hundred when adding tens

  Check: Problem Set problems #1d, #2a

M4 L18 Adding Two Numbers: Disks

Goals:

- **Echo** Lesson 6 for two compositions:
  - Use place value disks to add two two-digit numbers involving composing a ten and a hundred
    - Example:

      49 + 73
      = (40 + **9**) + (70 + **3**)
      = 40 + 70 + (**9 + 3**)
      = 40 + 70 + **12**
      = <u>40 + 70 + **10** + **2**</u> ← compose 10 ones into a unit of ten
      = <u>12 tens</u> + 2 ← 4 tens + 7 tens + 1 ten = 12 tens
      = 100 + 20 + 2 ← compose 10 tens into a unit of hundred
      = 122

    Focus: Concept Development problem #2 or #3

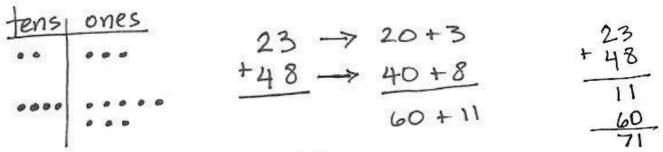
    Check: Problem Set problem #1c

M4 L19 Adding Two Numbers: Disks and Written Vertical Form

Goals:

- **Echo** Lesson 7 for two compositions:

- Build on **Lesson 18** by using place value disks and written vertical form to add two two-digit numbers involving composing a ten and a hundred



✔ **Check**: Problem Set problem #1d

M4 L20 Adding Two Numbers: Drawings and Written Vertical Form

Goals:

- **Echo** Lesson 8 for two compositions:
  - ↻ **Review/reinforce** Lesson 19 by drawing place value disks

    🔍 **Focus**: Concept Development problem #1

    ✔ **Check**: Problem Set problem #1c

M4 L21 Adding Two Numbers: Drawings and Written Vertical Form (Continued)

Goals:

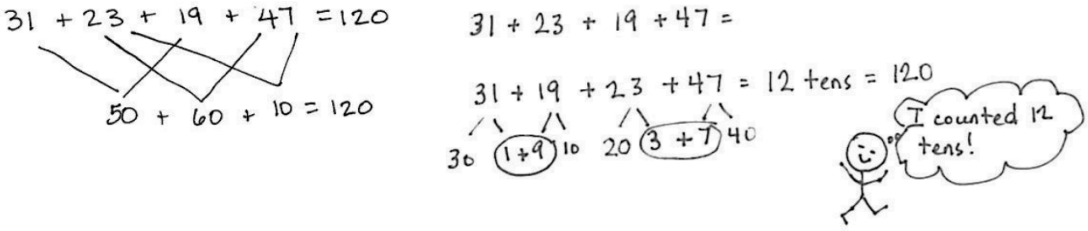
- ↻ **Review/reinforce** Lesson 20

  ✔ **Check**: Problem Set problem #1d

M4 L22 Adding Up to Four Numbers

Goals:

- Use Module 1 addition key idea to make multiples of 10 when adding numbers



🔍 **Focus**: Concept Development problems #2, #5

✔ **Check**: Problem Set problem #1c

Topic E: Strategies for Decomposing Tens and Hundreds

Suggestions:

- Incorporate drawing place value disks in Lessons 24-25 (then Lesson 26 can be omitted or used as review)
- Use / for exchange (decomposition) and -- for subtraction in place value drawings

M4 L23 Subtracting Multiples of 10

Goals:

- Build on **Lesson 2** to subtract multiples of 10 from three-digit numbers
  - Example:
    127 - 70
    = 100 + 27 - 70
    = (100 - 70) + 27
    = 30 + 27
    = 57

Key Ideas: Subtract from any part of the minuend

Focus: Concept Development problem #2

Check: Problem Set problem #1c

M4 L24 Subtracting from a Three-Digit Number: Disks

Goals:

- **Echo** Lesson 11 for two decompositions:
  - Use place value disks to subtract a two-digit number from a three-digit number involving decomposing a ten and a hundred

Focus: Concept Development problems #1, #3

Check: Problem Set problems #2a-b, e

M4 L25 Subtracting from a Three-Digit Number: Disks and Written Vertical Form

Goals:

- **Echo** Lesson 12 for two decompositions:
  - Build on **Lesson 24** by using place value disks and written vertical form to subtract from a three-digit number involving decomposing a ten and a hundred

Focus: Concept Development problem #1 or #2

✓ **Check**: Problem Set problems #1b & g

M4 L26

Subtracting from a Three-Digit Number: Drawings and Written Vertical Form

Goals:

- **Echo** Lesson 13 for two decompositions:
  - ↻ **Review/reinforce** Lesson 25 by drawing place value disks

    Focus: Concept Development problem #1 or #2

    ✓ **Check**: Problem Set problem #1a-b

M4 L27

Subtracting from a Three-Digit Number with Zero(s)

Goals:

- Build on **Lessons 23-26** to subtract from three-digit numbers with zero in the tens (and ones place)

  Focus: Concept Development problems #3, #4

  ✓ **Check**: Problem Set problems #2a & d

M4 L28

Subtracting from a Three-Digit Number with Zero(s) (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 27

  Focus: Concept Development problem #1 or #2

  ✓ **Check**: Problem Set problems #1b-c

Topic F: Student Explanations of Written Methods

✂ **Cut/consolidate**: Can omit Lessons 29-30 (see Suggestion under Topic D) or consolidate Lessons 29-31 (see *Eureka Math's Notes on Pacing*)

M4 L29

"Totals Below" Written Method

Goals:

- Record addition process with the "totals below" written method

  ✓ **Check**: Problem Set problem #2b

M4 L30 Adding Two Numbers (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 17-21, 29

  ✓ **Check**: Problem Set problems #3a-b

M4 L31 Word Problems (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 16: Solve two-step word problems using tape diagrams and addition and subtraction strategies from **Lessons 7-8 and 12-13**

  🔍 **Focus**: Concept Development problem #3

  ✓ **Check**: Problem Set problem #3

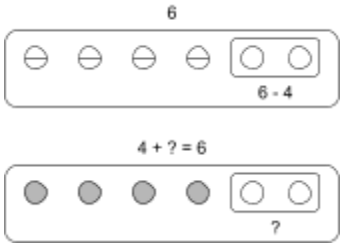
Module 5: Addition and Subtraction Within 1,000 with Word Problems to 100

Summary:

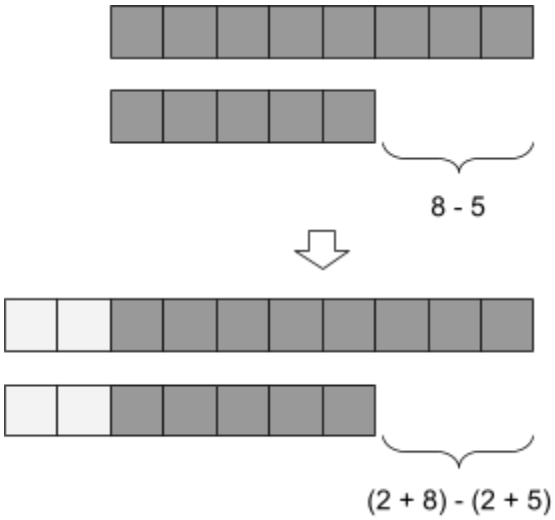
Strategy [Lesson(s)]	Addition	Subtraction	Key Ideas/Notes
Place value (Common units) [Lessons 2, 8 and on]	450 + 300 = **400** + 50 **+ 300** = **400 + 300** + 50 = 700 + 50 = 750	582 - 300 = **500** + 82 **- 300** = **500 - 300** + 82 = 200 + 82 = 282	● Addition and subtraction key ideas ● Basis for vertical form (standard algorithms)
Make multiple of 100 [Lessons 3-5]	280 + 230 = **280** + 200 **+ 20** + 10 = **280 + 20** + 200 + 10 = 300 + 200 + 10 = 510	780 - 390 = **780** - 300 **- 80** - 10 = (**780 - 80**) - 300 - 10 = 700 - 300 - 10 = 390	● Addition and subtraction key ideas
In parts, method 1 ("The arrow way") [Lessons 2-4]	450 + 300 = 450 + 100 + 100 + 100 $450 \xrightarrow{+100} 550 \xrightarrow{+100} 650 \xrightarrow{+100} 750$ = 750 280 + 230 = 280 + 200 + 30 $280 \xrightarrow{+200} 480 \xrightarrow{+30} 510$ = 510	582 - 300 = 582 - 100 - 100 - 100 $582 \xrightarrow{-100} 482 \xrightarrow{-100} 382 \xrightarrow{-100} 282$ = 282 780 - 390 = 780 - 300 - 50 - 30 - 10 $780 \xrightarrow{-300} 480 \xrightarrow{-50} 430 \xrightarrow{-30} 400 \xrightarrow{-10} 390$ = 390	● Use arrows or number line
In parts, method 2	120 **+ 190** = 120 **+ 200 - 10** = 320 - 10 = 310	780 **- 390** = 780 **- 400 + 10** = 380 + 10 = 390	● Use number line
Count on [Lessons 2 & 18]		582 - 300 = __ → 300 + __ = 582 → 300 + <u>200 + 82</u> = 582 → 582 - 300 = <u>282</u>	● Subtraction as addition with unknown addend ● Use (empty) number line (Module 3 Lesson 9)
Compensation [Lessons 6 & 18]		780 - 390 = (780 + 10) - (390 + 10) = 790 - 400 = 390	● Show simple case with linking cubes (Module 4 Lesson 4) ● Use tape diagram

Key Ideas:

- **Addition**: Because of the associative and commutative properties of addition, we can add numbers in *any order* and still keep the sum (total) the same
- **Subtraction**: We can subtract parts of the subtrahend in *any order* and from *any part* of the minuend (total) that is greater than or equal to the subtrahend part(s) and still keep the difference the same
- **Subtraction as addition with unknown addend**: “6 - 4 = __” also means “4 + __ = 6”



- **Compensation**: Addition (or subtraction) of the same number to the minuend and subtrahend keeps the difference the same
    - Example:
      8 - 5 = (2 + 8) - (2 + 5)



Materials:

- Place value disks [Topics A-C]

Suggestions: If student learning of Module 4 is solid, move through Module 5 more quickly because it applies the same ideas to larger numbers

Topic A: Strategies for Adding and Subtracting Within 1,000

M5 L1 Sequences of 10 or 100 More or Less

Goals:

- **Echo** Module 4 Lesson 1 for tens and hundreds:
  - Build on Module 3 **Lessons 19-20** to:
    - Identify rule in sequence as +10, -10, +100, or -100
    - Determine next number in sequence based on given rule

  Check: Problem Set problems #2b-c

Suggestions: Omit (or assign as "challenge problems") Problem Set problem #4, Exit Ticket, and Homework problem #4; these types of problems will be covered in later lessons of the module

M5 L2 Adding and Subtracting Multiples of 100

Goals:

- **Echo** Module 4 Lesson 2 for multiples of 100:
  - Build on Module 1 to develop strategies for adding multiples of 100
    - "Place value" (common units) strategy

      450 + 300
      = 400 + 50 + 300
      = (400 + 300) + 50
      = 700 + 50
      = 750

      Key Ideas: Add in any order
    - "In parts" method 1 ("the arrow way") strategy

      450 + 300
      = (450 + 100) + 100 + 100
      = (550 + 100) + 100
      = 650 + 100
      = 750

      Key Ideas: Add in any order

      $450 \xrightarrow{+100} 550 \xrightarrow{+100} 650 \xrightarrow{+100} 750$

  Check: Problem Set problem #1c
  - Build on Module 1 to develop strategies for subtracting multiples of 100
    - "Place value" (common units) strategy

582 - 300
= 500 + 82 - 300
= (500 - 300) + 82 **Key Ideas**: Subtract from any part of minuend
= 200 + 82
= 282

- "In parts" method 1 ("the arrow way") strategy
  582 - 300
  = (582 - 100) - 100 - 100 **Key Ideas**: Subtract parts in any order
  = (482 - 100) - 100
  = 382 - 100
  = 282

$582 \xrightarrow{-100} 482 \xrightarrow{-100} 382 \xrightarrow{-100} 282$

- "Count on" strategy
  582 - 300 = __
  - 300 + __ = 582

    Key Ideas: Subtraction as addition of unknown addend
  - 300 + <u>200 + 82</u> = 582
  - so 582 - 300 = 282

Check: Problem Set problem #2c

M5 L3 Adding Three-Digit Numbers

Goals:

- **Echo** Module 4 Lessons 3-4 for three-digit numbers:
  - Build on **Lesson 2** to add three-digit numbers
    - "In parts" method 1 ("the arrow way") strategy
      280 + 230
      = 280 + 200 + 30
      = (280 + 200) + 30 **Key Ideas**: Add in any order
      = 480 + 30
      = 510

$280 \xrightarrow{+200} 480 \xrightarrow{+30} 510$

  - Build on **Module 4 Lesson 4** ("make 10" strategy) to add three-digit numbers
    - "Make multiple of 100" strategy
      280 + 230
      = **280** + 200 **+ 20** + 10
      = (**280 + 20**) + 200 + 10 **Key Ideas**: Add in any order
      = 300 + 200 + 10
      = 510

Focus: Concept Development problems #3, #5

Check: Problem Set problems #2b & d

M5 L4 Subtracting Three-Digit Numbers

Goals:

- **Echo** Module 4 Lessons 3-4 for three-digit numbers:
  - Build on **Lesson 2** to subtract three-digit numbers
    - "In parts" method 1 ("the arrow way") strategy

      780 - 390
      = 780 - 300 - 90
      = (780 - 300) - 90
      = 480 - 50 - 40
      = 390

      $780 \xrightarrow{-300} 480 \xrightarrow{-50} 430 \xrightarrow{-30} 400 \xrightarrow{-10} 390$

      Key Ideas: Subtract parts in any order
  - Build on **Lesson 3** to subtract three-digit numbers
    - "Make multiple of 100" strategy

      780 - 390
      = **780** - 300 **- 80** - 10
      = (**780 - 80**) - 300 - 10
      = 700 - 300 - 10
      = 390

      Key Ideas: Subtract parts in any order

Focus: Concept Development problem #3

Check: Problem Set problems #2a & c

M5 L5 Adding Three-Digit Numbers (Continued)

Goals:

- **Review/reinforce** Lesson 3: "Make multiple of 100" strategy
  - Example:

    199 + 25
    = 199 + (1 + 24)
    = (199 + 1) + 24
    = 200 + 24
    = 224

    Key Ideas: Add in any order

Focus: Concept Development Parts 2-3

✓ **Check**: Problem Set problems #2c & f

Suggestions: Write continuous equations (see examples above) rather than separate equations to keep track of all parts of the expression

M5 L6

Subtracting Three-Digit Numbers (Continued)

Goals:

- **Echo** Module 4 Lesson 4 for three-digit numbers:
  - Use compensation to subtract three-digit numbers
    - Compensation strategy

      514 - 290
      = (514 + 10) - (290 + 10)
      = 524 - 300
      = 224

Focus: Concept Development problems #2, #3

✓ **Check**: Problem Set problems #1b & d, #2c

M5 L7

Adding and Subtracting Three-Digit Numbers (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 2-6

✓ **Check**: Problem Set problem #1

Topic B: Strategies for Composing Tens and Hundreds Within 1,000

Cut/consolidate: Can omit Lessons 8-9 if students are ready to use place value disk drawings without first using the disks/chart

M5 L8

Adding Three-Digit Numbers: Disks and Written Vertical Form

Goals:

- **Echo** Module 4 Lessons 6-7 for three-digit numbers:
  - Build on **Lesson 2** by using place value disks and written vertical form to add two three-digit numbers involving composing a hundred
    - Example:

      211 + 95
      = (200 + **10** + 1) + (**90** + 5)

= 200 + (**10 + 90**) + (1 + 5)
= 200 + **100** + 6
= 300 + 6
= 306

🔍 **Focus**: Concept Development problem #2

✔ **Check**: Problem Set problem #1g

M5 L9

Adding Three-Digit Numbers: Disks and Written Vertical Form (Continued)

