

## Lesson 21: Getting the Job Done—Speed, Work, and Measurement Units

### Classwork

Conversion tables contain ratios that can be used to convert units of length, weight, or capacity. You must multiply the given number by the ratio that compares the two units.

### Opening Exercise

Identify the ratios that are associated with conversions between feet, inches, and yards.

12 inches = \_\_\_\_\_ foot; the ratio of inches to feet is \_\_\_\_\_.

1 foot = \_\_\_\_\_ inches; the ratio of feet to inches is \_\_\_\_\_.

3 feet = \_\_\_\_\_ yard; the ratio of feet to yards is \_\_\_\_\_.

1 yard = \_\_\_\_\_ feet; the ratio of yards to feet is \_\_\_\_\_.

### Example 1

Work with your partner to find out how many feet are in 48 inches. Make a ratio table that compares feet and inches.

Use the conversion rate of 12 inches per foot or  $\frac{1}{12}$  foot per inch.

**Example 2**

How many grams are in 6 kilograms? Again, make a record of your work before using the calculator. The rate would be 1,000 grams per kg. The unit rate would be 1,000.

**Exercise 1**

How many cups are in 5 quarts? As always, make a record of your work before using the calculator. The rate would be 4 cups per quart. The unit rate would be 4.

**Exercise 2**

How many quarts are in 10 cups?

U.S. Customary Length	Conversion
Inch (in.)	1 in. = $\frac{1}{12}$ ft.
Foot (ft.)	1 ft. = 12 in.
Yard (yd.)	1 yd. = 3 ft. 1 yd. = 36 in.
Mile (mi.)	1 mi. = 1,760 yd. 1 mi. = 5,280 ft.

Metric Length	Conversion
Centimeter (cm)	1 cm = 10 mm
Meter (m)	1 m = 100 cm 1 m = 1,000 mm
Kilometer (km)	1 km = 1,000 m

U.S. Customary Weight	Conversion
Pound (lb.)	1 lb. = 16 oz.
Ton (T.)	1 T. = 2,000 lb.

Metric Capacity	Conversion
Liter (L)	1 L = 1,000 ml
Kiloliter	1 kL = 1,000 L

U.S. Customary Capacity	Conversion
Cup (c.)	1 c. = 8 fluid ounces
Pint (pt.)	1 pt. = 2 c.
Quart (qt.)	1 qt. = 4 c. 1 qt. = 2 pt. 1 qt. = 32 fluid ounces
Gallon (gal.)	1 gal. = 4 qt. 1 gal. = 8 pt. 1 gal. = 16 c. 1 gal. = 128 fluid ounces

Metric Mass	Conversion
Gram (g)	1 g = 1,000 mg
Kilogram (kg)	1 kg = 1,000 g

**Lesson Summary**

Conversion tables contain ratios that can be used to convert units of length, weight, or capacity. You must multiply the given number by the ratio that compares the two units.

**Problem Set**

1. 7 ft. = \_\_\_\_\_ in.
2. 100 yd. = \_\_\_\_\_ ft.
3. 25 m = \_\_\_\_\_ cm
4. 5 km = \_\_\_\_\_ m
5. 96 oz. = \_\_\_\_\_ lb.
6. 2 mi. = \_\_\_\_\_ ft.
7. 2 mi. = \_\_\_\_\_ yd.
8. 32 fl. oz. = \_\_\_\_\_ c.
9. 1,500 mL = \_\_\_\_\_ L
10. 6 g = \_\_\_\_\_ mg
11. Beau buys a 3-pound bag of trail mix for a hike. He wants to make one-ounce bags for his friends with whom he is hiking. How many one-ounce bags can he make? \_\_\_\_\_
12. The maximum weight for a truck on the New York State Thruway is 40 tons. How many pounds is this? \_\_\_\_\_
13. Claudia's skis are 150 centimeters long. How many meters is this? \_\_\_\_\_
14. Claudia's skis are 150 centimeters long. How many millimeters is this? \_\_\_\_\_
15. Write your own problem and solve it. Be ready to share the question tomorrow.