Goals: To be able to navigate between the American and Metric Systems of Measurement.
- Unit Conversions.
  - Length.
  - Weight and Mass.
  - Volume.
  - Speed.

Unit Conversions.

When converting from American measurements to metric (or vice versa), we do not have the simplicity of multiplying or dividing by 10. For this reason, we must go back to dimensional analysis. There are many unit conversions that we can use. We will list just a few below to practice the process.

Length:

Metric System	American System
2.54 centimeters (cm.)	1 inch (1 in.)
0.3048 meters (m.) (use 0.30)	1 foot (1 ft.)
0.9144 meters (m.) (use 0.91)	1 yard (1 yd.)
1.6093 kilometers (km.) (use 1.6)	1 mile (1 mi.)

Examples: Convert each measurement using the unit conversions given above.
1. 227 miles to kilometers (to the nearest tenth).

2. 25 meters to feet (to the nearest foot).

Mass and Weight:

Metric System	American System
28.35 grams (gr.) (use 28.4)	1 ounce (1 oz.)
0.454 kilograms (kg.)	1 pound (1 lb.)

Examples: Convert each measurement using the unit conversions given above.
1. 5.7 kilograms to ounces (nearest ounce).

2. 527 pounds to kilograms (nearest tenth of a kg.)

Volume:

Metric System	American System
0.030 litres (L.) (use 0.03)	1 fluid ounce (1 fl. oz.)
0.473 litres (L.) (use 0.47)	1 pint (1 pt.)
0.946 litres (L.) (use 0.95)	1 quart (1 qt.)
3.785 litres (L.) (use 3.8)	1 gallon (1 gal.)

    Examples: Convert each measurement using the unit conversions given above.
1. 3.2 dekaliters to gallons (nearest tenth of a gallon).

Speed: When we convert rates, we may use several different unit conversions. Convert each of the given rates accordingly.
1. 45 kilometers per hour to miles per hour (nearest mph).

    Remember, we start first with what we have been given. We will write our given quantity as a fraction. Then, select the appropriate unit conversion to multiply (be sure to multiply it in a way to cancel the units that we want to remove).

$$\frac{45 \ \cancel{km.}}{1 \ hour} \cdot \frac{1 \ mi.}{1.6093 \ \cancel{km.}} = \frac{27.9624....mi.}{hour} = 28 \ \text{mph.}$$

2. 52 meters per second to feet per minute.