Goals:

- **Echo** Module 4 Lessons 18-19 for three-digit numbers:
  - Build on **Lesson 8** by using place value disks and written vertical form to add two three-digit numbers involving composing a hundred and composing a ten

    🔍 **Focus**: Concept Development problem #1 or #2

    ✔ **Check**: Problem Set problem #1c

M5 L10

Adding Three-Digit Numbers: Drawings and Written Vertical Form

Goals:

- **Echo** Module 4 Lesson 8 for three-digit numbers:
  - ↻ **Review/reinforce** Lesson 8 (one composition) by drawing place value disks

    🔍 **Focus**: Concept Development problem #2

    ✔ **Check**: Problem Set problem #1c

M5 L11

Adding Three-Digit Numbers: Drawings and Written Vertical Form (Continued)

Goals:

- **Echo** Module 4 Lesson 20 for three-digit numbers:
  - ↻ **Review/reinforce** Lesson 9 (two compositions) by drawing place value disks

    🔍 **Focus**: Concept Development problem #1

    ✔ **Check**: Problem Set problem #1c

M5 L12 Adding Three-Digit Numbers (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 2-11

  🔍 **Focus**: Concept Development problem #2 or #3

  ✔ **Check**: Problem Set problem #2

Topic C: Strategies for Decomposing Tens and Hundreds Within 1,000

M5 L13 Subtracting Three-Digit Numbers: Disks and Written Vertical Form

✂ **Cut/consolidate**: Can omit if students are ready to use place value disk drawings without first using the disks/chart

Goals:

- **Echo** Module 4 Lessons 11-12 for three-digit numbers:
  - Build on **Lesson 2** by using place value disks and written vertical form to subtract three-digit numbers involving decomposing a ten or hundred
    - Example:

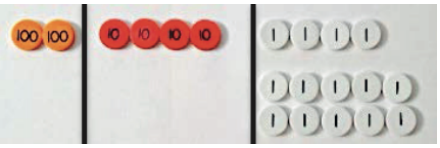
      254 - 135

      = 200 + 50 + **4** - 100 - 30 - 5

      = 200 - 100 + 50 - 30 + **4** - 5 ← not enough to subtract

      = 200 - 100 + 40 + **10** - 30 + **4** - 5

      = 200 - 100 + 40 - 30 + **14** - 5



      = 100 + 10 + 9

      = 119

🔍 **Focus**: Concept Development problems #1, #2

✔ **Check**: Problem Set problem #2c-d

M5 L14 Subtracting Three-Digit Numbers: Drawings and Written Vertical Form (Continued)

Goals:

- Echo Module 4 Lesson 13 for three-digit numbers:
  - Review/reinforce Lesson 13 (one decomposition) by drawing place value disks
  - Verify answer by checking equivalent addition equation

Focus: Concept Development problem #1

Check: Problem Set problem #1b

M5 L15 Subtracting Three-Digit Numbers: Drawings and Written Vertical Form (Continued)

Goals:

- Echo Module 4 Lessons 24-26 for three-digit numbers:
  - Build on **Lesson 14** by using drawings and written vertical form to subtract three-digit numbers involving decomposing a ten and decomposing a hundred

    Focus: Concept Development problem #3

    Check: Problem Set problem #1d

M5 L16 Subtracting from a Three-Digit Number with Zero(s)

Goals:

- Echo Module 4 Lesson 27 for three-digit numbers:
  - Build on **Lessons 13-15** to subtract from three-digit numbers with zero in the tens (and ones place)

    Focus: Concept Development problems #1, #2

    Check: Problem Set problems #1a-b & e

M5 L17 Subtracting from a Three-Digit Number with Zero(s) (Continued)

Goals:

- Echo Module 4 Lesson 28 for three-digit numbers:
  - Review/reinforce Lesson 16

Focus: Concept Development problem #2, #3

Check: Problem Set problems #1c & e

M5 L18 Subtracting from a Three-Digit Number with Zero(s) (Continued)

Goals:

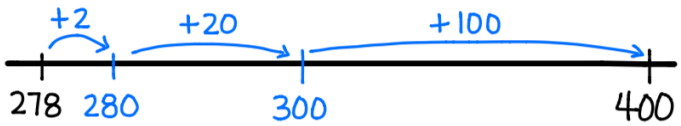
- Build on **Lessons 2 and 6** by using compensation and "place value" strategies to subtract from multiple of 100
  - Example:
    300 - 159

    = (300 - 1) - (159 - 1) **Key Ideas**: Compensation
    = 299 - 158
    = 200 + 90 + 9 - 100 - 50 - 8
    = 200 - 100 + 90 - 50 + 9 - 8 **Key Ideas**: Subtract from any part of minuend
    = 100 + 40 + 1
    = 141

  Focus: Concept Development problem #1

  Check: Problem Set problem #5a
- Build on **Lesson 2** ("count on" strategy) to subtract from multiple of 100
  - Example:
    400 - 278 = __
    - 278 + __ = 400

      Key Ideas: Subtraction as addition of unknown addend



    - 278 + <u>2 + 20 + 100</u> = 400
    - so 400 - 278 = <u>122</u>

  Focus: Concept Development problem #2

  Check: Problem Set problem #1b

Topic D: Student Explanations for Choice of Solution Methods

M5 L19

Adding and Subtracting Three-Digit Numbers

Goals:

- ↻ **Review/reinforce** Lessons 2-18

M5 L20

Adding and Subtracting Three-Digit Numbers (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 2-18

Module 6: Foundations of Multiplication and Division

Summary:

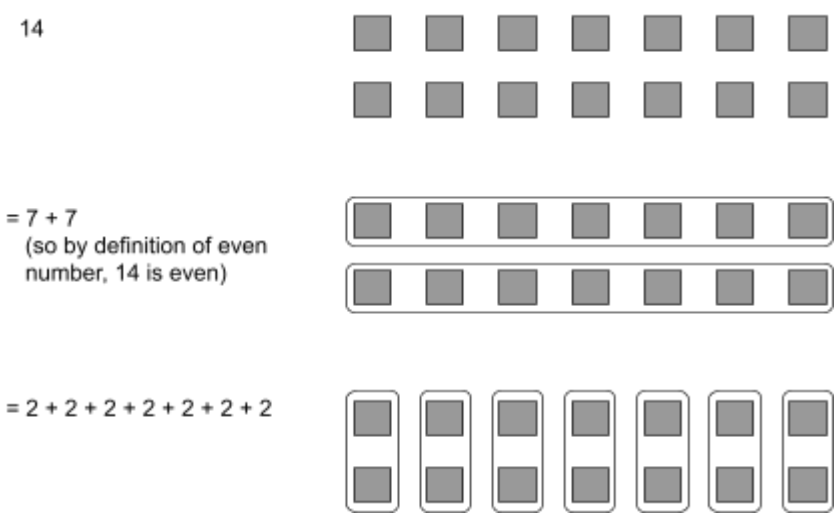
- Addition of equal groups (sum of equal addends): $n + n + \ldots + n$
- Progression of learning:
  - objects in equal groups → objects in array → squares in rectangle
  - groups ↔ rows or columns
- To prep students for Grade 3:
  - Multiplication will be *shorthand* for addition of equal groups
    - Example: $7 \times 2 = 2 + 2 + 2 + 2 + 2 + 2 + 2$ (total of 7 groups of 2)
  - Area of rectangle: counting total number of unit squares that fit inside rectangle

Definitions:

- **Even number**: a number equal to $n + n$ for some whole number n ("twice a whole number," "doubles").
  - Example: $14 = 7 + 7$
- **Odd number**: a number that is not even

Key Ideas:

- **Interpretations of an even number**:
  - An even number is equal to $2 + 2 + \ldots + 2$
    Reasoning:



    a. An even number is in the sequence of skip-counting by twos: $2,\ 4\ (= 2 + 2),\ 6\ (= 4 + 2 = 2 + 2 + 2),\ etc.$
    b. An even number is the total when all objects are paired up with <u>none left unpaired</u>.
  - An even number has last digit 0, 2, 4, 6, or 8.

- **Interpretations of an odd number**:
  - An odd number is the total when all objects are paired up with <u>one left unpaired</u>.
    Example: $15 = 7\,pairs + 1\,unpaired$
  - An odd number is equal to $even\,number + 1$ (or $even\,number - 1$).
    Example: $15 = 14 + 1$, $15 = 16 - 1$

Materials:

- Counters (up to 30 per student/pair) [Topics A-B, D]
- Color Tiles (up to 25 per student/pair) [Topics B-D]
- Ruler [Topic C]

Topic A: Formation of Equal Groups

M6 L1 Equal Groups: Objects

✂ **Cut/consolidate**: Can consolidate with Lesson 2 (*Eureka Math's Notes on Pacing*)

Goals:

- Arrange a set of objects into equal groups

  ✓ **Check**: Problem Set problems #2, #4

M6 L2 Equal Groups: Drawings and Addition Equation

Goals:

- Write the addition equation that corresponds to the drawing and statement "__ groups of __ equals __"
  - Example:

"3 groups of 5 equals 15"

__ + __ + __ → 5 + 5 + 5 → 5 + 5 + 5 = 15

✓ **Check**: Problem Set problem #1

M6 L3 Equal Groups: Drawings and Addition Equation (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 2

  ✓ **Check**: Problem Set problem #1a
- Add pairs of addends ("doubles") as a strategy to find sum more efficiently

M6 L4 Equal Groups: Tape Diagrams

Goals:

- Build on **Lesson 2** by representing equal groups with tape diagram (or number line)

  ✓ **Check**: Problem Set problems #1a & c

Topic B: Arrays and Equal Groups

Suggestions: Incorporate Lesson 8's Concept Development into Lesson 5 or 6 and Problem Set into Lesson 7 (then Lesson 8 can be omitted or used as review)

M6 L5 Composing Arrays: Objects

Goals:

- Organize a set of equal groups into an array of rows and columns
  - "Group" is now "row" or "column"

Focus: Concept Development problems #1, #2

Check: Problem Set problem #2

Suggestions: Include the addition equation that corresponds with each array

"2 groups of 3" → 3 + 3 = 6

$$\begin{array}{r} 3 \\ +\,3 \\ \hline 6 \end{array}$$

M6 L6 Decomposing Arrays: Objects

Goals:

- Decompose array into rows or columns and write the corresponding addition equation

Check: Problem Set problems #1c-d

M6 L7 Arrays: Drawings

Goals:

- Make array drawings and use lines between columns or rows to distinguish the equal groups by columns or rows

Check: Problem Set problem #2

M6 L8 Arrays: Square Tiles

Goals:

- **Review/reinforce** Lessons 5-7 with square tiles

Check: Problem Set problem #3

M6 L9

Word Problems

Goals:

- Solve word problems involving addition of equal groups
  - Draw groups, array, or tape diagram
  - Write corresponding addition equation

Focus: Concept Development problems #2, #3

Check: Problem Set problems #1, #5

Topic C: Rectangular Arrays as a Foundation for Multiplication and Division

M6 L10

Composing Rectangles: Square Tiles

Cut/consolidate: Can omit or consolidate with Lesson 11

Goals:

- Compose rectangle or square from array of square tiles
- Write addition equation to find total number of square tiles in rectangle
- Note there can be no overlap or gap

Check: Problem Set problems #2, #3a

M6 L11

Composing Rectangles: Square Tiles (Continued)

Goals:

- Compose rectangles with different numbers of rows and columns for a given total number of square tiles

Check: Problem Set problem #2

M6 L12

Drawing Rectangles

Goals:

- Use one square tile (and ruler) to draw rectangle composed of square tiles

Check: Problem Set problem #3

Suggestions: For Problem Set problems #1 and #2, allow students to use one square tile to be consistent with Concept Development and Homework

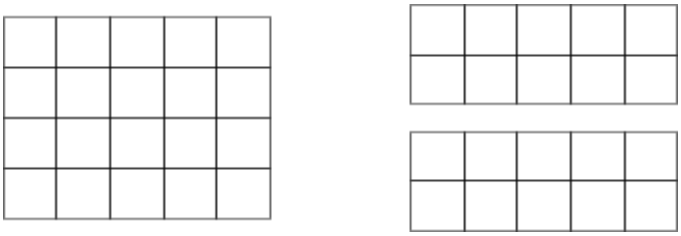
M6 L13

Decomposing Rectangles: Square Tiles

Cut/consolidate: Can omit because concept is a Grade 3 Standard (2.MD.7)

Goals:

- Decompose rectangle into smaller rectangles and express total number of square tiles as sum of two repeated addition sums



5 + 5 + 5 + 5 = (5 + 5) + (5 + 5)

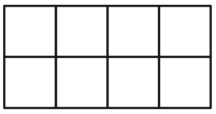
Check: Problem Set problem #2

- Find the total number of square tiles in a rectangle when one row or column is removed

M6 L14 Decomposing and Composing Rectangles: Paper Squares

Goals:

- Decompose rectangle into rows and columns, and write corresponding addition equations for total number of square tiles in rectangle
  - Example:
    - 2 rows of 4 squares → 4 + 4 = 8
    - 4 columns of 2 squares → 2 + 2 + 2 + 2 = 8



Notes to teacher:

- Flexibility in switching between rows and columns is necessary for reasoning and understanding the relationship between the two main interpretations of even numbers (**Lessons 17-18**)

Materials: Lesson 14 Template (p. 198 of Teacher Edition), scissors

M6 L15 Drawing Rectangles (Continued)

Goals:

- Draw rectangle with given dimensions ("__ rows of __" or "__ columns of __") and write corresponding addition equation for total number of square tiles in rectangle

M6 L16

Tesselation Designs

Cut/consolidate: Can omit or use as enrichment because not directly relevant to Grade 2 Standards

Goals:

- Use colored squares (and triangles) to create a rectangular design ("core unit") and repeat "core unit" to create pattern ("tesselation")

Materials: Lesson 16 Template (p. 221 of Teacher Edition), colored pencils/crayons, scissors

Topic D: The Meaning of Even and Odd Numbers

M6 L17

Even Numbers

Goals:

- Define even number

  Check: Problem Set problem #1c
- Observe and give reasoning for why an even number is also $2 + 2 + \ldots + 2$ and skip-counting by twos (interpretations of an even number #1 and #1a)

  Check: Problem Set problem #2b

M6 L18

Even Numbers (Continued)

Goals:

- Build on **Lesson 17** to observe and give reasoning for why an even number is the total when all objects are paired up with none left unpaired (interpretations of an even number #1b)
- Use definition and interpretations of an even number to determine if a number is even or not

  Check: Problem Set problems #1, #6

M6 L19

Even and Odd Numbers

Goals:

- Define odd number

  ✓ **Check**: Problem Set problem #3b
- Observe and give reasoning for additional interpretations of an odd number
- Use definitions and interpretations to determine if a number is even or odd
  - Note: If you want to show a number is odd by using the definition ("not even") or interpretation of an odd number #2 ("even number + 1" or "even number - 1"), then you **also** need to show WHY the number is not even or WHY an addend or the minuend (total) is even
    - Example: 19 is odd because $19 = 18 + 1 = even\ number + 1$ **and** 18 is even because $18 = 9 + 9$ (or $18 = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2$).

