

All About Chemistry

Unit One Home Assignment #2 (2 pts)

Due M/W Aug 28 and T/Th Aug 29

You will find the videos in Unit One C2 Required HW Assignments. The videos for the assignment are denoted with a “red >”.

1. Time Line for Atomic Models (11 min)

- What does the word “atomos” mean? When was this term introduced?
- Who was the other philosopher who challenged Democritus idea about the structure of an atom? How long was his explanation accepted?
- When was the first scientific proof for the structure of an atom? By who? Described as?
- How did the model for the atom change in 1909? What did JJ Thompson discover? What type of food was used to describe the atom?
- In 1911 what did Rutherford discover? What was his model called?
- How was Rutherford’s Model changed by Bohr in 1913?
- How did Schrodinger’s model differ from Bohr’s Model? What was Schrodinger’s model called?

2. Bohr’s Model of the Atom (7 min)

- What did Bohr understand about the location of the electron? Could an electron be between two orbits? What term was introduced to explain the spectrum emitted by the atom?
- What would happen if an electron absorbed the energy from a “photon”? What would happen if the electron lost energy and emitted a photon?
- What part of an atom was used to “organize the structure of the periodic table”?
- What do electrons tell us about the atom?

3. How the Periodic Table Works.

- What are the rows and columns in the periodic table called? (periods and groups)
- What is used to arrange the elements in the periodic table? (atomic number - protons)
- What does the different periods show? (the electron shells filled)
- What does the groups show? (the group the element is in will tell us how many electrons are in the outer shell)
- What do you know about an element if they are in the same group? (will have similar chemical properties)
- What is the trend related to “metal” as you move in a period from left to right? (metals on left and non metal on right)
- What is the trend related to “metal” as you move down a group? (as you go down the element becomes more like a metal)
- What is the difference in how electrons are arranged between metals and non-metals? (metals more reactive and lose electrons and non-metals gain electrons and are less reactive)
- Why are noble gases not very reactive? (they have a full outer shell of electrons)

4. Ionic vs Covalent v Polar Covalent Bonds (3 min)

- What happens to electrons in an ionic bond? What holds the two atoms together?
- What happens to electrons in a covalent bond? What holds the two atoms together?
- What do we call the covalent bond if the electrons are not evenly shared? Is there a small charge on either end of the molecule?

5. Oxidation-Reduction Reactions

- a. What happens in a redox reaction?
- b. What does reduction mean?
- c. What does oxidation mean?
- d. What happens to the atoms charge as it is reduced?
- e. Sodium and chlorine are neutral. What happens to make table salt?
- f. Can you have oxidation without reduction?

6. Hydrogen Bonding (1 min)

- a. What is an example where hydrogen binding occurs?
- b. What is the particle charges across a water molecule?
- c. How are hydrogen bonds illustrated?
- d. What happens to water molecules as they cool? Form ice? Is ice less dense than water?

7. What is the difference between an acid, base, and salt? (17 min)

- a. What is the taste of tomato sauce? Is it an acid or base?
- b. Are oranges acid or base?
- c. Is vinegar an acid or a base
- d. Is soap an acid or a base? What is the difference between bar soap and liquid soap?
- e. Is tooth paste an acid or a base?
- f. Is chalk an acid or a base?
- g. Is sugar is an acid, base, or salt?
- h. What is the taste of acids, bases, and salts?
- i. What makes an acid an acid?
- j. What are bases?
- k. How are salts formed?
- l. How do you identify salts?
- m. Are acid soluble in water?
- n. Are most bases soluble in water?
- o. What bases are soluble in water?
- p. Are all salts soluble in water

8. What is the bicarbonate buffering system? Why is it important? (7 min)

- a. What do buffers do?
- b. What is the pH range of blood?
- c. What happens if you have to many protons (H^+) in blood?
- d. What if you have to few protons in blood?
- e. What happens to carbonic acid in water? How do you describe both molecules?
- f. What molecule is formed when you combine carbon dioxide with water?
- g. What side of the bicarbonate buffering system deals with the lungs?
- h. What side of the bicarbonate buffering system deals with the kidneys?
- i. If you don't have enough H^+ in the blood then how may you increase the H^+ concentration?
- j. What happens if you have to many H^+ ?

9. Biochemical Pathways (2 min)

- a. What type of molecules are used to make a biochemical pathway?
- b. What name do we assign to the molecule that interacts with the biochemical pathway?
- c. What does the substrate become after it interacts with an enzyme?

10. Enzymes (1.5 min)

- a. What are enzymes?
- b. What binds to the the enzyme's reactive site?
- c. What may occur with a substrate and reactive site combines?