

**ELG 5.MD.A Convert like measurement units within a given measurement system**

**Vertical Progression:**

<b>3<sup>rd</sup> Grade</b>	<p><b>3.MD.A Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b></p> <ul style="list-style-type: none"> <li>○ <b>3.MD.A.2</b> Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</li> </ul>
<b>4<sup>th</sup> Grade</b>	<p><b>4.MD.A Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</b></p> <ul style="list-style-type: none"> <li>○ <b>4.MD.A.1</b> Know relative sizes of measurement units within one system of units including km, m, cm; 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. <i>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), ...</i></li> <li>○ <b>4.MD.A.2</b> Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</li> </ul>
<b>5<sup>th</sup> Grade</b>	<p><b>5.MD.A Convert like measurement units within a given measurement system.</b></p> <ul style="list-style-type: none"> <li>○ <b>5.MD.A.1</b> Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</li> </ul>
<b>6<sup>th</sup> Grade</b>	<p><b>6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.</b></p> <ul style="list-style-type: none"> <li>○ <b>6.RP.A.3</b> Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.</li> <li>○ <b>6.RP.A.3.d</b> Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</li> </ul>

**Students will demonstrate command of the ELG by:**

- Converting among measurement systems and identify patterns of conversion within systems for length, weight, and volume.
- Interpreting and solving multi-step real world problems involving conversions in various measurement situations.

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**Vocabulary:**

- conversion
- convert
- gallon (gal)
- gram (g)
- kilogram (kg)
- kilometer (km)
- liter (L)
- mass
- meter (m)
- metric
- mile (mi)
- milliliter (mL)
- ounce (oz)
- pint (pt)
- pound (lb)
- quart (qt)

**Sample Instructional/Assessment Tasks:**

**1) Standard: 5.MD.A.1**

**Source:** Illustrative Mathematics

<https://www.illustrativemathematics.org/content-standards/5/MD/A/1/tasks/293>

**Item Prompt:** Converting Fractions of a Unit into a Smaller Unit

a. Five brothers are going to take turns watching their family's new puppy. How much time will each brother spend watching the puppy in a single day if they all watch him for an equal length of time? Write your answer

- Using only hours,
- Using a whole number of hours and a whole number of minutes, and
- Using only minutes.

b. Mrs. Hinojosa had 75 feet of ribbon. If each of the 18 students in her class gets an equal length of ribbon, how long will each piece be? Write your answer

- Using only feet,
- Using a whole number of feet and a whole number of inches, and
- Using only inches.

c. Wesley walked 11 miles in 4 hours. If he walked the same distance every hour, how far did he walk in one hour? Write your answer

- Using only miles,
- Using a whole number of miles and a whole number of feet, and
- Using only feet.

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**Correct Answer:**

The following solutions give a sense of how students might solve the problems, but do not cover all possibilities.

- a. Each brother will watch the puppy for  $4\frac{4}{5}$  hours, which is also 4 hours 48 minutes or 288 minutes.
- b. Each student will get a piece of ribbon that is  $4\frac{1}{6}$  feet long, which is also 4 feet 2 inches or 50 inches.
- c. Wesley walked  $2\frac{3}{4}=2.75$  miles in one hour, which is also 2 miles and 3960 feet or 14,520 feet.

**2) Standard: 5.MD.A.1**

**Source:** Howard County Public Schools (Adapted from Smarter Balance)

**Item Prompt:**

Write each measurement in the correct column of the table with an equivalent measurement.

0.001 km      0.01mm      0.1 cm      0.01 km      0.01 m

Note: Some measurements may not have an equivalent measurement.

1 meter	1 centimeter	1 millimeter

**Correct Answer:** 0.001 km in the “1 meter” column, 0.01 m in the “1 centimeter column and 0.1 cm in the “millimeter” column.