  ✓ **Check**: Problem Set problems #5a-b

M6 L20 Sums of Even or Odd Numbers

Goals:

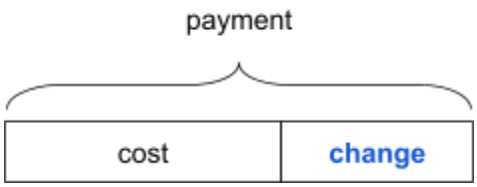
- Use definitions and interpretations of even, odd numbers and reasoning to conclude the following:
  - even + even = even
  - even + odd = odd, odd + even = odd
  - odd + odd = even

  ✓ **Check**: Problem Set problems #2b-d

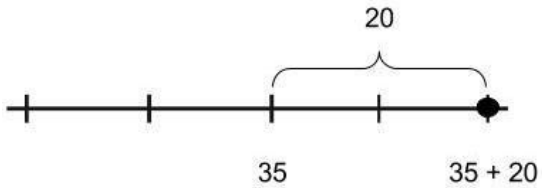
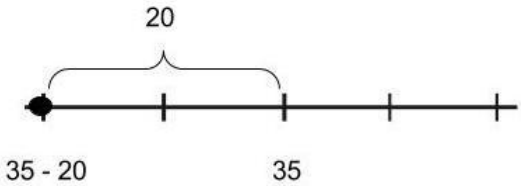
Module 7: Problem Solving with Length, Money, and Data

Definitions:

- **To "make change"**:
  - cost + **change** = payment
  - **change** = payment - cost



- **To measure length** with (or using) a specified **length unit**: to <u>count the number of length units that fit</u>
  (1) side by side (no overlap or extra space between) and
  (2) from one endpoint to the other endpoint of the object
- **To estimate (approximate) length**: to find the number of units that is <u>closest</u> to the actual length of the object
- **Inch**, **foot, yard**: 12 inches = 1 foot, 3 feet = 1 yard
- **"More than", "less than" on the number line**:

Word form	*Meaning (Definition)*
20 yards more than 35 yards	35 + 20 
20 yards less than 35 yards	35 - 20 

Key Ideas:

- **Relationship between measurement units and values**:

Measuring with a …	yields a …
larger unit	*smaller* value
smaller unit	*larger* value

Reasoning: one larger unit takes more space so fewer can fit in a given space; one smaller unit takes less space so it takes more to fit in a given space

Materials:

- Money [Topic B]
- Centimeter cubes [Topic C]
- Color tiles [Topic C]
- Ruler [Topics D & F]
- Tape measure [Topic D]

Topic A: Problem Solving with Categorical Data

M7 L1 Categories and Table with Counts

Cut/consolidate: Can consolidate with Lesson 2 (*Eureka Math's Notes on Pacing*)

Goals:

- Sort animals into categories based on characteristics such as classification (bird, mammal, reptile, fish), habitat (arctic, woodland, ocean)
- Record category counts into table
- Solve word problems involving addition, subtraction, or comparison of category counts (see questions on p. 17 of Teacher Edition)

Check: Problem Set problems #1, #3a-b

Materials: See p. 15 of Teacher Edition; will continue to use in Lesson 2

M7 L2 Picture Graph

Goals:

- Build on **Lesson 1** by representing categorical data as (vertical and horizontal) "picture graphs"

Check: Problem Set problems #1a-c

Materials: Lesson 2 Templates 1-2 (pp. 46-47 of Teacher Edition)

M7 L3 Bar Graph

Cut/consolidate: Can consolidate with Lesson 4 (*Eureka Math's Notes on Pacing*)

Goals:

- Build on **Lesson 2** by representing categorical data as (vertical and horizontal) bar graphs
- Observe that the category count equals the length (or height) of the bar measured by the count axis (number line)

Check: Problem Set problem #2a

Materials: Lesson 3 Template 2 (p. 62 of Teacher Edition)

M7 L4

Bar Graph (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 3

  ✓ **Check**: Problem Set problems #1a-b

M7 L5

Word Problems

Goals:

- ↻ **Review/reinforce** Lesson 3

  ✓ **Check**: Problem Set problems #2a-b

Topic B: Problem Solving with Coins and Bills

M7 L6

Coins

Goals:

- Use coin values and addition strategies to find total value of a set of coins

  ✓ **Check**: Problem Set problems #4, #12

M7 L7

Word Problems with Coins

Goals:

- Build on **Lesson 6** to solve word problems involving addition (and/or subtraction) of values of coins

  ✓ **Check**: Problem Set problems #2, #4

M7 L8

Word Problems with Dollar Bills

Goals:

- Solve word problems involving addition (and/or subtraction) of values of dollar bills

  ✓ **Check**: Problem Set problems #2, #3

M7 L9

Different Coin Combinations

Goals:

- Compose different coin combinations with the same total value

Focus: Concept Development Part 1

Check: Problem Set problem #2

- Solve word problems involving composition of different coin combinations with the same total value

Focus: Concept Development Part 2 Problem #1

Check: Problem Set problem #6

M7 L10 Fewest Number of Coins

Goals:

- Find the coin combination that makes the given total value with the fewest number of coins and observe:

Key Ideas:

  - Concept Development Part 2: Combination with fewest coins is reached when there is no group of coins that can be exchanged for fewer coins
  - Concept Development Part 3: Strategy to find combination with fewest coins - start with highest coin value possible and then work down
    - Example: 27¢ = 25¢ + 1¢ + 1¢

Check: Problem Set problem #3

M7 L11 Making $1 or Making Change from $1

Cut/consolidate: Can omit or consolidate with Lesson 12 (*Eureka Math's Notes on Pacing*)

Goals:

- Define to "make change"
- Use strategies for subtraction or addition with unknown addend to "make change" from $1 (payment = 100¢)

Focus: Concept Development Part 1

Check: Problem Set problem #2b-c

M7 L12 Making $1 or Making Change from $1 Word Problems

Goals:

- Build on **Lesson 11** to solve word problems involving making $1 or making change from $1

Focus: Concept Development Parts 1 & 3

Check: Problem Set problem #2

M7 L13 Word Problems with Coins or Dollar Bills

Goals:

- Solve two-step word problems involving addition and/or subtraction of coin or dollar bill values

Check: Problem Set problems #1, #2

Topic C: Creating an Inch Ruler

Cut/consolidate: Can consolidate Lessons 14 and 15 (*Eureka Math's Notes on Pacing*)

M7 L14 Measuring Length with One Square-Inch Tile

Goals:

- **Echo** Module 2 Lesson 2 (iterated length units) for inches:
  - Use the "mark and move forward" technique with one square-inch tile to measure and estimate lengths of linear objects

    Check: Problem Set problem #1

M7 L15 Measuring with Ruler

Goals:

- **Echo** Module 2 Lesson 3 (create and measure with ruler) for inches:
  - Define inch, foot
  - Create and use inch ruler to measure lengths of objects
  - Compare and add or subtract lengths

Check: Problem Set problems #6, #7b

Topic D: Measuring and Estimating Length Using Customary and Metric Units

M7 L16 Measuring with Customary Units

Goals:

- Define yard
- Use inch ruler and yardstick (or tape measure) to measure lengths of objects
- Determine the appropriate unit (inch, foot, yard) for measuring an object

Focus: Concept Development Centers 3-4 (Recording Sheet)

M7 L17 Estimating with Mental Benchmarks

Goals:

- **Echo** Module 2 Lesson 5 (mental benchmarks) for inches/feet/yards:
  - Use "mental benchmarks" by "picturing them in your head to estimate the length of an object"
    - Sample mental benchmarks:
      - width of quarter: about 1 inch
      - length of paper: about 1 foot
      - width of door: about 1 yard

Check: Problem Set problems d-e

M7 L18 Measuring with Different Units

Goals:

- **Echo** Module 2 Lesson 7 (comparison of different unit measurements) for centimeters and inches:
  - Measure objects with units of different size (e.g., centimeters and inches) and observe the relationship between measurement units and values

Check: Problem Set problems #4, #5

M7 L19 Comparing Lengths

Goals:

- **Echo** Module 2 Lesson 6 for inches/feet/yards:
  - Use the relationship between comparing and measuring lengths and definition of subtraction (or addition with unknown addend) to find difference in lengths

Check: Problem Set problem #2

Topic E: Problem Solving with Customary and Metric Units

M7 L20 Word Problems

Goals:

- Build on **Lesson 19** to solve one-step word problems involving subtraction (or addition with unknown addend) of lengths

  Focus: Concept Development Part 1 (Problem Set problem #1)

  Check: Problem Set problem #2
- Solve two-step word problems involving addition (and subtraction) of lengths

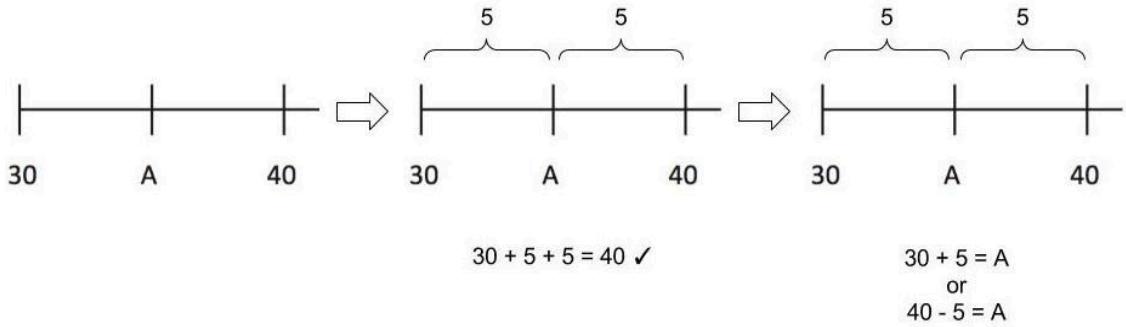
  Focus: Concept Development Part 2 (Problem Set problem #3)

  Check: Problem Set problem #4

M7 L21 Finding Unlabeled Point on Number Line

Goals:

- Use definitions of addition or subtraction to determine if number line has been marked by "units" of 5 or 10 and then find value of unlabeled point



  Focus: Concept Development problem #1

  Check: Problem Set problem #2
- Use definitions of addition or subtraction to find values of unlabeled points on the number line marked by "units" of 5 or 10

  Focus: Concept Development problems #2, #3

  Check: Problem Set problems #4, #6

M7 L22

Finding Distance on Number Line

Goals:

- Build on **Lesson 21** to find "more than", "less than" on the number line

  Focus: Concept Development problems #1, #2

  Check: Problem Set problems #1a & c, #2a & c
- Use definition of addition or subtraction to find distance (or length) between two points on number line (or to find values of points given distance in between)

  Focus: Concept Development problem #3

  Check: Problem Set problem #4

Topic F: Displaying Measurement Data

Cut/consolidate: Can omit Lesson 26 or consolidate with Lesson 25 (*Eureka Math's Notes on Pacing*)

Suggestions: Use grid paper to display line plots in Lessons 24-26

M7 L23

Table with Counts

Goals:

- Record data (measurements) as tally marks in a table and solve comparison problems using information in the table

  Check: Problem Set problems #1, #2

M7 L24

Line Plot

Goals:

- Display measurement data as line plot

  Focus: Concept Development Part 1

  Check: Problem Set problem #1
- **Review/reinforce** Lesson 23 and Lesson 24 Part 1

  Focus: Concept Development Parts 2-3

  Check: Problem Set problem #2

Notes to teacher:

- For line plots:
  - Label horizontal axis (scale) with unit of measurement
  - Use double hash mark to skip numbers

M7 L25 Line Plot (Continued)

Goals:

- Build on **Lesson 24** by displaying measurement data as line plot, solving problems involving comparison and totals, and drawing conclusions or making inferences based on the data

  Focus: Concept Development Part 1 or 2

  Check: Problem Set problem #2

M7 L26 Line Plot (Continued)

Goals:

- **Review/reinforce** Lesson 25

  Focus: Concept Development Part 1

  Check: Problem Set problem #2
- Display measurement data as line plot with vertical scale

  Focus: Concept Development Part 2

Module 8: Time, Shapes, and Fractions as Equal Parts of Shapes

Summary:

- Geometry: attributes, classification, construction/drawing, and compositions of shapes [Lessons 1-6]
- Fractions: “equal” partitions of shapes [Lessons 7-12]
- Telling time: half, quarter-partitions of circle [Lessons 13-16]

Definitions:

- **Angle**: figure formed where two sides of a shape meet
  - **Right angle** (“square corner”): “L-shaped” corner; angle formed by sides of index card
- **Parallel lines**: lines that never cross or touch, even if they kept going in both directions
- **Polygon**: closed shape (no gap or overlap) with straight sides
- **Triangle**: polygon with three sides (and three angles)
- **Quadrilateral**: polygon with four sides (and four angles)
  - **Trapezoid**: quadrilateral with *at least one* pair of parallel sides
  - **Parallelogram**: quadrilateral with *two* pairs of parallel sides
  - **Rectangle**: quadrilateral with four right angles (special parallelogram)
  - **Rhombus**: quadrilateral with four equal sides (special parallelogram)
  - **Square**: quadrilateral with four equal sides and four right angles (rhombus and rectangle)
- **Pentagon**: polygon with five sides (and five angles)
- **Hexagon**: polygon with six sides (and six angles)
- **Cube**: solid shape with equal edges (and square faces)
- **Half/Third/Fourth**:
  - To “cut a shape into halves/thirds/fourths” means “to cut a shape into two/three/four parts with equal space (‘equal parts’)”
  - “1 half/third/fourth of a shape” means “1 part when a shape is cut into halves/thirds/fourths”
- **To tell time to the half or quarter hour**

Time	Analog Clock	Digital Clock (hour:minutes)
Three-*fifteen* *Quarter past* **3** o’clock	hour (short) hand pointed **between 3 and 4**, **closer to 3** minute (long) hand pointed *at 3*	**3**:*15*
Three-*thirty* *Half past* **3** o’clock	hour (short) hand pointed **halfway between 3 and 4**	**3**:*30*

	minute (long) hand pointed *at 6*	
Three-*forty-five* *Quarter to* **4** o'clock	hour (short) hand pointed **between 3 and 4**, **closer to 4** minute (long) hand pointed *at 9*	**3**:*45*

- **a.m.**, **p.m.**
  - "a.m." for times starting at 12:00 midnight to right before 12:00 noon
  - "p.m." for times starting at 12:00 noon to right before 12:00 midnight

Materials:

- Attribute blocks [Topics A-B]
- Geoboards and rubber bands [Topics A, C]
- Rulers [Topic A]
- Index cards [Topic A]
- Tangrams [Topic A]
- Pattern blocks [Topic B]
- Clocks [Topic D]

Topic A: Attributes of Geometric Shapes

M8 L1 Shapes

Goals:

- Define angle
- Construct closed shapes with 3-6 sides or angles
- Identify number of sides and angles in a shape

✓ **Check**: Problem Set problems #1d-f

M8 L2 Polygons

Goals:

- Construct polygons with specified attributes
- Name two-dimensional shapes based on attributes (see definitions above)
  - Review from Grades K-1: triangle, hexagon
  - New in Grade 2: polygon, quadrilateral, pentagon

✓ **Check**: Problem Set problems #1c-f

Materials: See p. 25 of Teacher Edition for materials and instruction note

M8 L3 Polygons (Continued)

Goals:

- Draw polygons with specified attributes

  Focus: Concept Development Part 1

  ✓ **Check**: Problem Set problems #1b-c
- Sort polygons or draw specified polygons

  Focus: Concept Development Part 2

  ✓ **Check**: Problem Set problems #2c-d

M8 L4 Right Angles, Parallel Lines, and Quadrilaterals

Goals:

- Draw and identify right angles ("square corners") with index card, parallel lines with ruler

  Focus: Concept Development Part 1

✓ **Check**: Problem Set problems #1, #3a-d

- Draw quadrilaterals with specified attributes using ruler and index card
  - New in Grade 2: parallelogram (other quadrilaterals were introduced in Grades K-1 but were not drawn using ruler and index card in those grades)

🔍 **Focus**: Concept Development Parts 2-4

✓ **Check**: Problem Set problems #4, #5

M8 L5 Cubes

Goals:

- Construct and draw cubes

✓ **Check**: Problem Set problem #6

Notes to teacher:

- Problem Set problem #1 and Homework problem #1 assume "when looking *straight* at the face of a cube"

Materials: See p. 70 of Teacher Edition for materials and instruction note

Topic B: Composite Shapes and Fraction Concepts

M8 L6 Composite Shapes

Goals:

- ↻ **Review/reinforce** Lessons 2-4: Name and describe attributes of polygons
  - Cut tangram pieces (each student needs a set for the Problem Set, Homework, and Lesson 7 Concept Development Part 1)

