4 Math Unit 13: Units of Measurement & Data

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 4**
Length: **17 days**
Status: **Published**

Unit Overview

Units of Measurement and Data

In this unit, students extend their earlier work with metric units of length, liquid volume, and mass to work with relative sizes of units and to perform conversions within the metric system. Students learn that using base units helps them comprehend relative sizes of measurements expressed in larger or smaller units. Students learn that a larger metric unit can be converted to a smaller metric unit by using multiplication. After working with metric units, students use a similiar approach to learn about customary units. Students convert using units of time. Students extend their knowledge of area, perimeter, and line plots that show fractional measurements.

Students will extend their ability to add and subtract fractions and compare fractions. These include:

- **Relate Metric and Customary Units:** Students use place value understanding to relate metric units and equivalence tables to relate customary units.
- **Converts Units of Time:** Students use equivalence tables to convert units of time.
- **Create and Interpret Line Plots:** Students create line plots and use them to solve problems involving the addition and subtraction of fractional measurements.

What Students Are Learning

- Students use multiplication and equivalence tables to convert from a larger unit of measure to a smaller unit of measure.
- Students solve problems involving metric and customary units of measurement.
- Students solve problems involving elapsed time.
- Students use the formulas for the area and perimeter of rectangles. They apply the formulas to solve real-world problems.
- Students create and interpret line plots that show fractional measurements.

- What Did You See?
- Decompose It
- Which Benchmark Is It Closest To?
- About How Much?
- Where Does It Go?

Standards

4.OA.A.3	Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be

	interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
4.M.A.1	Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
4.M.A.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
4.DL.B	Represent and interpret measurement data
4.DL.B.5	Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Materials

Core Materials:

Reveal Math

13.1 Relate Metric Units

13.2 Relate Customary Units of Weight

13.3 Relate Customary Units of Capacity

13.4 Convert Units of Time

13.5 Solve Problems That Involve Units of Measure

13.6 Solve More Problems That Involve Units of Measure

13.7 Solve Problems Using a Perimeter Formula

13.8 Solve Problems Using an Area Formula

13.9 Solve Problems Involving Perimeter and Area

13.10 Display and Interpret Data on a Line Plot

13.11 Solve Problems Involving Data on a Line Plot

Supplemental Materials:

- ST Math
- Happy Numbers
- 3 Act Lessons
- Building Fact Fluency Kit
- Brainingcamp Manipulatives
- Nearpod Lessons
- Brainpop Resources

- Online Resources

Technology

DA	Data & Analysis
	Data can be organized, displayed, and presented to highlight relationships.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
	Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Assessment

Formative Assessment

- Unit Readiness Diagnostics
- Lesson Checks
- Exit Tickets
- Teacher Observation

Summative Assessment

- Unit Assessment Performance Task
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Differentiated Instruction

Accommodate Based on Students Individual Needs: Strategies			
Time/General • Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for reports and projects • Communication system between home and school • Provide lecture notes/outline	**Processing** • Extra response time • Have students verbalize steps • Repeat, clarify, or reword directions • Mini-breaks between tasks • Provide a warning for transitions • Reading partners	**Comprehension** • Precise step-by-step directions • Short manageable tasks • Brief and concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory learning	**Recall** • Teacher-made checklist • Use visual graphic organizers • Reference resources to promote independence • Visual and verbal reminders • Graphic organizers
Assistive Technology • Computer/whiteboard • Tape recorder • Spell-checker • Audio-taped books	**Tests/Quizzes/Grading** • Extended time • Study guides • Focused/chunked tests • Read directions aloud	**Behavior/Attention** • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback	**Organization** • Individual daily planner • Display a written agenda • Note-taking assistance • Color code materials

504

- In class/pull out support with special ed teacher Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks Graphic organizers
- Vocabulary support Mnemonic devices
- Songs/videos to reinforce concepts Limit number of questions
- Scribe Manipulatives Calculators Reteach pages Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System Another look homework video

- Practice buddy

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Math Diagnosis & Intervention System

At-risk of Failure

- Additional time during intervention time
- Questions read aloud
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

Gifted & Talented

- Independent projects
- Enrichment pages
- Online games
- Leveled Homework
- Extension Activities
- Today's Challenge

Interdisciplinary Connections

Climate Change:

Climate Change Example: Students may, knowing that energy and fuels are derived from natural resources and that their uses affect the climate, make a line plot to display a data set of measurements in fractions of a unit.

RI.CI.4.2	Summarize an informational text and interpret the author's purpose or main idea citing key details from the text.
ETS1.B	Developing Possible Solutions Testing a solution involves investigating how well it performs under a range of likely conditions.

Career Readiness, Life Literacies & Key Skills

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.4.5.CT	Critical Thinking and Problem-solving The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
9.4.5.CT.3	Describe how digital tools and technology may be used to solve problems.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
9.1.5.FI	Financial Institutions People can choose to save money in many places such as home in a piggy bank, bank, or credit union.
9.1.5.FI.1	Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.

Career Ready Practices

STEM CAREER: Nurse Student talks about the work of nurses. Student talks about how to measure medicine in milliliters.

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.