

## 094 DENSITY, SIG FIGS, CONVERSIONS.

$$6. \quad d = \frac{m}{V} = \frac{2088 \text{ g}}{2180.0 \text{ mL}} = 0.9578 \text{ g/mL}$$

$$7. \quad 7.50 \times 10^3 \text{ mL SOLUTION} \times \frac{0.9867 \text{ g SOLUTION}}{1 \text{ mL SOLUTION}} \times \frac{8.50 \text{ g ACETONE}}{100 \text{ g SOLUTION}} = 629 \text{ g ACETONE}$$

$$8. \quad 775 \text{ g NITROGEN} \times \frac{100 \text{ g FEET}}{21 \text{ g NITROGEN}} \times \frac{1 \text{ kg FEET}}{10^3 \text{ g FEET}} = 3.69 \text{ kg FEET}$$

$$9. \quad \textcircled{1} \text{ VOLUME OF ALUMINUM FOIL} = 2.568 \text{ g} \times \frac{1 \text{ cm}^3}{2.70 \text{ g}} = 0.9511 \text{ cm}^3$$

$$\textcircled{2} \text{ VOLUME OF AL} = \left( 9.0 \text{ cm} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left( \frac{9.0 \text{ cm} \times 2.54 \text{ cm}}{1 \text{ in}} \right) (\text{THICKNESS})$$

$$\therefore \textcircled{1} = \textcircled{2}$$

$$\therefore \text{THICKNESS} = \frac{0.9511 \text{ cm}^3}{9.0 \times 2.54 \times 9.6 \times 2.54 \text{ cm}^2} = 1.82 \times 10^{-3} \text{ cm}$$

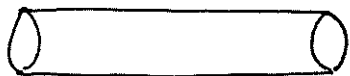
$$\therefore \text{THICKNESS} = 1.82 \times 10^{-2} \text{ mm} = 0.0182 \text{ mm}$$

$$10. \quad 3.50 \times 10^3 \text{ g SODIUM} \times \frac{100 \text{ g SOLN}}{12.0 \text{ g SODIUM}} \times \frac{1 \text{ mL SOLN}}{1.131 \text{ g SOLN}} \times \frac{1 \text{ L}}{10^3 \text{ mL}}$$

$$= 2.58 \text{ L}$$

## 094 SIG FIGS, DENSITY, CONV.

11.



$$1.00 \text{ lb} \times \frac{454 \text{ g}}{1 \text{ lb}} = 454 \text{ g COPPER WIRE.}$$

$$\text{VOLUME OF COPPER WIRE} = \frac{454 \text{ g}}{8.92 \text{ g/cm}^3} = 50.9 \text{ cm}^3$$

$$\text{VOLUME OF A CYLINDRICAL OBJECT} = (\pi r^2 \times L)$$

$$3.14 \times \left( \frac{0.65082}{4} \times 2.54 \text{ cm} \right)^2 \times L = 50.9 \text{ cm}^3$$

$$\therefore L = 4972.8 \text{ cm}$$

$$= 49.728 \text{ m} = 38.9 \text{ m}$$

12.

$$\text{mass WATER} = (20.0 \times 10^2 \text{ cm})(50.0 \times 10^2 \text{ cm})(9.0 \times 10^2 \text{ cm}) \times \frac{1 \text{ g}}{1 \text{ cm}^3}$$

$$= 9.00 \times 10^9 \text{ cm}^3 \times \frac{1 \text{ g}}{1 \text{ cm}^3} = 9.00 \times 10^9 \text{ g}$$

$$\text{mass CHLORINE} = 15.0 \text{ lb} \times \frac{454 \text{ g}}{1 \text{ lb}} = 6810 \text{ g}$$

$$10^6 \text{ g WATER} \times \frac{6810 \text{ g CHLORINE}}{9.0 \times 10^9 \text{ g WATER}} = 0.757 \text{ pp}_{200}$$