🔍 **Focus**: Concept Development Part 1

✓ **Check**: Problem Set problem #1

- Create composite shapes with tangrams

🔍 **Focus**: Concept Development Part 2

✓ **Check**: Problem Set problem #2

M8 L7 Composite Shapes with Same (Congruent) Shapes

Goals:

- Create composite shapes made with the same (congruent) shapes

  ✓ **Check**: Problem Set problems #1a-e
- Use definition of half, third, fourth to identify if a shape has been cut into halves, thirds, or fourths

  ✓ **Check**: Problem Set problem #2

M8 L8 Half, Third, Fourth of a Shape

Goals:

- Use definition of half, third, fourth to:
  - Identify the shape that would cover one half, third, or fourth of the given shape
  - Identify the fraction corresponding to the shaded part(s) of the shape

Materials: Students need pattern blocks to complete Homework problems #1-4, #6

Topic C: Halves, Thirds, and Fourths of Circles and Rectangles

Suggestions:

- To check "equal parts" (parts that take up the same amount of space (area)), trace a part onto wax/patty paper and then see if it can fit exactly on top of the other part(s) after sliding/rotating/flipping
- Use finger to trace or outline "parts" and "whole" as count or identify parts, whole
- Consider the materials for each lesson

M8 L9 Halves

Cut/consolidate: Can consolidate with Lesson 10

Goals:

- Partition circle and rectangle into halves, and shade in one half of the shape
- ↻ **Review/reinforce** Lesson 7: Identify if a shape has been cut into halves

✓ **Check**: Problem Set problems #2c-f, #3

M8 L10 Halves, Thirds, and Fourths

Goals:

- **Echo** Lesson 9 to include thirds and fourths:
  - Partition circle and rectangle into halves, thirds, or fourths, and shade in one half, third, or fourth of the shape
  - **Review/reinforce** Lesson 7: Identify if a shape has been cut into halves, thirds, or fourths

Check: Problem Set problems #1, #4a-e

M8 L11 One ("Whole")

Goals:

- Identify the number of halves, thirds, or fourths to complete a rectangle or circle, which represents the number 1 ("whole")

  Focus: Concept Development Parts 1-2

  Check: Problem Set problems #1a-c, #2c-d
- Use the identified half, third, or fourth to draw 1 ("whole")
  - Note: more than one configuration is possible (preview of **Lesson 12 Part 3**)

Focus: Concept Development Part 3

Check: Problem Set problem #3b

M8 L12 Equal Parts with Different Shapes

Goals:

- Observe and confirm the equality of halves, thirds, or fourths with different shapes

  Focus: Concept Development Parts 1-2

  Check: Problem Set problem #1

Topic D: Application of Fractions to Tell Time

M8 L13 Telling Time to the Half or Quarter Hour

Goals:

- Build on Grade 1 **Module 5 Lessons 10-12** to tell time to the half or quarter hour

  ✓ **Check**: Problem Set problem #2
- Reason that quarter (fourth) of an hour is 15 minutes by
  - observing that the minute hand has traveled a quarter (fourth) of the clock's face when it starts at 12 and ends at 3, and
  - counting the minute marks from 12 to 3 by ones or groups of five minutes

Suggestions: Skip Concept Development Part 2 by borrowing clocks from other grades/ classrooms

M8 L14 Telling Time to Nearest Five Minutes

Goals:

- Tell time to the nearest five minutes

  ✓ **Check**: Problem Set problem #3

M8 L15 a.m. and p.m.

Goals:

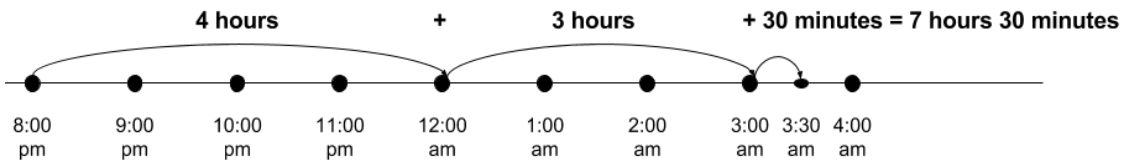
- Use a.m., p.m. to distinguish first twelve hours from second twelve hours in day

  ✓ **Check**: Problem Set problems #1a-b, #3

M8 L16 Time Elapsed

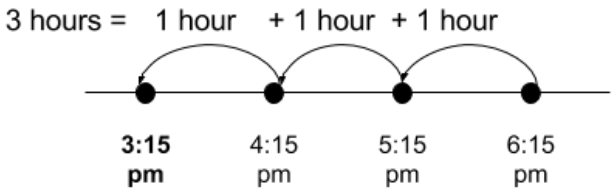
Goals:

- Find time elapsed between hours and/or half hours and solve word problems that involve finding elapsed time



✓ **Check**: Problem Set problems #1c-f, #2a

- For Problem Set problems #2b-c and Homework problems #2b-c: Solve word problems that involve finding start or end time given time elapsed and end or start time, respectively



Suggestions: Use the number line to solve elapsed time problems as an additional or alternative tool to the physical clock (see examples above)

Jamie Burgess <jburgess@nomeschools.org>

Letter from USED

3 messages

Bishop, Deena M (EED) <deena.bishop@alaska.gov> Mon, Mar 31, 2025 at 11:42 AM
To: "Commissioner, DEED (EED sponsored)" <deed.commissioner@alaska.gov>
Cc: "Jolin, Kathijo M (EED)" <kathijo.jolin@alaska.gov>, "Cc:" <abrower@dlgsd.org>, "agallanos@kakeschools.com" <agallanos@kakeschools.com>, "Andrew_anderson@lksd.org" <Andrew_anderson@lksd.org>, "arussin@cordovasd.org" <arussin@cordovasd.org>, "baldwinm@pribilofsd.org" <baldwinm@pribilofsd.org>, Bill Burr <bburr@wpsd.us>, "bmwarey@hydaburg.k12.ak.us" <bmwarey@hydaburg.k12.ak.us>, "carolp@yakutatschools.org" <carolp@yakutatschools.org>, Clayton Holland <cholland@kpbsd.k12.ak.us>, "cyndy.mika@kibsd.org" <cyndy.mika@kibsd.org>, "CYNTHIA.PAYNE@MATSUK12.US" <CYNTHIA.PAYNE@matsuk12.us>, "danpolta@dbsd.org" <danpolta@dbsd.org>, "David.Vadiveloo@nsbsd.org" <David.Vadiveloo@nsbsd.org>, "debbe.lancaster@yfsd.org" <debbe.lancaster@yfsd.org>, "divanoff@smcsd.us" <divanoff@smcsd.us>, "Dr. Randy Trani" <randy.trani@matsuk12.us>, "f368570@k12northstar.org" <f368570@k12northstar.org>, Finkenbinder Audra <afinkenbinder@swrsd.org>, "frank.hauser@juneauschools.org" <frank.hauser@juneauschools.org>, "Huntington, Mary L (MEHS)" <suzzukh@mehs.us>, "jandrews@craigschools.com" <jandrews@craigschools.com>, "jason.johnson@galenanet.com" <jason.johnson@galenanet.com>, "jburgess@nomeschools.org" <jburgess@nomeschools.org>, "jcampbell@chevakschool.org" <jcampbell@chevakschool.org>, "jcoughran@skagwayschool.org" <jcoughran@skagwayschool.org>, "jgroves@nwarctic.org" <jgroves@nwarctic.org>, "jhanson@craigschools.com" <jhanson@craigschools.com>, "jhargis@lysd.org" <jhargis@lysd.org>, "jim.holien@klawockschool.com" <jim.holien@klawockschool.com>, "jsmith@bbbsd.net" <jsmith@bbbsd.net>, Kerry Boyd <kboyd@yksd.com>, "khanisch@ucsd.net" <khanisch@ucsd.net>, "kluke@lpsd.com" <kluke@lpsd.com>, "Lucero, Maxine D (GOV)" <maxine.lucero@alaska.gov>, "Luke, Paciencia G (FCS)" <paciencia.luke@alaska.gov>, "luke.meinert@k12northstar.org" <luke.meinert@k12northstar.org>, "maguillard@kuspuk.org" <maguillard@kuspuk.org>, "mfranklin@aebsd.org" <mfranklin@aebsd.org>, "mhanley@aleutregion.org" <mhanley@aleutregion.org>, "michael.robbins@k21schools.org" <michael.robbins@k21schools.org>, "mpeavey@craigschools.com" <mpeavey@craigschools.com>, "Mr. Patrick Mayer" <pmayer@agsd.us>, "nholmgaard@pelicanschool.org" <nholmgaard@pelicanschool.org>, "officeofthesuperintendent@asdk12.org" <officeofthesuperintendent@asdk12.org>, PJ Ford Slack <pjfordslack@iditarodsd.org>, "pmanning@nenanalynx.org" <pmanning@nenanalynx.org>, "rmorrison@sisd.org" <rmorrison@sisd.org>, Roy Getchell <rgetchell@hbsd.net>, "rwatkins@chathamsd.org" <rwatkins@chathamsd.org>, "sballard@yupiit.org" <sballard@yupiit.org>, "superintendent@sisd.org" <superintendent@sisd.org>, "Riddle, Deborah A (EED)" <deborah.riddle@alaska.gov>, "jensond@sitkaschools.org" <jensond@sitkaschools.org>, Susan Nedza <susan.nedza@bssd.org>, "tbauer@valdezcityschools.org" <tbauer@valdezcityschools.org>, "tbell@nwarctic.org" <tbell@nwarctic.org>, "tlaville@crsd.us" <tlaville@crsd.us>, "tlindsey@aisdk12.org" <tlindsey@aisdk12.org>, "tmase@chugachschools.com" <tmase@chugachschools.com>, "Heineken, Heather L (EED)" <heather.heineken@alaska.gov>, "tpoage@smcsd.us" <tpoage@smcsd.us>, "Morrison, Karen B (EED)" <karen.morrison@alaska.gov>, "twalker@nwarctic.org" <twalker@nwarctic.org>, "Zadalis, Bryan M (EED)" <bryan.zadalis@alaska.gov>, "Goyette, Monica L (EED)" <monica.goyette@alaska.gov>, "Almeida, Jacob W (EED)" <jacob.almeida@alaska.gov>, "jweber@valdezcityschools.org" <jweber@valdezcityschools.org>

Dear Superintendents,

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Please know we are looking forward to ASA's "DEED Day" to collaborate and better understand your local goals and explore how the department can best be organized to support you. Change is a constant in our lives, and my goal is to work with you to position our districts for success during this change. Those who know me well can attest that I view challenges as opportunities—not setbacks.

Thank you again for all that you do. It will take time to fully process the law, the guidance, and align them with our shared goals for Alaska's students. Please know that we are committed to a thoughtful, deliberate approach as we move forward together.

Wishing you a successful remainder of your Legislative Fly-in.

Cheers,
Deena

(Additionally, I am working with DEED staff to update this email group. If you see and error, please let me know. I want to ensure superintendents receive the updates. Thanks)!

Deena M. Bishop, Ed.D.

Commissioner

Department of Education and Early Development

907-465-2802 I education.alaska.gov

State Chief Letter.pdf
188K

Jamie Burgess <jburgess@nomeschools.org> Tue, Apr 1, 2025 at 1:32 PM
To: Lisa Parady <lparady@alaskaacsa.org>

Can we discuss this as superintendents sometime in the near future?
[Quoted text hidden]
--
Thanks.

Jamie S. Burgess
Superintendent, Nome Public Schools
907-443-6191
Excellence, Kindness, Joy

State Chief Letter.pdf
188K

Lisa Parady <lparady@alaskaacsa.org> Tue, Apr 1, 2025 at 1:37 PM
To: "jburgess@nomeschools.org" <jburgess@nomeschools.org>

Absolutely
Sent from my iPhone

On Apr 1, 2025, at 1:33 PM, Jamie Burgess <jburgess@nomeschools.org> wrote:

Can we discuss this as superintendents sometime in the near future?

---------- Forwarded message ---------
From: **Bishop, Deena M (EED)** <deena.bishop@alaska.gov>
Date: Mon, Mar 31, 2025 at 11:42 AM
Subject: Letter from USED
To: Commissioner, DEED (EED sponsored) <deed.commissioner@alaska.gov>
Cc: Jolin, Kathijo M (EED) <kathijo.jolin@alaska.gov>, Cc: <abrower@dlgsd.org>, agallanos@kakeschools.com <agallanos@kakeschools.com>, Andrew_anderson@lksd.org <Andrew_anderson@lksd.org>, arussin@cordovasd.org <arussin@cordovasd.org>, baldwinm@pribilofsd.org <baldwinm@pribilofsd.org>, Bill Burr <bburr@wpsd.us>, bmwarey@hydaburg.k12.ak.us <bmwarey@hydaburg.k12.ak.us>, carolp@yakutatschools.org <carolp@yakutatschools.org>, Clayton Holland <cholland@kpbsd.k12.ak.us>, cyndy.mika@kibsd.org <cyndy.mika@kibsd.org>, CYNTHIA.PAYNE@MATSUK12.US <CYNTHIA.PAYNE@matsuk12.us>, danpolta@dbsd.org <danpolta@dbsd.org>, David.Vadiveloo@nsbsd.org <David.Vadiveloo@nsbsd.org>, debbe.lancaster@yfsd.org <debbe.lancaster@yfsd.org>, divanoff@smcsd.us <divanoff@smcsd.us>, Dr. Randy Trani <randy.trani@matsuk12.us>, f368570@k12northstar.org <f368570@k12northstar.org>, Finkenbinder Audra <afinkenbinder@swrsd.org>, frank.hauser@juneauschools.org <frank.hauser@juneauschools.org>, Huntington, Mary L (MEHS) <suzzukh@mehs.us>, jandrews@craigschools.com <jandrews@craigschools.com>, jason.johnson@galenanet.com <jason.johnson@galenanet.com>, jburgess@nomeschools.org <jburgess@nomeschools.org>, jcampbell@chevakschool.org <jcampbell@chevakschool.org>, jcoughran@skagwayschool.org <jcoughran@skagwayschool.org>, jgroves@nwarctic.org <jgroves@nwarctic.org>, jhanson@craigschools.com <jhanson@craigschools.com>, jhargis@lysd.org <jhargis@lysd.org>, jim.holien@klawockschool.com <jim.holien@klawockschool.com>, jsmith@bbbsd.net <jsmith@bbbsd.net>, Kerry Boyd <kboyd@yksd.com>, khanisch@ucsd.net <khanisch@ucsd.net>, kluke@lpsd.com <kluke@lpsd.com>, Lucero, Maxine D (GOV) <maxine.lucero@alaska.gov>, Luke, Paciencia G (FCS) <paciencia.luke@alaska.gov>, luke.meinert@k12northstar.org <luke.meinert@k12northstar.org>, maguillard@kuspuk.org <maguillard@kuspuk.org>, mfranklin@aebsd.org <mfranklin@aebsd.org>, mhanley@aleutregion.org <mhanley@aleutregion.org>, michael.robbins@k21schools.org <michael.robbins@k21schools.org>, mpeavey@craigschools.com <mpeavey@craigschools.com>, Mr. Patrick Mayer <pmayer@agsd.us>, nholmgaard@pelicanschool.org <nholmgaard@pelicanschool.org>, officeofthesuperintendent@asdk12.org <officeofthesuperintendent@asdk12.org>, PJ Ford Slack <pjfordslack@iditarodsd.org>, pmanning@nenanalynx.org <pmanning@nenanalynx.org>, rmorrison@sisd.org <rmorrison@sisd.org>, Roy Getchell <rgetchell@hbsd.net>, rwatkins@chathamsd.org <rwatkins@chathamsd.org>, sballard@yupiit.org <sballard@yupiit.org>, superintendent@sisd.org <superintendent@sisd.org>, Riddle, Deborah A (EED) <deborah.riddle@alaska.gov>, jensond@sitkaschools.org <jensond@sitkaschools.org>, Susan Nedza <susan.nedza@bssd.org>, tbauer@valdezcityschools.org <tbauer@valdezcityschools.org>, tbell@nwarctic.org <tbell@nwarctic.org>, tlaville@crsd.us <tlaville@crsd.us>, tlindsey@aisdk12.org <tlindsey@aisdk12.org>, tmase@chugachschools.com <tmase@chugachschools.com>, Heineken, Heather L (EED) <heather.heineken@alaska.gov>, tpoage@smcsd.us <tpoage@smcsd.us>, Morrison, Karen B (EED) <karen.morrison@alaska.gov>, twalker@nwarctic.org <twalker@nwarctic.org>, Zadalis, Bryan M (EED) <bryan.zadalis@alaska.gov>, Goyette, Monica L (EED) <monica.goyette@alaska.gov>, Almeida, Jacob W (EED) <jacob.almeida@alaska.gov>, jweber@valdezcityschools.org <jweber@valdezcityschools.org>

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Deena M. Bishop, Ed.D.

