

North Penn School District
Elementary Math Parent Letter

Grade 5

Unit 4 – Chapter 10: Convert Units of Measure

Examples for each lesson:

Lesson 10.1

Customary Length

<p>You can convert one customary unit of length to another customary unit of length by multiplying or dividing.</p> <p><u>Multiply</u> to change from <u>larger</u> to <u>smaller</u> units of length.</p> <p><u>Divide</u> to change from <u>smaller</u> to <u>larger</u> units of length.</p> <p>Convert 3 feet to inches.</p> <table style="width: 100%; border: none;"><tr><td style="width: 33%; border-right: 1px solid black; padding: 5px;"><p>Step 1 Decide: <u>Multiply</u> or Divide</p><p>feet → inches larger → smaller</p></td><td style="width: 33%; border-right: 1px solid black; padding: 5px;"><p>Step 2 Think: 1 ft = 12 in., so 3 ft = (3 × <u>12</u>) in.</p></td><td style="width: 33%; padding: 5px;"><p>Step 3 Multiply. 3 × 12 = 36</p></td></tr></table> <p>So, 3 feet = <u>36</u> inches.</p> <p>Convert 363 feet to yards.</p> <table style="width: 100%; border: none;"><tr><td style="width: 33%; border-right: 1px solid black; padding: 5px;"><p>Step 1 Decide: Multiply or <u>Divide</u></p><p>feet → yards smaller → larger</p></td><td style="width: 33%; border-right: 1px solid black; padding: 5px;"><p>Step 2 Think: 3 ft = 1 yd, so 363 ft = (363 ÷ <u>3</u>) yd.</p></td><td style="width: 33%; padding: 5px;"><p>Step 3 Divide. 363 ÷ <u>3</u> = <u>121</u></p></td></tr></table> <p>So, 363 feet = <u>121</u> yards.</p>		<p>Step 1 Decide: <u>Multiply</u> or Divide</p> <p>feet → inches larger → smaller</p>	<p>Step 2 Think: 1 ft = 12 in., so 3 ft = (3 × <u>12</u>) in.</p>	<p>Step 3 Multiply. 3 × 12 = 36</p>	<p>Step 1 Decide: Multiply or <u>Divide</u></p> <p>feet → yards smaller → larger</p>	<p>Step 2 Think: 3 ft = 1 yd, so 363 ft = (363 ÷ <u>3</u>) yd.</p>	<p>Step 3 Divide. 363 ÷ <u>3</u> = <u>121</u></p>	<p>Customary Units of Length</p> <p>1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet 1 mile (mi) = 5,280 feet 1 mile = 1,760 yards</p>
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More information on this strategy is available on Animated Math Model #33.

Lesson 10.2

Customary Capacity

You can convert one unit of customary capacity to another by multiplying or dividing.

Multiply to change from larger to smaller units.

Divide to change from smaller to larger units.

Customary Units of Capacity

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

Convert 8 cups to quarts.

Step 1

Decide:

Multiply or Divide

cups → quarts
smaller → larger

Step 2

Think:

4 c = 1 qt,
so 8 c = (8 ÷ 4) qt.

Step 3

Divide.

$$8 \div \underline{4} = \underline{2}$$

So, 8 cups = 2 quarts.

Convert 19 gallons to quarts.

Step 1

Decide:

Multiply or Divide

gallons → quarts
larger → smaller

Step 2

Think:

1 gal = 4 qt,
so 19 gal = (19 × 4) qt.

Step 3

Multiply.

$$19 \times \underline{4} = \underline{76}$$

So, 19 gallons = 76 quarts.

More information on this strategy is available on Animated Math Model #34.

Lesson 10.3

Weight

You can convert one customary unit of weight to another by multiplying or dividing.

Multiply to change from larger to smaller units.

Divide to change from smaller to larger units.

Customary Units of Weight

1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds

Convert 96 ounces to pounds.

Step 1

Decide:

Multiply or Divide

ounces → pounds
smaller → larger

Step 2

Think:

16 oz = 1 lb
so 96 oz = (96 ÷ 16) lb.

Step 3

Divide.

$$96 \div \underline{16} = \underline{6}$$

So, 96 ounces = 6 pounds.

Convert 4 pounds to ounces.

Step 1

Decide:

Multiply or Divide

pounds → ounces
larger → smaller

Step 2

Think:

1 lb = 16 oz,
so 4 lb = (4 × 16) oz.

Step 3

Multiply.

$$4 \times \underline{16} = \underline{64}$$

So, 4 pounds = 64 ounces.

More information on this strategy is available on Animated Math Model #35.

Lesson 10.4

Multistep Measurement Problems

An ice cream parlor donated 6 containers of ice cream to a local elementary school. Each container holds 3 gallons of ice cream. If each student is served 1 cup of ice cream, how many students can be served?

