4th Nine Weeks Study Guide

The 4th 9 weeks FINAL EXAM for SCIENCE will take place on Thursday, May 22nd. Please use this study guide to help you prepare for this upcoming test. All notes can be found online on the blog.

The Periodic Table/Atoms/Ions/Bonding

1. Into what three categories are elements grouped? Know how to find these three different types on the periodic table.

2. Who were the contributors we discussed to atomic theory and what did each person do?

3. How are protons, neutrons, and electrons alike and different?

4. What is an isotope?

5. What forces do atoms experience and what does each do?

6. Who was Dmitri Mendeleev and why was he important?

7. How is the periodic table organized?

8. Know how to find the atomic mass, atomic number, number of protons, neutrons and electrons for the elements. Practice this by using Argon as an example.

9. What are valence electrons?

10. How many valence electrons does each group possess?

11. Know how to diagram an atom. Practice by doing Sulfur. Be sure to include protons and neutrons and ALL electrons in the correct level.

12. Explain why atoms want to form bonds.

13. What is the difference between an ionic bond and a covalent bond?

14. Why are atoms neutral?

15. How are positive and negative ions formed?

16. What is a diatomic molecule and what is an example of one?

17. Know how to draw the Lewis Dot Structure for an element. Practice by drawing hydrogen, carbon, and argon.

18. What are metallic bonds and why do they occur?

19. What do metallic bonds do for metals?

Chemical Reactions

1. What is a chemical reaction?  
2. What are four signs that a chemical reaction is taking place?   
3. What happens to chemical bonds when a reaction occurs?  
4. What is a chemical formula?  
5. What are the prefixes used for naming covalent compounds? (If I give you a formula, you will need to know the prefix to identify the correct chemical name!)  
6. What is the difference between covalent compounds and ionic compounds?  
7. What does the law of conservation of mass say?  
8. Know how to balance equations. Do the following equation on your own paper to practice:

\_\_\_\_CuO + \_\_\_\_\_HCl 🡪 \_\_\_\_\_CuCl2 + \_\_\_\_\_H2O

9. Label the equation above with the following terms on your paper: reactants, products, yields, subscripts, coefficients.  
10. What are the four types of chemical reactions and how do you know which is which?  
11. What is the difference between an exothermic reaction and an endothermic reaction?  
12. What does the law of conservation of energy say?  
13. What is activation energy?  
14. What are the five factors that can affect reaction rates and what do they do to the reaction?

Solutions/Acids/Bases

1. How are acids and bases alike?

2. Describe properties of acids and bases that make them different.

3. How is a strong acid created? A strong base? A weak acid? A weak base?

4. What happens during a neutralization reaction?

5. What is pH?

6. Where are the strongest points on the pH scale? Where is the weakest point?

7. Name two ways you can determine pH.

8. Be able to discuss one way that pH shows up in the environment.

9. During our acid/base tie dye experiment, what did we use as the indicator?

10. What are the three types of mixtures and how are they determined?

11. What are examples of solutions, colloids, and suspensions?

12. What two things combine together to make a solution? What is the difference between them?

13. If two liquids or gases form a solution, how do I know which one is the solvent?

14. Explain the terms concentrated and dilute.

15. How do you make a supersaturated solution?

16. What can you do to dissolve a solid faster?

17. How are diffusion and osmosis alike and different.

18. Explain the differences between isotonic, hypotonic, and hypertonic solutions.