Name: Key Period: ____ Date: ____

CP Chemistry – Math in Chem Review Questions

1. Why is there math in science?
   To quantify concepts, make predictions!

2. What is a hypothesis? How is a hypothesis different than a claim?
   Hypothesis - Proposed question for study.
   Claim - Statement of fact

3. Describe what has to be included in a reasoning paragraph.
   Reasoning must include - claim, evid., and a connection between them.

4. Explain what density is.
   $\frac{\text{mass}}{\text{volume}}$

5. Which metric prefixes represent each quantity:
   - 1/100: cm - centi
   - 1000: kilo - k
   - 1/1000: mm - mill

8. Explain what information you would need to be able to convert from mL to gallons
   The conversion for ___ mL = ___ gal

9. Convert 2.45×10^7 mL to gallons. (Show your work, use DA).

$$2.45\times10^{7}\text{ mL}\left|\frac{1\text{ L}}{1000\text{ mL}}\right|\left|\frac{1.06\text{ qt}}{.946\text{ L}}\right|\left|\frac{1\text{ gal}}{4\text{ quart}}\right| = 6.47\times10^{3}\text{ gal}$$

10. Convert 147km to inches. Express your answer in scientific notation.

$$1.47\text{km}\left|\frac{1000\text{m}}{1\text{km}}\right|\left|\frac{100\text{cm}}{1\text{m}}\right|\left|\frac{1\text{in}}{2.54\text{cm}}\right| = 5.79\times10^{6}\text{ in.}$$

11. What is the difference between mass and density?
    mass changes with size.
    density does not change with size.

12. Calculate the density of an object that has a volume of 68.7ml and a mass of 392.00g

$D = \frac{m}{V}$ $D = \frac{392.00\,g}{68.7\,mL} = 5.71\,g/mL$

13. If two objects have the same volume, but one is twice as massive as the other is, how do their density values compare?

$D_1 = \frac{m_1}{V}$ $D_2 = \frac{m_2}{V}$ vol. is same

$m_2 > m_1$

$D_2 > D_1$

Density of D_2 is $2 \times D_1$!

14. What is a change in state?

solid → liquid

when a substance changes between solid, liquid, or gas: like boiling or melting

15. What are the two types of observations, explain the difference?

quantitative - measurement with #'s and units

qualitative - no measurement, like color, size, etc.

16. What two types of properties are there? What is the difference?

Physical - substance Properties like color, density, etc.

chemical - interacting with other substances.

17. What are the two types of changes that matter can undergo? Explain the difference.

Physical - substance is still the same stuff (can be reversed)

chemical - substance is changed into "new" substance. (can't be reversed)

18. When making a measurement the last digit is estimated? Why?

no markings - not certain!

19. What do significant figures tell you about a measurement?

How precise it is!

Determined by the measuring tool.