Step 1 Record the information you are given.

There are 6 containers of ice cream.

Each container holds 3 gallons of ice cream.

Step 2 Find the total amount of ice cream in the 6 containers.

6×3 gallons = 18 gallons of ice cream

Step 3 Convert from gallons to cups.

There are 4 quarts in 1 gallon, so 18 gallons = 72 quarts.

There are 2 pints in 1 quart, so 72 quarts = 144 pints.

There are 2 cups in 1 pint, so 144 pints = 288 cups.

So, 288 students can be served 1 cup of ice cream.

More information on this strategy is available on Animated Math Models #33, 34, 35.

Lesson 10.5

Metric Measures

The metric system is based on place value. To convert between units, you multiply or divide by a power of 10. You **multiply** to change larger units to smaller units, such as liters to centiliters. You **divide** to change smaller units to larger units, such as meters to kilometers.

Convert 566 millimeters to decimeters.

- Think about how the two units are related.

1 decimeter = 100 millimeters

- **Think:** Should I multiply or divide?

Millimeters are smaller than decimeters.

So divide, or move the decimal point left for each power of 10.

$566 \div 100 = \underline{5.66}$
millimeters mm in 1 dm total decimeters

So, 566 mm = 5.66 dm.

Metric Units of Length

1 centimeter (cm) = 10 millimeters (mm)

1 decimeter (dm) = 10 centimeters (cm)

1 meter (m) = 1,000 millimeters (mm)

1 kilometer (km) = 1,000 meters (m)

				5	6	6
kilo- (k)	hecto- (h)	deka- (da)	meter liter gram	deci- (d)	centi- (c)	milli- (m)

More information on this strategy is available on Animated Math Models #36, 37.

Lesson 10.6

Problem Solving • Customary and Metric Conversions

You can use the strategy *make a table* to help you solve problems about customary and metric conversions.

Jon's faucet is dripping at the rate of 24 centiliters in a day. How many milliliters of water will have dripped from Jon's faucet in 24 hours?

Read the Problem				
What do I need to find? I need to find <u>how many milliliters of water will have dripped from Jon's faucet in 24 hours.</u>	Conversion Table			
What information do I need to use? I need to use <u>the number of cL that have dripped in 24 hr and the number of mL in a cL.</u>				
How will I use the information? I will make a table to show the relationship between the number of <u>centiliters</u> and the number of <u>milliliters</u> .				

	L	dL	cL	mL
1 L	1	10	100	1,000
1 dL	$\frac{1}{10}$	1	10	100
1 cL	$\frac{1}{100}$	$\frac{1}{10}$	1	10
1 mL	$\frac{1}{1,000}$	$\frac{1}{100}$	$\frac{1}{10}$	1

I can use the Conversion Table to find the number of milliliters in 1 centiliter. There are 10 milliliters in 1 centiliter.

cL	1	2	4	24
mL	10	20	40	240

So, 240 milliliters of water will have dripped from Jon's faucet in 24 hours.

More information on this strategy is available on Animated Math Models #33, 34.

Lesson 10.7

Elapsed Time

You can solve elapsed time problems by converting units of time.

Starting at 4:20 P.M., Connie practiced piano for 90 minutes. At what time did Connie stop practicing piano?

Convert 90 minutes to hours and minutes. Then find the end time.

Step 1 To convert minutes to hours, divide.

$90 \div 60$ is 1 r 30

90 min = 1 hr 30 min

Step 2 Count forward by hours until you reach 1 hour. 4:20 → 5:20 = 1 hour

Step 3 Count forward by minutes until you reach 30 minutes.

5:20 → 5:30 = 1 hour 10 minutes
5:30 → 5:40 = 1 hour 20 minutes
5:40 → 5:50 = 1 hour 30 minutes

Connie stops practicing piano at 5:50 P.M.

Units of Time
60 seconds (s) = 1 minute (min)
60 minutes = 1 hour (hr)
24 hours = 1 day (d)
7 days = 1 week (wk)
52 weeks = 1 year (yr)
12 months (mo) = 1 year
365 days = 1 year

More information on this strategy is available on Animated Math Models #38, 39.

Vocabulary

Capacity – the amount that a container can hold

Decimeter – a metric unit used to measure length or distance; 10 decimeters = 1 meter

Dekameter – a metric unit used to measure length or distance; 10 meters = 1 dekameter

Milligram – a metric unit used to measure mass; 1 milligram = 0.001 gram

Milliliter – a metric unit used to measure capacity; 1 milliliter = 0.001 liter

Millimeter – a metric unit used to measure length or distance; 1 millimeter = 0.001 meter