

**Activity 3.2 Unit Conversion**

Procedure

Complete each of the following. When a calculation is required, show your work.

1. Write an equation that shows the equivalency between meters and Gigameters.
2. What conversion factor should be used to convert from meters to Gigameters?
3. Convert each of the following quantities to the indicated units. Use the appropriate number of significant figures to express your answer unless directed otherwise.
   1. 4.567 trillion (4,567,000,000,000) meters to Gigameters.
   2. 14520 milliliters to liters. Report to the nearest hundredth of a liter.
   3. 43 thousand microseconds to seconds. Report to the nearest thousandth of a second.
   4. 6.30 yards to feet.
   5. 0.55 feet to inches.
   6. 9 ft – 2 ½ in. to inches. Report answer using fractional inches.
   7. 3 ft – 5 inches to decimal feet. Report to the nearest hundredth of a foot.
   8. 59.2 cm to inches.
   9. 3.20 yards to inches.
   10. 350.0 billion nanoliters to decaliters.
4. A village on a Caribbean island was devastated by a hurricane. The supply of fresh water was contaminated when the storm surge washed over the island, inundating the wells. Several tanks of fresh water were delivered to the village. Each tank contains 10.5 hectoliters of water.
   1. How many liters of water does each tank contain?
   2. On any given day, one person needs an average of 2.5 liters of water to survive. How many *people* will a tank supply for the day? Hint: Create a conversion factor to convert from liters to people.
   3. If the village (which includes people and livestock) requires a total of 430 liters of water each day, approximately how long (in *days*) will one tank provide an adequate supply for the village? Give your answer to the nearest tenth of a day. Hint: Create a conversion factor to convert form liters to days.

[Challenge] Convert the result to days and hours. Give your answer to the nearest hour.

1. It is 3.67 miles to your grandparents’ home.
   1. If you can walk 4 miles in one hour, how long will it take for you to walk to your grandparents’ home? Express your answer in decimal hours and then convert the time to minutes (to the nearest minute).

Hours: **\_\_\_\_\_\_\_\_\_\_\_\_\_**

Minutes: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* 1. If your average stride length is 2.6 feet, how many strides will it take you to walk to your grandparents’ home? Hint: You will need two conversion factors.
  2. If you ride your bike at an average speed of 15 mph, how long will it take you to ride to your grandparents’ home? Express your answer in hours (to the nearest hundredth of an hour). Convert to minutes (to the nearest minute).
  3. If the circumference of each wheel on your bicycle is 82.6 inches, how many revolutions of a bicycle wheel will it take to get to your grandparents’ home? Give your answer to the nearest revolution. Hint: You need to convert miles to inches and create a conversion factor to convert inches to revolutions of a wheel.

1. Measure the size of your desk (length, width, and height) using a tape measure. Record the measurement in feet and inches, and then convert the measurements to decimal feet and decimal inches.

|  |  |  |  |
| --- | --- | --- | --- |
| Measurement | Feet-inches | Decimal feet | Decimal inches |
| width |  |  |  |
| height |  |  |  |
| depth |  |  |  |

1. Measure and record additional items in your classroom and then convert each measurement to an alternate unit as directed by your instructor.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Object | Description of Measurement | Original Measurement | Original Measurement Units | Converted Measurement | Converted Measurement Units | | room | length x width | 25’-6” x 30’-0” | ft-in. | 7.77 x 9.15 | m | | CD | diameter | 4 5/8 | in. |  | cm | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |

1. Many track and field events are measured in metric units.
   1. In the long jump, if you can jump 5.92 meters, what is your jump length in feet? In yards?
   2. How many yards must you run to complete a 100 meter dash?
   3. The women’s world record high jump is 6 feet, 10 ¼ inches. What is the record in meters? Record your answer to the nearest hundredth of a meter.
   4. How many meters is equivalent to a mile? Give your answer to the nearest meter.
   5. What is the length of a marathon (26.2 miles) in kilometers?
2. A European car manufacturer reports that the fuel efficiency of the new MicroCar is 28.5 km/L highway and 22.0 km/L city. What are the equivalent fuel efficiency rates in miles per gal?

If gas costs $3.50 per gal, how much would it cost to drive 500 miles in the city in this car (assuming the fuel efficiency rating is accurate)?

Conclusion

1. Why would you have to know how to convert measurements when looking at a technical drawing?

2. How can you use units help you solve a problem?