

### Dimensional Analysis Practice

Use dimensional analysis to answer each question. Record your solutions and notes in the spaces provided.

1. Find the number of centimeters in  $1.00 \times 10^2$  yards
  
  
  
  
  
  
  
  
  
  
2. Determine the number of meters in 1.00 miles.
  
  
  
  
  
  
  
  
  
  
3. The speed of light is  $1.86 \times 10^5$  miles per second. How many meters will light travel in 1.0 seconds?
  
  
  
  
  
  
  
  
  
  
4. Calculate the number of seconds in a year.
  
  
  
  
  
  
  
  
  
  
6. The density of mercury is 13.55 g/ml, and the density of gold is 19.32 g/ml.
  - a) What is the density of mercury in kg/L?
  
  
  
  
  
  
  
  
  
  
  - b) A 10.0 mL graduated cylinder is filled to 5.00 mL. A ring is placed in the graduated cylinder, and the water level rises to 5.15 mL. The ring is then dried and placed on a balance, and its mass is 2.8315g. Find the density of the ring.

c) Is the ring pure gold? Explain how you arrived at your conclusion.

8. The units of the chain system of measure, used by surveyors, are as follows:

7.92 inches = 1 link

100 links = 1 chain

10 chains = 1 furlong

80 chains = 1 mile

The distance of the Kentucky Derby, a classic horse race, is 1.25 miles. How is this distance expressed in furlongs?

9. The displacement (total volume of the cylinders of the engine in a Ford Mustang) is 5.0 L. Convert this to cubic inches.

10. A cube that has a length of 1 cm on each side has a volume of  $1 \text{ cm}^3$ . How many cubic centimeters are in 1 cubic meter?