

**North Penn School District**  
**Elementary Math Parent Letter**

**Grade 6**

**Unit 2 – Chapter 6: Units of Measure**

**Examples for each lesson:**

**Lesson 6.1**

**Convert Units of Length**

To convert a unit of measure, multiply by a conversion factor. A **conversion factor** is a rate in which the two quantities are equal, but are expressed in different units.

Convert to the given unit. 2,112 ft = \_\_\_\_\_ mi

**Step 1** Choose a conversion factor.

1 mile = 5,280 feet, so use the conversion factor  $\frac{1 \text{ mile}}{5,280 \text{ feet}}$ .

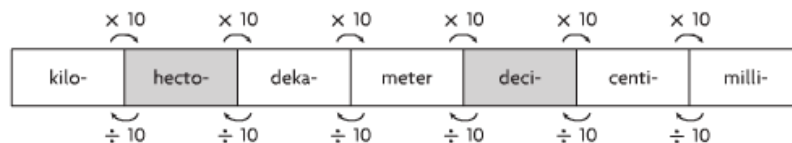
**Step 2** Multiply by the conversion factor.

$$2,112 \text{ ft} \times \frac{1 \text{ mi}}{5,280 \text{ ft}} = \frac{2,112 \cancel{\text{ft}}}{1} \times \frac{1 \text{ mi}}{5,280 \cancel{\text{ft}}} = \frac{2,112}{5,280} \text{ mi} = \frac{2}{5} \text{ mi}$$

So, 2,112 ft =  $\frac{2}{5}$  mi.

When converting metric units, move the decimal point to multiply or divide by a power of ten.

14 dm = \_\_\_\_\_ hm



**Step 1** Start at the given unit.

**Step 2** Move to the unit you are converting to.

**Step 3** Move the decimal point that same number of spaces in the same direction. Fill any empty place-value positions with zeros.

So, 14 dm = 0.014 hm.

Customary Units of Length
1 foot (ft) = 12 inches (in.)
1 yard (yd) = 36 inches
1 yard = 3 feet
1 mile (mi) = 5,280 feet
1 mile = 1,760 yards

## Lesson 6.2

### Convert Units of Capacity

**Capacity** is the measure of the amount that a container can hold. When converting customary units, multiply the initial measurement by a conversion factor.

Convert to the given unit.  $35 \text{ c} = \underline{\hspace{2cm}} \text{ qt}$

**Step 1** Choose a conversion factor.

1 quart = 4 cups, so use the conversion factor  $\frac{1 \text{ quart}}{4 \text{ cups}}$ .

**Step 2** Multiply by the conversion factor.

$$35 \text{ c} \times \frac{1 \text{ qt}}{4 \text{ c}} = \frac{35 \cancel{\text{c}}}{1} \times \frac{1 \text{ qt}}{4 \cancel{\text{c}}} = \frac{35}{4} \text{ qt} = 8\frac{3}{4} \text{ qt}$$

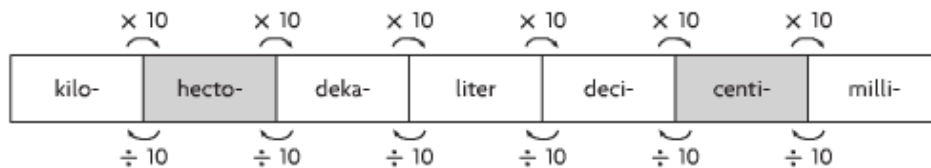
You can rename the fractional part using the smaller unit.

$$8\frac{3}{4} \text{ quarts} = 8 \text{ quarts}, 3 \text{ cups}$$

So,  $35 \text{ c} = 8\frac{3}{4} \text{ qt}$ , or  $8 \text{ qt}, 3 \text{ c}$ .

When converting metric units, move the decimal point to multiply or divide by a power of ten.

$26 \text{ cL} = \underline{\hspace{2cm}} \text{ hL}$



**Step 1** Start at the given unit.

**Step 2** Move to the unit you are converting to.

**Step 3** Move the decimal point that same number of spaces in the same direction. Fill any empty place-value positions with zeros.

So,  $26 \text{ cL} = 0.0026 \text{ hL}$ .

