

## PAP Chemistry Summer Assignment

Welcome to PAP Chemistry, we are excited to meet you. Before we meet, we need you to know some information before the first day. The following information is required for you to know on the first day of school! Use your summer time wisely, as this information will be used throughout the school year and **tested during the first week of school.**

1. Know the following **element's name** and **symbol**: (with correct spelling)
  - The first 30 elements on the periodic table (Elements 1-30)
  - The following must also be memorized: Br, Kr, Ag, Sn, I, Ba, Au, Hg, Pb and U.
  - Examples of what will be required:
    - What is the symbol for Nitrogen? \_\_\_\_\_
    - What is the name of this element Sn? \_\_\_\_\_
  - How to memorize these. We recommend making flash cards and practice spelling the element names.
2. Memorize the 7 diatomic molecules:
  - Diatomic molecules that are found naturally or in their "elemental" state as a pair (twins).
  - You need to label these 7 elements with the subscript 2, this represents that they occur in a pair.
  - The 7 diatomic molecules are as follows: H<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub>, F<sub>2</sub>, Cl<sub>2</sub>, Br<sub>2</sub>, I<sub>2</sub>
  - You must be able to **list** (*not multiple choice*) these molecules.
  - How to remember the diatomic molecules. **Start** at element 7 (on the periodic table) and **make** a 7...PLUS H<sub>2</sub>)
3. Memorize the following polyatomic ions:
  - A polyatomic ion is a charged chemical species composed of two or more atoms that can be considered as a single unit.
  - The following polyatomic ions **name**, **symbol** and their **charge** must be memorized.

○ Acetate C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>	○ Sulfate SO <sub>4</sub> <sup>2-</sup>
○ Hydrogen carbonate or bicarbonate HCO <sub>3</sub> <sup>-</sup>	○ Carbonate CO <sub>3</sub> <sup>2-</sup>
○ Nitrite NO <sub>2</sub> <sup>-</sup>	○ Chromate CrO <sub>4</sub> <sup>2-</sup>
○ Nitrate NO <sub>3</sub> <sup>-</sup>	○ Dichromate Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>
○ Cyanide CN <sup>-</sup>	○ Phosphite PO <sub>3</sub> <sup>3-</sup>
○ Hydroxide OH <sup>-</sup>	○ Phosphate PO <sub>4</sub> <sup>3-</sup>
○ Sulfite SO <sub>3</sub> <sup>2-</sup>	○ Ammonium NH <sub>4</sub> <sup>+</sup>
  - Examples of what will be required:
    - Name the following polyatomic ion: HCO<sub>3</sub><sup>-</sup> \_\_\_\_\_
    - Give the following formula and charge for dichromate ion \_\_\_\_\_
  - How to memorize the polyatomic ions. Flash cards are recommended.

4. Be able to solve for x:

- Algebra is used throughout the course. You must be able to solve for simple algebraic expressions.
- Examples: Solve for x in the following expressions below:
  - $2x = 3$
  - $45 = 7x + 23$
  - $23.5 = (2.3)(x)(3.5)(4.23)$
  
  - $\frac{34}{3.5} = \frac{x}{5.4}$
  
  - $\frac{7.6}{2.5} = \frac{4.3}{x}$
  
  - $\frac{QMS}{PT} = \frac{FN}{Rx} - G$

5. Know the following metric conversions:

- The metric system is used in science, it is imperative that you are able to convert between different units.
- The following prefixes must be memorized:
  - Milli = m =  $10^{-3}$  it takes 1000 millimeters to make one meter
  - Centi = c =  $10^{-2}$  it takes 100 milliliters to make 1 liter
  - Kilo = k =  $10^3$  it takes 1000 grams to make 1 kilogram
- Using the prefixes you should be able to convert the following:
  - Liters to Milliliters  $1L=1000 \text{ mL}$
  - Grams to Kilograms  $1000g = 1 \text{ kg}$
  - Centimeters to Kilometers  $100\text{cm} = 1000 \text{ km}$
- Examples of what will be required:
  - How many grams are found in 1.3 kilograms?
  - How many milliliters are in 2.5 Liters?
  - How many centimeters are in 100 meters?
  - How many milligrams are in 2 kilograms?