Commissioner

Department of Education and Early Development

907-465-2802 I education.alaska.gov
<image001.png>

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Thanks.

Jamie S. Burgess
Superintendent, Nome Public Schools
907-443-6191

Excellence, Kindness, Joy
<State Chief Letter.pdf>

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image001.png
11K

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF ELEMENTARY AND SECONDARY EDUCATION

March 31, 2025

Dear Chief State School Officer:

The Trump Administration is committed to supporting parents in choosing and directing the upbringing and education of their children. The U.S. Department of Education (Department) is pleased to provide information regarding how States can use Federal formula funds under the Elementary and Secondary Education Act of 1965 (ESEA) to support elementary and secondary school educational choice initiatives. In this letter, we are focusing on two important aspects of Title I, Part A (Title I) of the ESEA where States and local educational agencies (LEAs) have discretion to provide greater flexibility to support parents' choices for their child's education. This will be the first of several guidance documents aimed at expanding education choice for students and families.

Direct Student Services Under ESEA section 1003A

One important flexibility to support parents is section 1003A of the ESEA, which provides a State the flexibility to reserve up to three percent of its Title I allocation to provide funds to LEAs for direct student services that allow parents to exercise a meaningful choice in their child's education. This is an important flexibility of which very few States have taken advantage. Ohio is currently the only state implementing direct student services, which they use to increase access to advanced coursework. States can use this flexibility so that parents can be given a range of options – advanced courses, dual enrollment, academic tutoring, career and technical education, personalized learning, and out-of-school activities – to select for their child.

ESEA section 1003A authorizes a State to award funds to LEAs for the following activities:

- Enrollment and participation in academic courses not otherwise available at a student's school, including advanced courses and CTE coursework that is aligned to State standards and leads to industry-recognized credentials that meet the quality criteria established by the State under section 123(a) of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102).
- Credit recovery and academic acceleration courses that lead to a regular high school diploma (as defined in ESEA section 8101(43)).
- Activities that assist students in successfully completing postsecondary level instruction and examinations that are accepted for credit at institutes of higher education (IHEs), including AP and IB courses, which may include reimbursing students from low-income backgrounds to cover all of the costs of fees for such examinations; such activities may also include the costs of dual or concurrent enrollment in postsecondary coursework.
- Components of a personalized learning approach, which may include high-quality tutoring.
- Transportation to allow a student enrolled in a school identified for comprehensive support and improvement (CSI) under ESEA section 1111(c)(4)(D)(i) to transfer to another public school (including a public charter school) that has not been identified for CSI (i.e., public

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http://www.ed.gov/

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school choice), in the case of an LEA that does not reserve Title I funds as permitted under ESEA section 1111(d)(1)(D)(v) for this purpose.

In order to receive funds, ESEA section 1003A(d) requires an LEA to describe how it will provide adequate outreach, time, and information to parents to ensure they can exercise a meaningful choice of direct student services for their child's education. Further, the LEA must describe how it will select providers of direct student services, which may include LEAs, community colleges or other institutions of higher education, non-public entities including private schools, and community-based organizations. Because the LEA retains control and responsibility for the funds, providers of these services do not become Federal grantees. For tutoring services, the State must provide a list of options that, among other requirements, provides parents with meaningful choices, offers a range of tutoring including online and on campus, and provide instruction and content that is secular, neutral, and non-ideological.

States must award direct student services funds to geographically diverse LEAs that serve high numbers of schools identified for support and improvement. While a State cannot direct or limit the use of these funds by LEAs, the State could establish priorities to award these funds to LEAs that align with the State's priorities and goals. For example, while a State cannot establish an absolute priority that focuses on one of the activities listed above, it could award points in its competitive process for those activities that it believes or has evidence the activity will provide parents the most choices and maximize the impact of these funds. See the enclosed document for more information about ESEA section 1003A.

Title I, Part A of the ESEA

Related to the flexibility within ESEA section 1003A, LEAs and schools have similar flexibility with respect to their use of Title I funds. A school operating a Title I schoolwide program, in consultation with parents as required in ESEA section 1116, could choose to implement a program that identifies activities that improve the academic program in the school and which allows parents to choose the best activity to meet their child's educational needs. This would have to be consistent with the school's needs assessment and schoolwide program plan and be designed to improve student academic achievement, particularly for the lowest-achieving students. For example, a school could identify a range of dual enrollment opportunities, academic tutoring programs, and career and technical education activities that are available for students and let parents select the best option for their child. Similarly, a Title I school that operates a targeted assistance program under ESEA section 1115 may offer these choices to parents of children identified to receive Title I services. An LEA may also use some of its required Title I reservation under ESEA section 1113(c)(3) to serve homeless children and youth in all of its schools to provide these choices to their parents.

Thank you for your continued focus on providing meaningful options for parents to ensure all children receive a high-quality education. The Department encourages States to reach out to the Title I, Part A team for details on how these and other strong practices can be tailored to provide more meaningful choices to parents in your State. A frequently asked questions document is also being prepared to offer more guidance on how to use this flexibility. If you have any questions or need additional information, please contact us at: OESE.TitleI-A@ed.gov.

Sincerely,

Hayley B. Sanon
Principal Deputy Assistant Secretary
and Acting Assistant Secretary
Office of Elementary and Secondary Education

Jamie Burgess <jburgess@nomeschools.org>

Title VI Certification Letter from USED

Michael D. Caulfield <mcaulfield@jdolaw.com> Fri, Apr 4, 2025 at 8:13 PM
To: Jamie Burgess <jburgess@nomeschools.org>

Hi Jamie,

Yes, I'll be happy to talk with you about this. As you of course know, the District does not discriminate based on race and there is nothing in the USED letter that I believe the District would be in violation of (neither NPS or AASB have developed any specific "DEI" policies). As the Commissioner noted in her e-mail, districts already do sign a statement that says they do not discriminate for federal grants. That said, I understand the concern of signing a letter that feels akin to a hostage note, and one that says the DOJ could sue based on a "breach of contract" grounds (I question whether signing this letter would actually constitute grounds for such a suit).

Ultimately, there is likely more risk in not signing the letter and bringing specific attention to the District. The administration's primary focus is on colleges and graduate level programs, where admissions criteria may have raced based components. I think it would be unlikely to challenge a K-12 district that simply returns this letter, particularly in a state like Alaska. Unless there is a statewide pact between superintendents to not sign and have strength in numbers, I think it will likely make sense for NPS to simply sign and return it.

I'll be happy to talk about it more when you have some time next week. I'm available on Monday prior to 10:00 am, and again after 2:00 pm. On Tuesday, I'll be in available in the afternoon.

Thanks, and I hope you have a good weekend.

Best,

Michael

JDOLAW
JERMAIN DUNNAGAN & OWENS, P.C.

Michael D. Caulfield

Jermain, Dunnagan & Owens, PC

111 W. 16th Ave, Suite 203

Anchorage, AK 99501

Tel: 907.563.8844

Fax: 907.563.7322

[Quoted text hidden]

Jermain Dunnagan & Owens, P.C. has moved to our new address. Please send all deliveries and correspondence to our new business address – 111 West 16th Avenue, Suite 203, Anchorage, AK 99501. Our phone numbers and email addresses will remain the same, as will our website address and social media accounts.

The information contained in this transmittal is confidential, may be subject to attorney-client privilege, protected health information that is subject to HIPAA privacy and security guidelines, or otherwise legally exempt from disclosure and is intended only for the use of the recipient named above. If the reader of this information is not the intended recipient, or the employee or agent responsible for delivery of this information to the intended recipient, you are hereby notified that this is not a waiver of privilege and any dissemination, distribution, or copying of this information is strictly prohibited. The firm does not provide tax advice and nothing herein should be relied upon for tax advice by the taxpayer. If you have received this information in error, please notify the sender immediately by telephone at (907) 563-8844 and delete this message from your system.

Jamie Burgess <jburgess@nomeschools.org>

US ED Update: Title VI Compliance Letter

Commissioner, DEED (EED sponsored) <deed.commissioner@alaska.gov> Fri, Apr 11, 2025 at 1:59 PM
To: Alaska Gateway <pmayer@agsd.us>, Aleutian East <mfranklin@aebsd.org>, Aleutian Region <mhanley@aleutregion.org>, Anchorage Schools <news@asdk12.org>, Annette Island Schools <tlindsey@aisdk12.org>, Bering Strait <tdodd@bssd.org>, Bristol Bay <superintendent@bbbsd.net>, Catham <rwatkins@chathamsd.org>, Chugach <tmase@chugachschools.com>, Cordova <arussin@cordovasd.org>, Craig <jhanson@craigschools.com>, "david_vadiveloo@nsbsd.org" <david_vadiveloo@nsbsd.org>, Deidre Jenson <jensond@sitkaschools.org>, Delta Greely <mlee@dgsd.us>, Denail <danpolta@dbsd.org>, Dillingham <abrower@dlgsd.org>, Fairbanks North Star <superintendent@k12northstar.org>, Galena <jason.johnson@galenanet.com>, Haines Borough School <rgetchell@hbsd.net>, Hoonah <howardd@hoonahschools.org>, Hydaburg <bmwarey@hydaburg.k12.ak.us>, Iditarod <johnbruce@iditarodsd.org>, Juneau <frank.hauser@juneauschools.org>, Kake <agallanos@kakeschools.com>, Kashunamiut <jcampbell@chevakschool.org>, Kenai <cholland@kpbsd.k12.ak.us>, Ketchikan <michael.robbins@k21schools.org>, Klawock <jim.holien@klawockschool.com>, Kodiak <cyndy.mika@kibsd.org>, Kuspuk <maguillard@kuspuk.org>, Lake and Penninsula <kluke@lpsd.com>, Lower Kuskokwim <Andrew_anderson@lksd.org>, Lower Yukon <jhargis@lysd.org>, Mat Su <randy.trani@matsuk12.us>, "Huntington, Mary L (MEHS)" <suzzukh@mehs.us>, Nenana <pmanning@nenanalynx.org>, Nome <jburgess@nomeschools.org>, Northwest Arctic <twalker@nwarctic.org>, Pelican City <bagenbroad@pelicanschool.org>, Petersburg <contact@pcsd.us>, Pribilof <baldwinm@pribilofsd.org>, Robyn Taylor <rtaylor@pcsd.us>, Saint Mary's <tpoage@smcsd.us>, Skagway <jcoughran@skagwayschool.org>, Southeast Island <superintendent@sisd.org>, Southwest Region <afinkenbinder@swrsd.org>, Theresa Laville <tlaville@crsd.us>, Unalaska City <jwilson@ucsd.net>, Valdez City <jweber@valdezcityschools.org>, Wrangell City <bburr@wpsd.us>, Yakutat School District <Carolp@yakutstschools.org>, Yukon Flats <debbe.lancaster@yfsd.org>, Yukon Koyukuk <kboyd@yksd.com>, Yupitt <sballard@yupiit.org>

Dear Superintendents,

I wanted to reach out and share that DEED continues to investigate how best to meet the requirement for the Title VI Compliance Certification within our present procedures. I received further correspondence this week from the Office of Civil Rights (OCR). As requested, we continue to seek clarification to your questions on certain programming within your districts for compliance with anti-discrimination.

Per the directive below, we are forwarding you the attached agreement between the National Educational Association (NEA) and the United States Department of Education (USDOE), which came about after NEA filed a motion for a temporary restraining order in the U.S. District Court for the District of New Hampshire. You will see that this agreement addresses the USDOE's letter of April 3, 2025, which I have passed along previously.

We aim to share updates with you next week as we continue engaging with statewide partners to gather valuable insights. Thank you once again for your dedication and the incredible work you do to support your school communities.

Cheers,

Deena

From: OCR <OCR@ed.gov>
Sent: Thursday, April 10, 2025 12:38 PM
To: OCR <OCR@ed.gov>
Subject: RE: Department of Education Title VI Compliance Certification

The United States Department of Education is notifying you of an agreement (attached) related to the April 3 request for certification. The submission deadline for certification remains close of business on April 24, 2025.

The Department directs you to immediately inform your constituent Local Education Agencies of the contents of the attached agreement.

Thank you for your prompt attention to this matter.

Deena M. Bishop, Ed.D.

Commissioner

Department of Education and Early Development

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Office of the Commissioner

The State of Alaska

Department of Education and Early Development

907.269.1092

NH agreement.pdf
241K

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW HAMPSHIRE

NATIONAL EDUCATIONAL ASSOCIATION, et al., *Plaintiffs*, v. UNITED STATES DEPARTMENT OF EDUCATION, et al., *Defendants*.	Case No. 1:25-cv-00091-LM

NOTICE OF AGREEMENT WITH RESPECT TO
PLAINTIFFS' MOTION FOR TEMPORARY RESTRAINING ORDER (ECF NO. 41)

The attached reflects the agreement of the parties addressing Plaintiffs' Motion for a Temporary Restraining Order (ECF No. 41), which can be dismissed as moot.

Dated: April 9, 2025

Respectfully submitted,

/s/ Gilles R. Bissonnette
Gilles R. Bissonnette (N.H. Bar No. 265393)
Henry R. Klementowicz (N.H. Bar No. 21177)
SangYeob Kim (N.H. Bar No. 266657)
American Civil Liberties Union of New Hampshire
18 Low Avenue
Concord, NH 03301
(603) 224-5591
gilles@aclu-nh.org

Sarah Hinger*
Amanda Meyer*
Alexis Alvarez*
Ethan Herenstein*
Victoria Ochoa*
Sophia Lin Lakin*
American Civil Liberties Union Foundation
125 Broad Street, 18th Floor
New York, NY 10004
(212) 519-7882
shinger@aclu.org

Megan C. Keenan*
American Civil Liberties Union Foundation
915 15th Street NW
Washington, DC 20001
(740) 632-0671
mkeenan@aclu.org

Rachel E. Davidson*
American Civil Liberties Union Foundation of Massachusetts, Inc.
One Center Plaza, Suite 801
Boston, MA 02018
(617) 482-3170
rdavidson@aclum.org

Alice O'Brien*
Jason Walta*
Phil Hostak*
Stacy Hickox[T]
NEA Office of General Counsel
National Education Association
1201 16th Street NW
Washington, DC 20036
(202) 822-7035
aobrien@nea.org

**admitted pro hac vice*
[T] *pro hac vice* forthcoming

Final Agreement:

- ED will not initiate enforcement action, investigation, or otherwise take action based on any State or LEA certification, lack of certification, or communication with ED regarding the certification, until after the April 24, 2025 deadline has passed. Up to and including that date, States and LEAs may submit or re-submit the requested certifications and/or other responses to OCR, and ED will not act upon such submissions or rely on them as material representations until after April 24, 2025.
- Certifications by States and LEAs are not effective until after April 24, 2025, and may not be used for any purpose, including but not limited for the basis of any enforcement action, investigation, claim under the False Claims Act, contract claim, or any other basis for liability by any public or private party.
- ED will not initiate any enforcement action, investigation, or otherwise take action based on the Dear Colleague Letter issued on February 14, 2025 and subsequent actions implementing the letter until after April 24, 2025. This would not preclude enforcement actions, investigations, or other actions based on Title VI in general or the *Students for Fair Admissions* case."
- ED will direct States to notify every LEA in its jurisdiction of this correspondence by close of business on Thursday April 10.

