

Name \_\_\_\_\_ Period \_\_\_\_\_

LTHS: Chemistry

### Dimensional Analysis Worksheet #1

Use Dimensional Analysis method to solve the following calculations. Place your answer with the correct number of significant figures and correct units in box. Show all work.

Length 1 in = 2.54 cm 1 mi = 5280 ft 1 mi = 1.609 km	Volume 1 L = 1.0567 qt 1 gal = 4 qt 1 qt = 2 pt 1 pt = 2 cups	Mass 1 kg = 2.205 lbs 1 lbs = 16 oz
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1. 100. km is how many miles?

$$100. \text{ km} \times \frac{1 \text{ mi}}{1.609 \text{ km}}$$

62.2 mi

2. A marathon is 26.2 miles long. How many kilometers is a marathon?

$$26.2 \text{ mi} \times \frac{1.609 \text{ km}}{1 \text{ mi}}$$

42.2 km

3. How many inches are in 6.00 meters?

$$6.00 \text{ m} \times \frac{100 \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ in}}{2.54 \text{ cm}}$$

236 in

4. How many liters are in 10.0 gallons?

$$10.0 \text{ gal} \times \frac{4 \text{ qt}}{1 \text{ gal}} \times \frac{1 \text{ L}}{1.0567 \text{ qt}} =$$

37.9 L

5. Convert 0.0035 weeks into seconds.

$$.0035 \text{ wk} \times \frac{7 \text{ days}}{1 \text{ wk}} \times \frac{24 \text{ hr}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60 \text{ sec}}{1 \text{ min}} = 2100 \text{ sec}$$

6. Determine how many cups are in a 2 L bottle of coke.

$$2 \text{ L} \times \frac{1.0567 \text{ qt}}{1 \text{ L}} \times \frac{2 \text{ pt}}{1 \text{ qt}} \times \frac{2 \text{ cups}}{1 \text{ pt}} = 8 \text{ cups}$$

7. The speed limit on many interstate highways in the United States is 65.0 miles per hour. How many kilometers per hour is that?

$$65.0 \text{ mi/hr} \times \frac{1.609 \text{ km}}{1 \text{ mi}} = 105 \text{ km/hr}$$

8. Although it is widely believed that Germany's Autobahn highway has no speed limit whatsoever, much of the highway has regulated speed limits of 130 km/hr or less, and in some places speed is limited to just 60 km/hr.

a. How many miles per hour is 130. km/hr?

$$130. \text{ km/hr} \times \frac{1 \text{ mi}}{1.609 \text{ km}} = 80.8 \text{ mi/hr}$$

9. Convert 60.0 mi/hr to in/min

$$60.0 \frac{\text{mi}}{\text{hr}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{1 \text{ hr}}{60 \text{ min}} = 63400 \text{ in/min}$$