

# HONORS CHEMISTRY – UNIT 1 REVIEW

1. For each of the following, round to the indicated number of SigFigs and write in correct scientific notation:

29086.59 (to 4 SigFigs)  $2.909 \times 10^4$

$3490 \times 10^4$  (to 3 SigFigs)  $3.49 \times 10^7$

2. How many SigFigs are in the following numbers?

3030.00 6

22900. 5

$2.900 \times 10^4$  4

2810110 6

4000000 1

0.000880 3

3. In the following measurements, which digit is estimated?

390.0 m .0

180 g 8

1000 cm 1

4. Perform the following calculations. Round your answer to the correct number of SigFigs:

$$\frac{(2.98 \times 10^4)(3.776 \times 10^{-16})}{(3.9 \times 10^{-12})(5 \times 10^4)} = \boxed{6. \times 10^{-5}} \quad 5.770502564 \times 10^{-5}$$

$$\frac{(3.45 + 2.4 + 8.900)}{4.987 \times 10^6} = \boxed{2.97 \times 10^{-6}} \quad 2.967716062 \times 10^{-6}$$

5. Convert the following. Record your answer with correct SigFigs:

$3.90 \text{ m} = \underline{3.90 \times 10^3} \text{ mm}$   $2.098 \times 10^4 \text{ g} = \underline{2.098 \times 10^6} \text{ cg}$

$9.00 \text{ L} = \underline{9.00 \times 10^{-3}} \text{ kL}$   $34560 \text{ mL} = \underline{3.456 \times 10^7} \text{ dm}^3$

6. Perform the following conversions using dimensional analysis. Round your answer to correct SigFigs and put it in correct scientific notation:

3.598 mL = ? gal

$$3.598 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{1.0567 \text{ quarts}}{1 \text{ L}} \times \frac{1 \text{ gal}}{4 \text{ quarts}} = \boxed{9.505 \times 10^{-4} \text{ gal}}$$

3500 miles = ? mm

$$3500 \text{ miles} \times \frac{1.6093 \text{ km}}{1 \text{ mile}} \times \frac{10^6 \text{ mm}}{1 \text{ km}} = \boxed{5.6 \times 10^9 \text{ mm}}$$

2400. cg = ? pounds

$$\frac{2400. \text{ cg}}{100 \text{ cg}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} = 5.291 \times 10^{-2} \text{ lb}$$

398 miles per hour = ? m/sec

$$\frac{398 \text{ miles}}{1 \text{ hr}} \times \frac{1 \text{ min}}{60 \text{ min}} \times \frac{1 \text{ sec}}{60 \text{ sec}} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{100 \text{ cm}} = 1.78 \times 10^2 \text{ m/s}$$

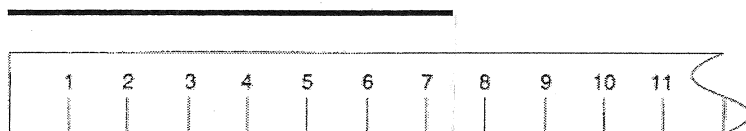
7. A cube-shaped object has dimensions of 5.00cm on each side and has a mass of 188.70g. Calculate the density in g/mL



$$(5.00 \text{ cm})^3 = 125 \text{ cm}^3 \quad 1 \text{ mL} = 1 \text{ cm}^3$$

$$D = \frac{M}{V} = \frac{188.7 \text{ g}}{125 \text{ cm}^3} = 1.51 \text{ g/mL}$$

8. Measure the length of the line above the ruler with the correct amount of precision: 7.5 cm



9. In the problem below, the correct units for the answer would be: fraggles \* baggles and the answer would contain 2 SigFigs

$$\frac{3.4 \text{ gaggles} \times 9.80 \text{ fraggles}^2 \times 22.98 \text{ baggles}}{3.900 \text{ fraggles} \times 800. \text{ gaggles}}$$

- ① 10. What is the difference between accuracy and precision? Can you have one without the other? Give an example of each:

① Accuracy is the target or standard - precision is how well a measurement repeats.

② yes, a bent caliper that has 5 sig figs (1.000") measures repeatedly an inaccurate number. a ruler with only .1 in increments can have accuracy if it is made to match a standard very closely. ... (1.01") it would only have 3 sig figs