Jamie Burgess <jburgess@nomeschools.org>

Superintendent Follow-Up Responses from Biweekly Meeting 4.7.25

Commissioner, DEED (EED sponsored) <deed.commissioner@alaska.gov> Fri, Apr 18, 2025 at 1:41 PM
To: Alaska Gateway <pmayer@agsd.us>, Aleutian East <mfranklin@aebsd.org>, Aleutian Region <mhanley@aleutregion.org>, Anchorage Schools <news@asdk12.org>, Annette Island Schools <tlindsey@aisdk12.org>, Bering Strait <tdodd@bssd.org>, Bristol Bay <superintendent@bbbsd.net>, "carolp@yakutatschools.org" <carolp@yakutatschools.org>, Catham <rwatkins@chathamsd.org>, Chugach <tmase@chugachschools.com>, Cordova <arussin@cordovasd.org>, Craig <jhanson@craigschools.com>, "david_vadiveloo@nsbsd.org" <david_vadiveloo@nsbsd.org>, Deidre Jenson <jensond@sitkaschools.org>, Delta Greely <mlee@dgsd.us>, Denail <danpolta@dbsd.org>, Dillingham <abrower@dlgsd.org>, Fairbanks North Star <superintendent@k12northstar.org>, Galena <jason.johnson@galenanet.com>, Haines Borough School <rgetchell@hbsd.net>, Hoonah <howardd@hoonahschools.org>, Hydaburg <bmwarey@hydaburg.k12.ak.us>, Iditarod <johnbruce@iditarodsd.org>, Juneau <frank.hauser@juneauschools.org>, Kake <agallanos@kakeschools.com>, Kashunamiut <jcampbell@chevakschool.org>, Kenai <cholland@kpbsd.k12.ak.us>, Ketchikan <michael.robbins@k21schools.org>, Klawock <jim.holien@klawockschool.com>, Kodiak <cyndy.mika@kibsd.org>, Kuspuk <maguillard@kuspuk.org>, Lake and Penninsula <kluke@lpsd.com>, Lower Kuskokwim <Andrew_anderson@lksd.org>, Lower Yukon <jhargis@lysd.org>, Mat Su <randy.trani@matsuk12.us>, "Huntington, Mary L (MEHS)" <suzzukh@mehs.us>, Nenana <pmanning@nenanalynx.org>, Nome <jburgess@nomeschools.org>, Northwest Arctic <twalker@nwarctic.org>, Pelican City <bagenbroad@pelicanschool.org>, Petersburg <contact@pcsd.us>, Pribilof <baldwinm@pribilofsd.org>, Robyn Taylor <rtaylor@pcsd.us>, Saint Mary's <tpoage@smcsd.us>, Skagway <jcoughran@skagwayschool.org>, Southeast Island <superintendent@sisd.org>, Southwest Region <afinkenbinder@swrsd.org>, Theresa Laville <tlaville@crsd.us>, Unalaska City <jwilson@ucsd.net>, Valdez City <jweber@valdezcityschools.org>, Wrangell City <bburr@wpsd.us>, Yukon Flats <debbe.lancaster@yfsd.org>, Yukon Koyukuk <kboyd@yksd.com>, Yupitt <sballard@yupiit.org>

Dear Superintendents,

I hope you're enjoying a pleasant Friday ahead of the holiday weekend. Our team at DEED has worked to provide the most accurate and up-to-date responses available at this time to address your recent inquiries. Below is a follow-up to the questions raised during the Superintendent Biweekly Meeting held on Monday, April 7.

Federal Title VI Non-Discrimination Assurances Letter Questions:

1. **Are districts required to sign the Title VI certification letter that was sent out on Friday, April 4, 2025, or is there any additional action that needs to be taken beyond existing federal assurances?**

The Commissioner will be signing the certification on behalf of DEED and submitting it to the U.S. Department of Education (US ED) by April 24, 2025, affirming Alaska's compliance with federal anti-discrimination laws. Each district superintendent or chief school administrator will sign the FY2026 Consolidated Federal Programs Assurances & Certifications Packet – attached. Please email the signed certification form to deborah.riddle@alaska.gov by 5:00 p.m. on April 24, 2025. Then, as part of the standard annual process, upload the signed packet to your Consolidated Application form. Please see the attached letter from the Commissioner for additional details.

2. **Since the Title VI letter specifically addresses race, does it also apply to - or conflict with - other federally protected categories such as socioeconomic status, language, disability, or tribal affiliation?**

DEED does not have any further information on US ED's intent beyond the certification letter itself and other documents referenced in the certification letter. We suggest that school districts review this question with their legal counsel and consider all guidance from US ED on this topic. We do note that, on its face, the April 3 letter focuses on Title VI, which addresses discrimination on the basis of "race, color, or national origin," and references the Supreme Court's decision in *SFFA v. Harvard*.

3. **Does the Title VI certification letter apply strictly to Title VI compliance, or is it intended to apply more broadly to all district practices, including those not directly funded under Title VI (e.g., optional programs, DEI initiatives, access based on socioeconomic status)?**

Again, DEED does not have any further information on US ED's intent beyond the certification letter itself and other documents referenced in the certification. We suggest that school districts review this question with their legal counsel and consider all guidance from US ED on this topic. We do note that, on its face, the April 3 letter and other recent guidance from US ED, including the *Dear Colleague letter* and FAQs, reference DEI programs. Both of these documents are attached.

4. **Are programs that provide benefits or services exclusively to Alaska Native and American Indian (ANAI) students—such as school supply distributions—still allowable under federal guidelines, including Title VI?**

DEED is signing assurances related only to federal funds distributed through the state. The ANAI funding source in question involves a direct federal-to-district allocation. Please refer to the guidance provided directly by the federal funding agency to determine what is allowable under that specific program.

Comprehensive State Literacy Development (CSLD) Grant Questions:

1. **Is there an update on the reading grant, including when districts can expect the RFA to be released, what the submission deadlines will be, and the expected timeline for districts to complete and submit their applications?**

CSLD Grant – Notice of Intent to Apply

DEED will issue a Letter of Intent to Apply for the CSLD Grant on Monday, April 21, 2025. The CSLD grant supports the advancement of literacy skills from birth through grade 12, with a focus on disadvantaged children. This work aligns with the Alaska Reads Act, ensuring equity of access and opportunity for all Alaska students. To help DEED plan effectively and ensure eligible Local Education Agencies (LEAs) receive timely information and support, we strongly encourage eligible districts to submit a non-binding Notice of Intent to Apply. This notice is encouraged but not required, and submission does not obligate the district to complete an application.

Key Grant Priorities

Successful subgrantees will outline clear goals to increase literacy across age bands through the use of evidence-based practices. Grant funding must be allocated as follows:

- Minimum 15% for birth to kindergarten entry
- Minimum 40% for kindergarten through grade 5
- Minimum 40% for grades 6 through 12

Participation Expectations

Selected subgrantees will be expected to:

- Conduct a comprehensive literacy needs assessment
- Implement evidence-based instruction and interventions

- Provide high-quality professional development for educators
- Engage families and the community in literacy efforts
- Participate in a virtual subgrantee network
- Attend annual in-person networking events
- Fulfill grant monitoring and reporting requirements

Important Dates

- Letter of Intent Template Provided to Eligible Districts: Monday, April 21, 2025
- Letter of Intent Response Due: Friday, April 25, 2025
- RFA Opens: No later than Wednesday, April 30, 2025
- Application Due: Friday, May 30, 2025
- Grant Awards Announced: No later than Wednesday, June 18, 2025

2. **Which districts are eligible for the reading grant, and what specific criteria (such as economic disadvantage or other data points) are being used to determine eligibility?**

Eligibility for the CSLD grant is determined based on federally aligned criteria related to student poverty levels. Each Local Education Agency (LEA) has been evaluated using these criteria, and their eligibility status is included in the attached document. Districts highlighted in orange are ineligible under the current criteria. If you believe your district's eligibility status is inaccurate, please contact Kathy Moffitt at kathy.moffitt@alaska.gov and Diane Orr at diane.orr@alaska.gov.

To qualify for CSLD subgrant funding, an LEA must meet **one** of the following conditions:

1. At least 50% of the enrolled students served by the LEA are from low-income families, **or**
2. At least 30% of the schools served by the LEA qualify as "high-need" schools, as defined below:
    - Elementary, Middle, and K-12 Schools: 50% or more of students are from low-income families
    - High Schools: 40% or more of students are from low-income families

We look forward to our next biweekly superintendent meeting on Monday, April 21. Please bring any follow up questions you may have regarding these issues or other concerns. I hope you are all able to unplug from work over the Easter weekend and enjoy time with your family and friends.

Cheers,

Deena

907.269.1092

5 attachments

FY26 Consolidated Federal Programs Assurances Certifications Packet .docx
173K

Commissioner Letter Regarding Title VI Assurances.pdf
369K

OCR Dear Colleague Letter 2.14.25.pdf
169K

frequently-asked-questions-about-racial-preferences-and-stereotypes-under-title-vi-of-civil-rights-act-109530.pdf
268K

FY25 AK Economically Disadvantaged Eligibility by District 4.17.25.docx
30K

CONSOLIDATED FEDERAL PROGRAMS ASSURANCES & CERTIFICATIONS PACKET

Alaska Department of Education and Early Development
Division of Innovation and Education Excellence
Physical Address: 333 Willoughby Ave., Juneau SOB, 9th Floor
Mailing Address: P.O. Box 110500
Juneau, AK 99811-0500
education.alaska.gov

Revised April 2025

Print this packet, have the superintendent sign and date each appropriate page, and upload it in the GMS online grant system, Consolidated Application, under "Assurances".

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

This packet of assurances represents ALL assurances required for the ESEA Consolidated Federal Programs Consolidated Application for 2025-2026. **The district should print this packet, have the superintendent sign and date each appropriate page, and *upload it as a Related Document in the Assurances section of the Consolidated Application in the online DEED Grants Management (GMS) System*.**

TABLE OF CONTENTS

Items marked bold are required for ALL districts.
Other items are required only if the district is applying for that program.

- **Overall Assurances**
- **General Assurances, Title VIII for all federal programs**
- **Uniform Provisions, Title VIII, Part F, for all federal programs**
- Title I, Part A, Basic, Parent Involvement, Parent Notification, Foster Care
- Title I, Part C, Education of Migratory Children
- Title I, Part D, Neglected & Delinquent Children & Youth
- Title II, Part A, Supporting Effective Instruction
- Title III, Part A, English Language Acquisition
- Title IV, Part A, Student Support & Academic Enrichment Grants
- **Title IX, Part A of ESEA as amended by ESSA, Title VII, Part B of the Homeless Education (McKinney-Vento)**
- **Certifications Regarding Lobbying, Debarment, Suspension, and Other Responsibility Matters; and Drug-Free Work Place Requirements**
- **Certifications Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions**
- **Disclosure of Lobbying Activities**
- **Compliance Report for the Gun-Free Schools Act of 1994:** The report for the 2025-2026 school year ***must*** be completed electronically at: education.alaska.gov/safeschools/suspexptruancy

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Assurances form a binding agreement between the local district, the Alaska Department of Education & Early Development, and the U.S. Department of Education that assures all legal requirements are met in accordance with state and federal laws, regulations, and rules. These assurances apply to program activities and expenditures of funds. Compliance to general and specific program assurances is the legal responsibility of the local district under the authorization of the local board of education and the direction of the superintendent.

The district certifies the following statements:

1. The district understands and will comply with the provisions, regulations and rules of the (ESEA).

2. The district will use ESEA funds to supplement the district's existing programs and will not use ESEA funds to supplant existing or reduced general or other funds.

3. The district will provide, on request, other data as required, and will maintain all required documentation at the district office.

4. The district completed the ESEA consolidated application with group planning and input from teachers, principals, program administrators, parents, community, and other required participants.

5. The district certifies that it has no policy that prevents, or otherwise denies participation in, constitutionally protected school prayer in public elementary and secondary schools under Title VIII Section 8524 of ESEA and as detailed in the US Department of Education guidance of February 7, 2003.

6. The district understands and will comply with all applicable assurances for federal grant funds as provided in this 2025-2026 Federal Programs Assurances and Certifications Packet.

By my signature I am assuring that:

1. I am an authorized district representative;
2. I certify that to the best of my knowledge the above statements, 1-6, are true; and,
3. Each applicable page of this 2025-2026 Federal Programs Assurances & Certifications Packet has been signed (as applicable to the district) and has been uploaded on the DEED online grants management system.

Name of Authorized Representative: _____

Signature of Authorized Representative: _____

Date Signed: _____

Title VIII: Federal Programs General Assurances All Title Programs
(for all districts)

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the following requirements as contained in the Education Department General Administrative Regulations:

1. Each such program will be administered in accordance with all applicable statutes, regulations, program plans, and applications. [8306(a)(1)]
2. (A) Control of funds provided under each such program and title to property acquired with program funds will be in a public agency or in a nonprofit private agency, institution, organization, or Indian tribe, if the law authorizing the program provides for assistance to such entities; and
   (B) The public agency, nonprofit private agency, institution, or organization, or Indian tribe will administer such funds and property to the extent required by the authorizing statutes. [8306(a)(2)]
3. The applicant will adopt and use proper methods of administering each such program, including:
   (A) the enforcement of any obligations imposed by law on agencies, institutions, organizations, and other recipients responsible for carrying out each program; and
   (B) the correction of deficiencies in program operations that are identified through audits, monitoring, or evaluation. [8306(a)(3)]
4. The applicant will cooperate in carrying out any evaluation of each such program conducted by or for the state educational agency, the secretary or other federal officials. [8306(a)(4)]
5. The applicant will use such fiscal control and fund accounting procedures as will ensure proper disbursement of, and accounting for, federal funds paid to such applicant under each such program. [8306(a)(5)]
6. The applicant will:
   (A) make reports to the state educational agency and the Secretary as may be necessary to enable such agency and the Secretary to perform their duties under each such program; and
   (B) maintain such records, provide such information, and afford access to the records as the Stare educational agency or the Secretary may find necessary to carry out the state educational agency's or the Secretary's duties. [8306(a)(6)]
7. Before the application was submitted, the applicant afforded a reasonable opportunity for public comment on the application and considered such comment. [8306(a)(7)]
8. The local educational agency will provide reasonable opportunities for the participation by teachers, parents and other interested agencies, organizations, and individuals in the planning for and operation of each program.
9. Any application, evaluation, periodic program plan or report relating to each program will be made readily available to parents and other members of the general public.
10. When issuing statements, press releases, requests for proposals, bid solicitations, and other documents or announcements describing this project, the recipient will state clearly:
    (A) the dollar amount of federal funds for the project;
    (B) the percentage of the total cost of the project that will be financed with federal funds; and
    (C) the percentage and dollar amount of the total cost of the project that will be financed by non-governmental sources.

11. The grant recipient is in compliance with the requirements of the Gun-Free Schools Act of 1994. Grant recipients must assure compliance with federal and state laws requiring a mandatory one (1) calendar year expulsion for any student possessing a firearm on school property. Sec. 14.03.160, Sec. 11.61.210 (a)(8), 18 U.S.C.921
12. That equal access to educational programs and services is provided to all students. The eligible recipient will not discriminate against any student, and will comply with the provisions of Title VI of the Civil Rights Act of 1964; Title IX of the Education Amendments of 1972; Section 504 of the Rehabilitation Act of 1973; and the Individuals with Disabilities Education Act of 1990, and regulations implementing these statutes.
13. That provisions will be made to provide program and facility access and opportunities for students who desire to participate in these services, programs, and activities regardless of race, national origin, disability, language proficiency, pregnancy, parenting, or marital status.

