

Ionic and Metallic Bonds

(Chapter 11, section 3)

Name _____

Period _____

1. What is an ion?

2. a) Why do atoms that gain electrons become ions with a negative charge?

.....
b) Why do atoms that lose electrons become ions with a positive charge?

3. a) What is a polyatomic ion? Research using your computer.

.....
b) Give two examples of polyatomic ions (name and symbol).

4. a) When do metal atoms become more stable?

.....
b) Using sodium as an example, explain why.

5. a) When do nonmetal atoms become more stable?

.....
b) Using chlorine as an example, explain why.

6. a) Table salt is an ionic compound. What is its chemical formula? Which is the positive ion and which is the negative ion?

.....
b) How did this happen?

7. What is an ionic compound?

8. What is an ionic bond?

9. What are general properties of ionic compounds?

10. a) Between what kinds of atoms do **covalent** bonds usually form?

.....
b) Between what kinds of atoms do **ionic** bonds usually form?

11. a) What is a metallic bond?

.....
b) Diagram the pooling of valence electrons in aluminum. **Label** the positive aluminum ions and the negative valence electrons. (**Note** that the negative signs (-) only represent valence electrons, not all of the aluminum atoms' electrons.)

12. What are general properties of metallic compounds?

13. How does valence electron pooling explain why metals are good conductors of electricity, malleable and ductile, and shiny?

14. What is an alloy? Research using your computer.

15. How do the physical and chemical properties of an alloy compare to those of its individual elements?