**Quiz 1**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. What is the equation that you use to calculate standard deviation (2 points)?

$$σ=\sqrt{\frac{Σd^{2}}{n-1}}$$

1. Name three types of experimental error (3 points).

Random error, systematic error, and gross error

1. A chemist in an imaginary universe does an experiment that attempts to correlate the size of an atom with its chemical reactivity. The results are tabulated as follows (4 points).

|  |  |
| --- | --- |
| Size of Atom | Chemical Reactivity |
| small | low |
| medium  | intermediate  |
| large  | high |

* 1. Formulate a law from this data.

All atoms contain a degree of chemical reactivity. The larger the size of an atom, the higher the chemical reactivity of that atom.

* 1. Formulate a theory to explain this law.

There are many correct answers. One example is” Conceivable, when the size of an atom is increased, the surface area of the atom is also increased; an atom with a greater surface area is more likely to react chemically.

1. Which of these properties of water are intensive and which are extensive properties (3 points)?
	1. The density of water at room temperature and pressure. \_\_\_\_intensive property
	2. The temperature at which water freezes. \_\_\_\_intensive property
	3. The mass of water in your body. \_\_\_\_extensive property
2. Aspirin has a density of 1.40 g/cm3. What is the volume, in teaspoons, of a tablet weighing 325 mg? 1 cup = 48 teaspoons (8 points)

$$325 mg×\frac{1 g}{1000 mg}×\frac{1 cm^{3}}{1.40 g}×\frac{1 mL}{1 cm^{3}}×\frac{1 qt}{946.4 mL}×\frac{4 cups}{1 qt}×\frac{48 tsp}{1 cup}=0.0471 tsp$$

Or

$$325 mg×\frac{1 g}{1000 mg}×\frac{1 cm^{3}}{1.40 g}×\frac{1 mL}{1 cm^{3}}×\frac{1 L}{1000 mL}×\frac{1.057 qt}{1 L}×\frac{4 cups}{1 qt}×\frac{48 tsp}{1 cup}=0.0471 tsp$$