



c) \_\_\_\_\_ = \_\_\_\_\_

$$f) (4.5 \times 10^{-7} \text{ cm}) * (3.15 \times 10^5 \text{ cm}) = \frac{1.4010^{-1} \text{ cm}^2}{\text{or } 0.14 \text{ cm}^2}$$

Fill in the blanks with the appropriate unit.

7.  $\cancel{\text{apples}} \times \frac{\text{bushels}}{\cancel{\text{apples}}} = [ \text{bushels} ]$

14.  $\cancel{\text{classes}} \times \frac{[\text{students}]}{\cancel{\text{classes}}} = \text{students}$

8.  $[ \cancel{\text{league}} ] \times \frac{\text{teams}}{\cancel{\text{league}}} = \text{teams}$

15.  $\cancel{\text{dollars}} \times \frac{\text{quarters}}{\cancel{\text{dollar}}} = [ \text{quarters} ]$

Use *dimensional analysis* to perform the following conversions. Show all work, including conversion factors and unit cancellations. Solve each problem with the conversions given below.

454 g = 1.00 pound; 1 ton = 2000 pounds; 1 mile = 5280 ft; 3.28 ft = 1.00 m; 60 min = 1 hr; 60 s = 1 min

9) 27,500 pounds = 13.8 tons

$$\frac{27,500 \text{ lbs}}{2000 \text{ lbs}} = 13.8 \text{ tons}$$

17) 26.8 m = 87.9 ft

$$\frac{26.8 \text{ m}}{3.28 \text{ ft}} = 87.9 \text{ ft}$$

10) 7250 m = 4.50 miles

$$\frac{7250 \text{ m}}{3.28 \text{ ft}} \times \frac{5280 \text{ ft}}{1 \text{ mile}} = 4.50 \text{ miles}$$

11) 3.5 tons = 3,200 kg

$$\frac{3.5 \text{ tons}}{2000 \text{ lb}} \times \frac{454 \text{ g}}{1 \text{ lb}} \times \frac{1 \text{ kg}}{1000 \text{ g}} = 3.2 \times 10^3 \text{ kg}$$

12) 120 km/h = 75 mi/hr

$$\frac{120 \text{ km}}{1 \text{ h}} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{3.28 \text{ ft}}{1 \text{ m}} \times \frac{1 \text{ mi}}{5280 \text{ ft}} = 75 \text{ mi/h}$$

13)  $7.30 \times 10^3 \text{ mi/h} = \frac{3.26 \cdot 10^3}{\text{m/s}}$

$$\frac{7.3 \cdot 10^3 \text{ mi}}{1 \text{ h}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{1 \text{ m}}{3.28 \text{ ft}} \times \frac{1 \text{ h}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ s}} = 3.26 \cdot 10^3 \text{ m/s}$$

14) The density of lead is  $11.3 \text{ g/cm}^3$ . Use the density of lead as a conversion factor to find the volume of a slug of lead whose mass is 161 g.

$$\frac{161 \text{ g}}{11.3 \text{ g}} \times \frac{1 \text{ cm}^3}{\text{cm}^3} = 14.2 \text{ cm}^3 \text{ or } 14.2 \text{ mL}$$