Title VIII, Part F: Uniform Provisions in ESEA
(for all districts)

The following uniform provisions apply to all districts receiving any funds under ESEA. The district agrees to:

1. Comply with the provisions of section 8501 concerning the participation of private school children and teachers. [8501; 1117]
2. Comply with maintenance of effort requirements. [8521]
3. Comply with privacy of student assessment results. [8523]
4. Comply with constitutionally protected prayer in public elementary and secondary schools. [8524]
5. Allow the Boy Scouts of America to have equal access to school and district facilities. [8525]
6. Comply with prohibitions concerning sex education and dissemination of information and condoms in public schools. [8526]
7. Comply with the requirements for providing armed forces recruiters with access to students and student recruiting information. [8528]
8. Comply with requirements of the unsafe school choice option. [8532]
9. Comply with prohibition on discrimination. [8533]
10. Comply with civil rights. [8534]
11. Comply with consultation with Indian tribes and tribal organizations. [8538]
12. Comply with prohibitions on aiding and abetting sexual abuse. [8547]

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title I, Part A Basic: General Assurances
(only for districts receiving Title I-A funds)

District does not receive Title I-A funds: ☐

In accepting Title I-A funding the school district assures that it has a plan that meets the requirements of Section 1112 Local Educational Agency Plans as outlined in ESEA.

The district further assures:

1. Migratory children and formerly migratory children who are eligible to receive services under this part are selected to receive such services on the same basis as other children who are selected to receive services under this part. [1112(c)(1)]
2. The district will provide services to eligible children attending private elementary schools and secondary schools in accordance with section 1117, and timely and meaningful consultation with private school officials regarding such services. [1112(c)(2)]
3. The district will participate, if selected, in the National Assessment of Educational Progress in reading and mathematics in grades 4 and 8 carried out under section 303(b)(3) of the National Assessment of Educational Progress Authorization Act (20 U.S.C. 9622(b)(3)). [1112(c)(3)]
4. The district will coordinate and integrate services provided under this part with other educational services at the local educational agency or individual school level, such as services for English learners, children with disabilities, migratory children, American Indian, Alaska Native, and Native Hawaiian children, and homeless children and youths, in order to increase program effectiveness, eliminate duplication, and reduce fragmentation of the instructional program. [1112(c)(4)]
5. The district will ensure that all teachers and paraprofessionals working in a program supported with funds under this part meet applicable State certification and licensure requirements, including any requirements for certification obtained through alternative routes to certification. [1112(c)(6)]
6. In the case of a local educational agency that chooses to use funds under this part to provide early childhood education services to low-income children below the age of compulsory school attendance, ensure that such services comply with the performance standards established under section 641A(a) of the Head Start Act (42 U.S.C. 9836a(a)). [1112(c)(7)]
7. The district will meet the requirements of Section 1118: (a) Maintenance of Effort, (b) Supplement, Not Supplant, and (c) Comparability of Services. [1118]

Title I, Part A Basic: Parent and Family Engagement & Parent Notice Assurances
(only for districts receiving Title I-A funds)

District does not receive Title I-A funds: ☐

The district assures that it will develop jointly with, agree on with, and distribute to, parents and family members of participating children a written parent and family engagement policy. The policy shall be incorporated into the district's plan developed under section 1112, establish the district's expectations and objectives for meaningful parent and family involvement. The policy shall describe how the district will meet the requirements set forth in section 1116, Parent and Family Engagement Involvement. [1116(a)(2)]

In addition, the district assures that:

1. Each school served under this part shall jointly develop with, and distribute to, parents and family members of participating children a written parent and family engagement policy agreed on by such parents, that shall describe the means for carrying out the requirements of subsections (c) through (f) of section 1116 of ESEA. [1116(b)(1)]

2. Each school served under Title I-A as a component of the school parent and family engagement policy shall jointly develop with parents for all children served under this part (in a Targeted Assistance School, this means all students served by the program, in a Schoolwide Program this means all students enrolled at the school) a school-parent compact that outlines how parents, the entire school staff, and students will share the responsibility for improved student academic achievement and the means by which the school and parents will build and develop a partnership to help children achieve Alaska's high standards. The required elements of the compact are outlined in Section 1116(d). [1116(d)]
3. At the beginning of each school year, the district will notify the parents of each student attending any school receiving funds under this part that the parents may request, and the district will provide the parents on request (and in a timely manner), information regarding the professional qualifications of the student's classroom teachers and paraprofessionals. [1112(e)(1)(A)]
4. Each school that receives funds under this part will provide to each individual parent of a child who is a student in such school, with respect to such student:
   (A) information on the level of achievement and academic growth of the student, if applicable and available, on each of the State academic assessments required under this part; and
   (B) timely notice that the student has been assigned, or has been taught for 4 or more consecutive weeks by, a teacher who does not meet applicable State certification or licensure requirements at the grade level and subject area in which the teacher has been assigned. [1112(e)(1)(B)]
5. At the beginning of each school year, the district will notify the parents of each student attending any school receiving funds under this part that the parents may request, and the district will provide the parents on request (and in a timely manner), information regarding any State or district policy regarding student participation in any assessments mandated by section 1111(b)(2) and by the State or district, which shall include a policy, procedure, or parental right to opt the child out of such assessment, where applicable. [1112(e)(2)(A)]
6. The district will make widely available through public means (including by posting in a clear and easily accessible manner on the local educational agency's website and, where practicable, on the website of each school served by the district) for each grade served by the district, information on each assessment required by the State to comply with section 1111, other assessments required by the State, and where such information is available and feasible to report, assessments required districtwide by the district, including—
   (A) the subject matter assessed;
   (B) the purpose for which the assessment is designed and used;
   (C) the source of the requirement for the assessment; and
   (D) where such information is available—
      (I) the amount of time students will spend taking the assessment, and the schedule for the assessment; and
      (II) the time and format for disseminating results. [1112(e)(2)(B)]
7. Parents of English Learners (EL) served with Title I or Title III funds are notified of their child's identification as EL and participation in program services according to the requirements listed in 1112(e)(3)(A-C). [1112(e)(3)]
8. The district will ensure that notice and information provided to parents will be in an understandable and uniform format and, to the extent practicable, provided in a language that the parents can understand. [1112(e)(4)]
9. At the beginning of each school year, the district will prepare and disseminate an annual local district card that includes information on the district as a whole and each school served by the district. The report card will meet the requirements listed in Section 1111(h)(2)] [1111(h)(2)]

Title I, Part A Basic: Foster Care Assurances

The district will support the educational stability of children in foster care in compliance with ESEA sections 1111(g)(1)(E) and 1112(C)(5) by 1) Allowing students in foster care to remain in the school of origin when it is determined to be in the student's best interest; 2) Expediting the enrollment of students in foster care who are switching schools, regardless of whether all records normally required for enrollment are available; and 3) If the district receives Title I-A funds, working with the State Office of Children's Services, or any other Title IV-E agency, to develop and implement written procedures governing how transportation to the student's school of origin will be arranged, provided, and funded, including in the event of a dispute.

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

Title I, Part C: Education of Migratory Children
(only for districts receiving Title I-C funds)

District does not receive Title I-C funds: ☐

All districts participating in Title I-C programs assure that funds received under this part will be used only:

1. For programs and projects, including the acquisition of equipment, in accordance with section 1306. [1304(c)(1)(A)]
2. To coordinate such programs and projects with similar programs and projects within the State and in other States, as well as with other Federal programs that can benefit migratory children and their families. [1304(c)(1)(B)]
3. To carry out such programs and projects will be carried out in a manner consistent with the objectives of section 1114 (schoolwide programs), subsections (b) and (d) of section 1115 (targeted assistance programs), subsections (b) and (c) of section 1118 (supplement, not supplant; and comparability of services), and part F (general provisions); [1304(c)(2)]

In the planning and operation of programs and projects, the district will:

4. Consult with parents of migratory children, including parent advisory councils, for programs not less than 1 school year in duration, and that all such programs and projects are carried out—
   (A) in a manner that provides for the same parental involvement as is required for programs and projects under section 1116 (parent and family engagement), unless extraordinary circumstances make such provision impractical; and
   (B) in a format and language understandable to the parents; [1304(c)(3)]
5. Provide adequate provision for addressing the unmet education needs of preschool migratory children and migratory children who have dropped out of school; [1304(c)(4)]
6. Determine the effectiveness of such programs and projects, where feasible, using the same approaches and standards that will be used to assess the performance of students, schools, and local educational agencies under part A; [1304(c)(5)]
7. Provide for outreach activities for migratory children and their families to inform such children and families of other education, health, nutrition, and social services to help connect them to such services; [1304(c)(6)]
8. To the extent feasible, provide for—
   (A) advocacy and other outreach activities for migratory children and their families, including helping such children and families gain access to other education, health, nutrition, and social services;
   (B) professional development programs, including mentoring, for teachers and other program personnel;
   (C) family literacy programs;
   (D) the integration of information technology into educational and related programs; and
   (E) programs to facilitate the transition of secondary school students to postsecondary education or employment. [1304(c)(7)]

In addition, the district will:

9. Provide a high-quality and comprehensive educational programs and services during the school year and, as applicable, during summer or intersession periods that address the unique educational needs of migratory children. [1301(1)]
10. Ensure that migratory children who move among the States are not penalized in any manner by disparities among the Sates in curriculum, graduation requirements, and challenging State academic standards. [1301(2)]
11. Ensure that migratory children receive full and appropriate opportunities to meet the same challenging State academic standards that all children are expected to meet. [1301(3)]
12. Help migratory children overcome educational disruption, cultural and language barriers, social isolation, various

health-related problems, and other factors that inhibit the ability of such children to succeed in school. [1301(4)]

13. To help migratory children benefit from State and local systemic reforms. [1301(5)]
14. Identify, recruit, and certify eligible migratory children. [1304(c)(8)]
15. Use the MIS2000 system to keep adequate migratory student data records, such as types of instruction and support services. [1304(c)(8)]
16. Encourage meaningful and effective parent and family engagement in planning, operation, and evaluation of their children's educational program.
17. Identify and address the unique educational needs of migratory children in accordance with a comprehensive State plan that—
    - (A) is integrated with other programs under this Act or other Acts, as appropriate;
    - (B) may be submitted as a part of a consolidated application under section 8302, if
        - (i) the unique needs of migratory children are specifically addressed in the comprehensive State plan;
        - (ii) the comprehensive State plan is developed in collaboration with parents of migratory children; and
        - (iii) the comprehensive State plan is not used to supplant State efforts regarding, or administrative funding for, this part;
    - (C) provides that migratory children will have an opportunity to meet the same challenging State academic standards that all children are expected to meet;
    - (D) specifies measurable program goals and outcomes;
    - (E) encompasses the full range of services that are available for migratory children from appropriate local, State, and Federal educational programs;
    - (F) is the product of joint planning among such local, State, and Federal programs, including programs under part A, early childhood programs, and language instruction educational programs under part A of title III; and
    - (G) provides for the integration of services available under this part with services provided by such other programs. [1306(a)(1)]

Regarding electronic signatures on the Title I, Part C Certificate of Eligibility (COE) the district certifies it will:

18. Follow state and local laws/policies on electronic signatures.
19. Comply with Family Educational Rights and Privacy Act (FERPA) and Personally Identifiable Information security rules.
20. Implement security measures, such as 2-factor authentication.
21. Obtain new electronic signatures on forms in accordance with the Title I-C rules.
22. Adopt and implement written procedures regarding obtaining electronic signatures on the COE. The written procedures will:
    - (A) Describe the process for obtaining electronic signatures.
    - (B) Make it clear that the district will rely on the electronic signatures to identify the individuals who signed the document.
    - (C) Include how the process will comply with FERPA and PII security rules.
    - (D) Include how the district will ensure the electronic signatures are valid and authentic.
    - (E) Include provisions for making copies of the electronic documents available, within a reasonable time frame, to those who provide electronic signatures.

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____426_____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title I, Part D, Subpart 1: The Prevention and Intervention Programs for Children and Youth who are Neglected, Delinquent or At-Risk
(only for districts receiving Title I-D, Subpart 1 funds)

District does not receive Title I-D, Subpart 1 funds: ☐

Districts receiving these funds shall meet applicable state and federal requirements, including:

1. Assist in locating alternative programs through which students can continue their education if the students are not returning to school after leaving the correction facility or institution for neglected or delinquent children and youth. [§1414 (c)(13)]
2. Work with parents to secure parents' assistance in improving the educational achievement of their children and youth, and preventing their children's and youth's further involvement in delinquent activities. [§1414 (c)(14)]
3. If applicable, make services available to children and youth in adult correctional institutions, priority will be given to such children and youth who are likely to complete incarceration within a 2-year period. [§1414 (c)(2)]
4. Work with children and youth with disabilities in order to meet an existing individualized education program. [§1414 (c)(15)]
5. Notify the child's or youth's local school if the child or youth—
   A. is identified as in need of special education services while the child or youth is in the correctional facility or institution for neglected or delinquent children and youth; and
   B. intends to return to the local school. [§1414 (c)(15)]
6. Work with children and youth who dropped out of school before entering the correctional facility or institution for neglected or delinquent children and youth to encourage the children and youth to reenter school once the term of the incarceration is completed or provide the child or youth with the skills necessary to gain employment, continue the education of the child or youth, or achieve attain a regular high school diploma or its recognized equivalent if the child or youth does not intend to return to school. [§1414 (c)(16)]
7. Provide teachers and other qualified staff who are trained to work with children and youth with disabilities and other students with special needs taking into consideration the unique needs of such students. [§1414 (c)(17)]
8. Coordinate with any programs operated under the Juvenile Justice and Delinquency Prevention Act of 1974 (42 U.S.C. 5601 et seq.) or other comparable programs, if applicable. [§1414 (c)(19)]
9. If using funds to support an institution-wide project, provide for appropriate training for teachers and other instructional and administrative personnel to enable such teachers and personnel to carry out the project effectively. [§1416 (8)]
10. To the extent feasible LEAs will describe how they will track when a youth has come into contact with both the child welfare and juvenile justice systems; and how they will deliver services and interventions designed to keep such youth in school that are evidence-based. [1414 (c) (20)]

By my signature, I hereby certify that I have read the assurances above and I agree that, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title I, Part D, Subpart 2: The Prevention and Intervention Programs for Children and Youth who are Neglected, Delinquent or At-Risk

(only for districts receiving Title I-D, Subpart 2 funds)

District does not receive Title I-D, Subpart 2 funds: ☐

All districts participating in Title I-D, Subpart 2 programs assure that:

1. Funds received under this part will be used only for programs and projects in accordance with section 1424, and
2. All locally operated facilities served with Title I-D, Subpart 2 funds meet the program requirements outlined in section 1425.

By my signature, I hereby certify that I have read the assurances above and I agree that, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title II, Part A: Supporting Effective Instruction
(only for districts receiving Title II-A funds)

District does not receive Title II-A funds: ☐

All districts participating in Title II-A programs assure that funds received under this part are used:

1. To support the quality and effectiveness of teachers, principals and other school staff.
2. To address the learning needs of all students, including children with disabilities, English learners, and gifted and talented students.
3. Prioritize funds to schools that:
    A. Are implementing comprehensive support and improvement activities and targeted support and improvement activities under 1111(d), and
    B. Have the highest percentage of children counted under section 1124(c) (these are primarily lowincome children).
4. In accordance with the purpose of this title and to carry out one of more of the allowable activities under 2103(b).

In the planning and operation of programs and projects, the district will:

1. Conduct ongoing consultation with those stakeholders to update and improve activities supported with Title II funds.
2. Use data and ongoing consultation to continually update and improve activities supported under Title II-A.
3. Coordinate high-quality professional development activities funded by Title II, Part A that meet the federal definition outlines in 8101(42) with professional development activities provided through other Federal, State, and local programs.
4. Align activities with the challenging State academic standards, as applicable.
5. Have in place systems of professional growth and improvement, such as induction for teachers, principals, or other school leaders and opportunities for building the capacity of teachers and opportunities to develop meaningful teacher leadership.
6. Monitor the effectiveness of using Title II, Part A funded activities to improved teacher, principal, or other school leader effectiveness.
7. Implement "evidence-based" practices, activities, strategies and interventions with demonstrated evidence of effectiveness as outlined in 8101(21)(A) for Title II-A funded activities requiring an evidence base.

