

Core Content

Cluster Title: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Standard 1: Know relative sizes of measurement units within one system of units, including km, m, cm; g, kg; 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. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1,12), (2,24), (3,36), ...

MASTERY Patterns of Reasoning:

Conceptual:

- Students will understand the difference between standard and metric units of measurement.
- Students will understand relative size within one system of units (e.g., km, m, cm; ton, lb, oz, etc.).
- Students will understand equivalent measurements in larger and smaller units within one system.

Procedural:

- Students can identify the different measurement systems (standard and metric).
- Students can identify the units of measurement within each system (standard and metric).
- Students can identify the equivalent units of measurement within one system (e.g., 3 ft = 1 yd).
- Students can record measurement equivalents within one system in a two-column table.
- Students can convert between units of measurement within one system (e.g., 300 cm = 3 m).

Representational:

- Students can use models, manipulatives, and pictures to compare relative sizes within one system.
- Students can use models, manipulatives, and pictures to show equivalent measurements within one system.
- Students can use models, manipulatives, and pictures to convert between units of measurement within one system.

Supports for Teachers

Critical Background Knowledge

Conceptual:

- Students will know and understand the basic units for each system.
- Students will understand which measurement unit would be most reasonable to use to measure length, capacity, weight and time (e.g., grams versus kilograms, pounds versus ounces, etc.).
- Students will understand which unit to use to measure length, capacity, weight and time (e.g., measure weight with grams or kilograms, not liters).
- Students will understand how to use measurement tools (scale, clock, ruler, etc.).
- Students will understand part-to-whole and whole-to-part relationships (e.g., 1 inch = 1/12 foot; 1 foot = 12 inches).
- Students will understand how to generate and analyze patterns (Refer to 4.OA.5).

Procedural:

- Students can measure different items using both systems of measurement (standard and metric).
- Students can estimate the measurement using length, capacity, weight and time.
- Students can multiply and divide numbers.

Representational:

- Students can use pictures to show the measurement of different items.
- Students can use measurement tools for length, capacity, weight and time.

Academic Vocabulary and Notation

UNITS OF MEASUREMENT		
Components	Standard	Metric
Length	in., ft, yd, mi.	mm, cm, dm, m, km
Capacity	fl. oz., c, pt, qt, gal.	mL, L
Weight	oz., lb	g, kg
Time	sec., min., hr., day, week, month, year	

Instructional Strategies Used		Resources Used	
<p>1. Using different measurement tools provide time for students to measure items using various units within one system (e.g., the door is 2 yards tall, but 6 feet as well). Have students compare and record their measurements on a two-column table. This allows students to explore and discover relative size of measurements.</p> <p style="padding-left: 40px;">a. Have students use both the standard and customary units of measure for the same items and create charts for both.</p> <p>2. Have the students measure the length of the room with one-inch tiles, one foot rulers and with yardsticks. Students should notice that it takes fewer yardsticks to measure the room than rulers and tiles.</p> <p style="padding-left: 40px;">a. Have the students complete the same activity using centimeters and meters.</p>		<p>Measurement tools including, but not limited to, rulers, balances, cups, weights, beakers and clocks: http://www.harcourtschool.com/activity/con_math/g04c24.html</p> <p>Various activities relating to measurement: http://www.jmathpage.com/JIMSMeasurementpage.html</p>	
Assessment Tasks Used			
<p>Skill-Based Task:</p> <p>5000 mL = _____ L</p> <p>_____ cm = 5 m</p> <p>6 cups = _____ pints</p> <p>_____ quarts = 2 gal</p>		<p>Problem Task:</p> <p>Ask students to represent real-life situations (such as the length of an animal, the weight of a rock, etc.) in different units of measurement (e.g., the rock weighs 2 kg or 2,000 g).</p>	