#### Customary Units of Capacity

8 fluid ounces (fl oz) = 1 cup (c)
2 cups = 1 pint (pt)
2 pints = 1 quart (qt)
4 cups = 1 quart
4 quarts = 1 gallon (gal)

## Lesson 6.3

# Convert Units of Weight and Mass

In the customary system, weight is the measure of the heaviness of an object. When converting customary units, multiply the initial measurement by a conversion factor.

Convert to the given unit. 19 lb = \_\_\_\_\_ oz

Customary Units of Weight
1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds

**Step 1** Choose a conversion factor.

16 ounces = 1 pound, so use the conversion factor  $\frac{16 \text{ ounces}}{1 \text{ pound}}$ .

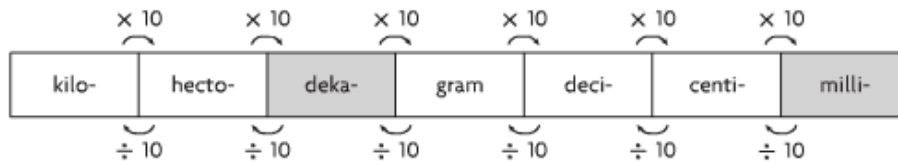
**Step 2** Multiply by the conversion factor.

$$19 \text{ lb} \times \frac{16 \text{ oz}}{1 \text{ lb}} = \frac{19 \cancel{\text{lb}}}{1} \times \frac{16 \text{ oz}}{1 \cancel{\text{lb}}} = \frac{304}{1} \text{ oz} = 304 \text{ oz}$$

So, 19 lb = 304 oz.

In the metric system, mass is the measure of the amount of matter in an object. When converting metric units, move the decimal point to multiply or divide by a power of ten.

3.1 dag = \_\_\_\_\_ mg



**Step 1** Start at the given unit.

**Step 2** Move to the unit you are converting to.

**Step 3** Move the decimal point that same number of spaces in the same direction. Fill any empty place-value positions with zeros.

So, 3.1 dag = 31,000 mg.

## Lesson 6.4

# Transform Units

To solve problems involving different units, use the relationship among units to help you set up a multiplication problem.

**Green peppers are on sale for \$1.80 per pound. How much would 2.5 pounds of green peppers cost?**

**Step 1** Identify the units.

You know two quantities: pounds of peppers and total cost. You want to know the cost of 2.5 pounds.

$$\boxed{\$1.80 \text{ per lb} = \frac{\$1.80}{1 \text{ lb}}}$$

**Step 2** Determine the relationship among the units.

The answer needs to be in dollars. Set up the multiplication problem so that pounds will divide out.

$$\frac{\$1.80}{1 \text{ lb}} \times 2.5 \text{ lb} = \frac{\$1.80}{\cancel{1 \text{ lb}}} \times \frac{2.5 \cancel{\text{lb}}}{1} = \$4.50$$

**Step 3** Use the relationship.

So, 2.5 pounds of peppers will cost \$4.50.

## Lesson 6.5

# Problem Solving • Distance, Rate, and Time Formulas

Use a formula to solve the problem.

A bug crawls at a rate of 2 feet per minute. How long will it take the bug to crawl 25 feet?

Read the Problem	Solve the Problem
<p><b>What do I need to find?</b></p> <p>I need to find _____</p> <p>_____</p>	<p>Write the appropriate formula.</p> $t = d \div r$
<p><b>What information do I need to use?</b></p> <p>I need to use the _____ the bug crawls and the _____ at which the bug crawls.</p>	<p>Substitute the values for <math>d</math> and <math>r</math>.</p> $t = \text{_____ ft} \div \frac{2 \text{ ft}}{1 \text{ min}}$
<p><b>How will I use the information?</b></p> <p>First I will choose the formula _____ because I need to find time. Next I will substitute _____ for <math>d</math> and _____ for <math>r</math>. Then I will _____ to find the time.</p>	<p>Rewrite the division as multiplication by the reciprocal.</p> $t = \frac{25 \text{ ft}}{1} \times \frac{1 \text{ min}}{2 \text{ ft}} = \text{_____ min}$

More information on this strategy is available on Animated Math Model #17.

### Vocabulary

**Capacity** – the amount that a container can hold

**Conversion factor** – a rate in which the two quantities are equal, but use different units

**Mass** – the amount of matter an object has

**Weight** – the measure of how heavy an object is