In addition, the district will:

1. Coordinate professional development activities authorized under this part with professional development activities provided through other Federal, State, and local programs.
2. Comply with ESEA section 8501 (*participation by private school children and teachers*).
3. Comply with a supplement, not supplant requirement (Sec. 2301)

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title III, Part A: English Language Acquisition, Language Enhancement, & Academic Achievement
(only for districts receiving Title III-A funds)

District does not receive Title III-A funds: ☐

In accepting Title III, Part A funds, the district assures that:

1. The district annually will assess the English proficiency of all English learners participating in programs funded under this part, consistent with ESEA section 1111(b)(2)(G). [3113(b)(3)(B)]
2. The district shall use effective approaches and methodologies for teaching English learners and immigrant children and youth. [3115](a)]
3. The district will ensure that elementary schools and secondary schools receiving funds under this subpart assist English learners in achieving English proficiency based on the State's English language proficiency assessment under section 1111(b)(2)(G), consistent with the State's long-term goals, as described in section 1111(c)(4)(A)(ii). [3116(b)(2)(A)]
4. The district will ensure that elementary schools and secondary schools receiving funds under this assist English learners meet the challenging State academic standards. [3116(b)(2)(B)]
5. The district will promote parent, family, and community engagement in the education of English learners. [3116(b)(3)]
6. The district complies with section 1112(e) prior to, and throughout, each school year as of the date of application. [3116(b)(4)(A)]
7. The district is not in violation of any State law, including constitutional law, regarding the education of English learners, consistent in sections 3125 and 3126. [3116(b)(4)(B)]
8. The district consulted with teachers, researchers, school administrators, parents, and family members, community members, public or private entities and institutions of higher education, in developing and implementing its plan. [3116(b)(4)(C)]
9. The district will, if applicable, coordinate activities and share relevant data under the plan with local Head Start and Early Head Start agencies, including migrant and seasonal Head Start agencies, and other early childhood education providers. [3116(b)(4)(D)]
10. The district is complying with ESEA section 1112 (parental notification) prior to, and throughout, each school year. [1112(e)(3)]
11. The district will ensure that all teachers in any language instruction educational program that is or will be funded under Title III are fluent in English and any other language used for instruction, including having written and oral communication skills. [3116(c)]

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Title IV, Part A: Student Support and Academic Enrichment Grants
(only for districts receiving Title IV-A funds)

District does not receive Title IV-A funds: ☐

In accepting Title IV, Part A funds, the district assures that:

1. The district or consortium receiving funds under this part prioritized the distribution of funds to schools served under this part that –
   - (A) Are among the schools with the greatest needs, as determined by the district or consortium;
   - (B) Have the highest percentage or numbers of children counted under section 1124(c);
   - (C) Are identified for comprehensive support and improvement under section 1111(c)(4)(D)(i);
   - (D) Are implementing targeted support and improvement plans as described in section 111(d)(2); or
   - (E) Are identified as a persistently dangerous public elementary school or secondary school under section 8532; [4106(e)(2)(A)]
2. The district shall comply with section 8501, regarding equitable participation by private school children and teachers. [4106(e)(2)(B)]
3. The district or consortium receiving under $30,000 shall assure at least one of the sections (A), (B), or (C), and a district or consortium receiving $30,000 or more shall assure (A), (B), and (C):
   - (A) Use not less than 20% of funds received under this part to support one or more of the activities authorized under section 4107, Activities to Support Well-Rounded Educational Opportunities. [4106(e)(2)(C)]
   - (B) Use not less than 20% of funds received under this part to support one or more of the activities authorized under section 4108, Safe and Healthy Students. [4106(e)(2)(D)]
   - (C) Use a portion of funds received under this part to support one or more of the activities authorized under section 4109, Activities to Support the Effective Use of Technology, providing not more than 15% is spent purchasing technology infrastructure, including devices, equipment, and software applications. [4106(e)(2)(E)]
4. The district or consortium will spend not more than 2% administering this program, and will publicly report through the application expenditures of funds and progress towards program outcomes. [4105 (c)] [4106(e)(2)(F)]
5. Amended section 8526 of the Elementary and Secondary Education Act of 1965 (ESEA) to add a prohibition that no funds under the ESEA may be used for the provision to any person of a dangerous weapon, as defined in section 930(g)(2) of title 18, United States Code, or training in the use of a dangerous weapon. The term "dangerous weapon" means a weapon, device, instrument, material, or substance, animate or inanimate, that is used for, or is readily capable of, causing death or serious bodily injury, this does not include a pocket-knife with a blade of less than 2½ inches in length.
6. The district shall ensure equitable access to, and participation in, this program for students, teachers, and other beneficiaries with special needs.(20 U.S.C. §1228a (a))

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above.

Signature: _____ Date: _____

Title: _____

Title VII, Part B Homeless Education (McKinney-Vento Act)
(for all districts)

The district assures that it will:

1. ensure homeless children and youth are given the opportunity to meet the same challenging State academic standards as all students are expected to meet. [722(g)(1)(A)]
2. adopt policies and practices to ensure prompt resolution of disputes regarding the educational placement of homeless children and youths. [722(g)(1)(C)]
3. ensure school personnel (including liaisons designated under subparagraph (J)(ii), principals and other school leaders, attendance officers, teachers, enrollment personnel, and specialized instructional support personnel) have a heightened awareness of the specific needs of homeless children and youths, including such children and youths who are runaway and homeless youths. [722(g)(1)(D)]
4. ensure that homeless children and youths who meet the relevant eligibility criteria are able to participate in Federal, State, or local nutrition programs. [722(g)(1)(E)]
5. ensure that homeless children have access to public preschool programs, administered by the State educational agency or local educational agency, as provided to other children in the State/ [722(g)(1)(F)(i)]
6. ensure that homeless children and youth separated from public schools are identified and accorded equal access to appropriate secondary education and support services, including by identifying and removing barriers that prevent youths described in this clause from receiving appropriate credit for full or partial coursework satisfactorily completed while attending a prior school, in accordance with State, local, and school policies. [722(g)(1)(F)(ii)]
7. ensure that homeless children and youths who meet the relevant eligibility criteria do not face barriers to accessing academic and extracurricular activities, including magnet school, summer school, career and technical education, advanced placement, on-line learning, and charter school programs, if such programs are available at the State and local levels. [722(g)(1)(F)(iii)]
8. address problems with respect to the education of homeless children and youths, including problems resulting from enrollment delays that are caused by:
    A. requirements of immunization and other required health records;
    B. residency requirements;
    C. lack of birth certificates, school records, or other documentation;
    D. guardianship issues; or
    E. uniform or dress code requirements. [722(g)(1)(H)]
9. review and revise, policies to remove barriers to the identification of homeless children and youths, and the enrollment and retention of homeless children and youths in schools in the State, including barriers to enrollment and retention due to outstanding fees or fines, or absences. [722(g)(1)(I)]
10. adopt policies and practices to ensure that homeless children and youths are not stigmatized or segregated on the basis of their status as homeless. [722(g)(1)(J)(i)]
11. designate an appropriate staff person, able to carry out the duties described in paragraph (6)(A), who may also be a coordinator for other Federal programs, as a local educational agency liaison for homeless children and youths. [722(g)(1)(J)(ii)]
12. adopt policies and practices to ensure that transportation is provided, at the request of the parent or guardian (or in the case of an unaccompanied youth, the liaison), to and from the school of origin (as determined under paragraph (3)), in accordance with the following, as applicable:
    A. If the child or youth continues to live in the area served by the local educational agency in which the school of origin is located, the child's or youth's transportation to and from the school of origin shall be provided or arranged by the local educational agency in which the school of origin is located. [722(g)(1)(J)(iii)(I)]
    B. If the child's or youth's living arrangements in the area served by the local educational agency of origin terminate and the child or youth, though continuing the child's or youth's education in the school of origin,

begins living in an area served by another local educational agency, the local educational agency of origin and the local educational agency in which the child or youth is living shall agree upon a method to apportion the responsibility and costs for providing the child or youth with transportation to and from the school of origin. If the local educational agencies are unable to agree upon such method, the responsibility and costs for transportation shall be shared equally. [722(g)(1)(J)(iii)(II)]

13. adopt policies and practices to ensure participation by liaisons described in clause (ii) in professional development and other technical assistance activities provided pursuant to paragraphs (5) and (6) of subsection (f), as determined appropriate by the Office of the Coordinator. [722(g)(1)(J)(iv)]
14. ensure homeless children and youth will receive assistance from counselors to advice such youth and prepare and improve the readiness of such youths for college. [722(g)(1)(K)]

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above:

Signature: _____ Date: _____

Title: _____

GUN-FREE SCHOOLS ACT AND DISCIPLINARY DATA REPORT

(for all districts)

Must be completed electronically at: education.alaska.gov/safeschools/suspexptruancy

Background

The Gun-Free Schools Act (GFSA), Title VIII, Part F, Subpart 4 of the Every Student Succeeds Act (section 8551), requires that each state have in effect a state law requiring local education agencies (LEAs) to expel from school for a period of not less than one year a student found to have brought a weapon to school. In addition, under the GFSA, LEAs receiving ESEA funds must adopt a policy requiring referral to the criminal justice or juvenile delinquency system of any student who brings a firearm to school. Alaska's law complies with these requirements.

Each state's law also must allow the chief administering officer of the LEA to modify the expulsion requirement on a case-by-case basis. The GFSA shall be construed to prevent a state from allowing a local educational agency that has expelled a student from such student's regular school setting from providing educational services to that student in an alternative setting.

IDEA Considerations

(*Authorization: 20 U.S.C. 1418(a)(1)(A)*

The GFSA explicitly states that the Act must be construed in a manner consistent with the Individuals with Disabilities Education Act (IDEA). Compliance with the GFSA can be achieved consistent with the IDEA as long as discipline of such students is determined on a case-by-case basis under the GFSA provision that permits modification of the expulsion requirement on a case-by-case basis. A student with a disability who brings a firearm to school may be removed from school for ten school days or less, and in accordance with state law, placed in an interim alternative education setting that is determined by the student's individualized education program team, for up to 45 calendar days. If the student's parents initiate due process proceedings under the IDEA, the student must remain in that interim alternative educational setting during authorized review proceedings, unless the parents and school district can agree on a different placement. Before an expulsion can occur, the IDEA requires a determination by a group of persons knowledgeable about the student on whether the bringing of a firearm to school was a manifestation of the student's disability. A student with a disability may be expelled only if this group of persons determines that the bringing of a firearm to school was not a manifestation of the student's disability, and the school follows applicable IDEA procedural safeguards before the expulsion occurs. Under IDEA, students with disabilities who are expelled in accordance with these conditions must continue to receive educational service during the expulsion period.

Reporting

The GFSA also requires states to provide annual report to the Secretary of Education concerning implementation of the Act's requirements. The district's form **must be submitted to DEED by June 30 each year.** The Secretary is required to report to Congress if any state is not in compliance with the GFSA. *Please note that this form replaces the AKDEED form #05-99-010 Table 5 – Unilateral Removal from Educational Placement.*

AS 14.33.120 (b) requires that "a school district shall report information relating to school district disciplinary and safety programs as required by the department, including incidents of disruptive or violent behavior." The district's form **must be submitted to DEED by June 30 each year.**

By my signature below, I agree, upon the approval of the project application by the Alaska Department of Education & Early Development, to accept and perform the requirements as contained in the assurances above:

Signature: _____ Date: _____

Title: _____

CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG-FREE WORKPLACE REQUIREMENTS (All Districts)

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 34 CFR Part 82, "New Restrictions on Lobbying," and 2 CFR Part 180, "Government-wide Debarment and Suspension (Nonprocurement) and 2 CFR Part 182, Government-wide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Education determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 34 CFR Part 82, for persons entering into a grant or cooperative agreement over $100,000, as defined at 34 CFR Part 82, Sections 82.105 and 82.110, the applicant certifies that:

(a) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any federal grant, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal grant or cooperative agreement;

(b)) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions;

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts) and that all subrecipients shall certify and disclose accordingly.

2. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

As required by Executive Order 12549, Debarment and Suspension, and implemented at 2 CFR Part 180, for prospective participants in primary covered transactions, as defined at 2 CFR Part 180, Section 180.335.

A. The applicant certifies that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (2)(b) of this certification; and

(c)) Have not within a three-year period preceding this application had one or more public transaction (federal, state, or local) terminated for cause or default; and

B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

3. DRUG-FREE WORKPLACE (GRANTEES OTHER THAN INDIVIDUALS)

As required by the Drug-Free Workplace Act of 1988, and implemented at 2 CFR Part 182 , Subpart B, for grantees, as defined at 2 CFR Part 182, Sections 182.200 through 182.215.

C. The applicant certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b)) Establishing an on-going drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c)) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency, in writing, within 10 calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position

title, to: Director, Grants Policy and Oversight Staff, U.S. Department of Education, 400 Maryland Avenue, S.W. (Room 3652, GSA Regional Office Building No. 3), Washington, DC 20202-4248. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement, or other appropriate agency;

(g)) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

D. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address. city, county, state, zip code)

_____

Check ☐ if there are workplaces on file that are not identified here.

DRUG-FREE WORKPLACE
(GRANTEES WHO ARE INDIVIDUALS)

As required by the Drug-Free Workplace Act of 1988, and implemented at 2 CFR Part 182, Subpart C, for grantees, as defined at 2 CFR Part 182, Section 182.300.

A. As a condition of the grant, I certify that I will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant; and

B. If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, I will report the conviction, in writing, within 10 calendar days of the conviction, to: Director, Grants Policy and Oversight Staff, Department of Education, 400 Maryland Avenue, S.W. (Room 3652, GSA Regional Office Building No. 3), Washington, DC 20202-4248. Notice shall include the identification number(s) of each affected grant.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above certifications.

Name of Applicant: _____ PR/Award Number and/or Project Name: _____

Printed Name and Title of Authorized Representative: _____

Signature: _____ Date: _____

FEDERAL PROGRAMS APPLICATION
2025-2026 ASSURANCES & CERTIFICATIONS

Disclosure of Lobbying Activities
(for all districts)

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

☐ ***Did NOT lobby – Check box, skip sections 1-10, sign below in section 11**

☐ ***Did lobby – Check box, complete sections 1-10, sign below in section 11**

1. Type of Federal Action:
- ☐ contract
- ☐ grant
- ☐ cooperative agreement
- ☐ loan
- ☐ loan guarantee
- ☐ loan insurance

2. Status of Federal Action:
- ☐ bid/offer/application
- ☐ initial award
- ☐ post-award

3. Report Type:
- ☐ initial filing
- ☐ material change

For material change only:
Year: _____
Quarter: _____
Date of last report: _____

4. Name and Address of Reporting Entity:
☐ Prime ☐ Subawardee Tier_____, *if known*

_____
_____
_____

Congressional District, if known: _____

5. If Reporting Entity in No. 4 is Subawardee,
Enter Name and Address of Prime:

_____
_____
_____

Congressional District, if known: _____

7. Federal Department/Agency:

_____
_____
_____

7. Federal Program Name/Description:

_____
_____

CFDA Number, *if applicable*: _____

8. Federal Action Number, *if known:*

_____

9. Award Amount, *if known:*
$_____

10. a. Name and Address of Lobbying Registrant
(if individual, last name, first name, MI):

_____
_____
_____

b. Individuals Performing Services *(including address if different from No. 10a) (last name, first name, MI):*

_____
_____
_____

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature: _____

Print Name: _____

Title: _____

Telephone: _____ **Date:** _____

Federal Use Only
Approved by OMB 0348-0046

Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime federal recipient, at the initiation or receipt of a covered federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered federal action.
2. Identify the status of the covered federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks “Subawardee,” then enter the full name, address, city, state and zip code of the prime federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the federal program name or description for the covered federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate federal identifying number available for the federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the federal agency). Included prefixes, e.g., “RFP-DE-90-001.”
9. For a covered federal action where there has been an award or loan commitment by the federal agency, enter the federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered federal action.
    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503