

Name _____ Period _____

Chemistry Unit 1: Review Sheet

Show all of your work. Think about significant figures and circle your final answers.

1) a. 32.0 grams is how many megagrams?

$$\frac{32.0 \text{ g}}{1} \times \frac{1 \text{ Mg}}{10^6 \text{ g}} = 3.20 \times 10^{-5} \text{ Mg}$$

b. 15.00 seconds is how many microseconds?

$$\frac{15.00 \text{ sec}}{1} \times \frac{10^6 \mu\text{sec}}{1 \text{ sec}} = 1.500 \times 10^7 \mu\text{sec}$$

c. 630.0 milliliters is how many gallons?

$$\frac{630.0 \text{ mL}}{1} \times \frac{1 \text{ L}}{10^3 \text{ mL}} \times \frac{1 \text{ gallon}}{3.785 \text{ L}} = 0.1664 \text{ gallon}$$

2) A light year is defined as 9.461×10^{15} meters. How many feet is this?

$$\frac{9.461 \times 10^{15} \text{ m}}{1} \times \frac{10^2 \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ inch}}{2.54 \text{ cm}} \times \frac{1 \text{ foot}}{12 \text{ inches}} = 3.104 \times 10^{16} \text{ ft}$$

3) The world record for the 100.00 m dash **WAS** 9.69 s. What is this speed in mi / h?

$$\frac{100.00 \text{ m}}{9.69 \text{ sec}} \times \frac{10^2 \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{1 \text{ mile}}{5280 \text{ ft}} \times \frac{60 \text{ sec}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = 23.1 \frac{\text{miles}}{\text{hr}}$$

4) The density of osmium (the densest metal) is 22.57 g / cm³. What is the mass of a block of osmium with dimensions 5.00 cm x 4.00 cm x 2.50 cm?

$$D = \frac{m}{V} \quad ; \quad DV = m$$

$$V = 5.00 \text{ cm} \times 4.00 \text{ cm} \times 2.50 \text{ cm} = 50.0 \text{ cm}^3$$

$$m = DV = \left(\frac{22.57 \text{ g}}{\text{cm}^3} \right) (50.0 \text{ cm}^3) = 1.13 \times 10^3 \text{ g}$$

5) An object's mass was found to be 52.6 g. Its volume was found to be 16.5 cm³. What is the density of this object?

$$D = \frac{m}{V} = \frac{52.6 \text{ g}}{16.5 \text{ cm}^3} = 3.19 \frac{\text{g}}{\text{cm}^3}$$

6) The speedometer on a Ford Mustang goes to 150.0 mi / h. What is this speed in m/s?

$$\frac{150.0 \text{ miles}}{\text{hour}} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{10^2 \text{ cm}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec}} = 67.06 \frac{\text{m}}{\text{sec}}$$

7) You are driving down the highway at 70.0 mi/hr, the legal speed limit. You get pulled over by a nice policeman who says he clocked you with his laser at 79.3 mi/h. Assuming that the nice policeman's laser is accurate, what is the percent error of your speedometer?

$$\% \text{ Error} = \frac{| \text{lab value} - \text{true value} |}{\text{true value}} \times 100$$

$$\frac{| 70.0 \text{ mph} - 79.3 \text{ mph} |}{79.3 \text{ mph}} \times 100 = 11.7\%$$

8) Also, be sure that you read through the notes, Mr. Craig did not place any concept type questions on this review sheet. You are responsible for anything we discussed in class and/or in the notes.