# Unit 1: Review Assignment

1. The three main states of matter have some similarities and differences. Complete the chart below by listing out the state(s) that describe each category:

| Particles can move around past each other | Particles take the shape of their container | Volume of all the particles doesn't change if the container changes | Particles are always moving at least a little bit | Particles aren't pulled towards each other |
|---|---|---|---|---|
| | | | | |

2. Draw what a solid, liquid and gas look like.

3. What happens to the motion of particles if their temperature is increased?

4. There are six phase changes that either involve gaining or losing energy.
   a. List them out in the proper category:

      Gaining Energy  Losing Energy

   b. For those that require energy to be gained, what happens to the space between the particles?

   c. For those that require energy to be lost, what happens to the space between the particles?

5. Calculate the density of the following:
    a. A student measures the mass of an 8 $cm^3$ block of brown sugar to be 12.9 g. What is the density of the brown sugar?

    b. A chef fills a 50 mL container with 43.5 g of cooking oil. What is the density of the oil?

    c. A machine shop worker records the mass of a metal cube as 176 g. If one side of the cube measures 4 cm, what is the density of the aluminum?

Use the following densities to answer questions 6 and 7

| **Fluid Density (g/mL)** | **Solid Density ($g/cm^3$)** |
|---|---|
| air 0.0013 | cork 0.24 |
| oxygen 0.0014 | oak 0.70 |
| carbon dioxide 0.002 | sugar 1.59 |
| ethyl alcohol 0.79 | salt 2.16 |
| machine oil 0.90 | aluminum 2.70 |
| water 1.00 | iron 7.87 |
| seawater 1.03 | nickel 8.90 |
| glycerol 1.26 | copper 8.92 |
| mercury 13.55 | lead 11.34 |
| | gold 19.32 |

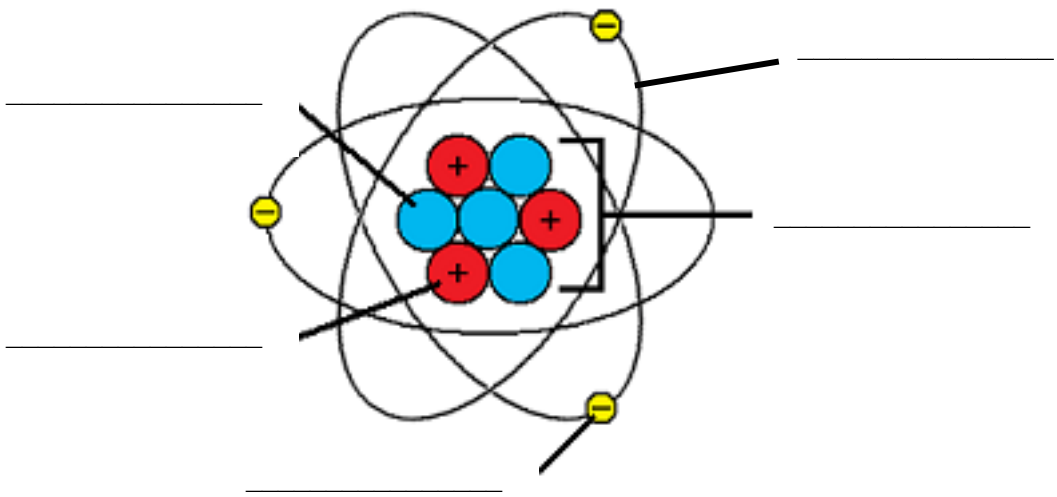
6. Identify the substance that could have:
    a. a mass of 50.15g and a volume of 55.7mL

    b. a mass of 48.794g and a volume of 6.2$cm^3$

7. If the following fluids were combined in layers some would float on top of the others. <u>Order</u> the substances by what would be on the TOP to BOTTOM:

Water, Glycerol, Ethyl Alcohol, Machine Oil

8. Label the following diagram of an atom:



9. For each of the given numbers of subatomic particles, find the total mass of the atom, and the total charge:
    a. 14p , 18n, 15e

    b. 25p, 22n, 25e

    c. 45p, 62n, 41e

10. Protons and Neutrons are made of a smaller type of particle.

    a. What type of "elementary" particle makes up these two sub atomic particles?

    b. What does the amount of protons tell us for an element?

    c. What does the amount of neutrons tell us about an element?

11. Are electrons made of smaller particles? If so, what particles?

12. What is science?

13. What is the scientific method?

14. List 3 pieces of lab safety equipment in the science room.

15. Design a controlled experiment and give examples of **two types** of data you would collect. Include a hypothesis for this experiment that uses the word because!

**Chemistry Review - BOHR MODELS**

1. Draw Bohr Models for the first 10 elements on the Periodic Table and - state what the symbol, atomic number and atomic mass is for each.
   Extending – can you draw the ions of any of them?!