Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_ Ast: \_\_\_\_\_

**Chemical Compounds Study Guide**

1. Describe valence electrons.
2. How can you determine the number of valence electrons a neutral atom has?
3. Why do atoms form chemical bonds?
4. How can you tell how many elements make up a compound by looking at the chemical formula?
5. What do the letters and subscripts (small numbers) mean in a chemical formula?
6. Compare the two types of chemical bonds discussed in class:
   1. Compare the role of valence electrons in ionic and covalent bonds.
   2. Compare what holds the atoms together (*what “bonds” them*) in ionic and covalent bonds.
   3. Compare the types of elements involved in ionic and covalent bonds.
7. How does an atom or group of atoms become an ion?
8. Why are some atoms positive and others negative?
9. How can you tell what the charge of an ion will be?
10. What is a polyatomic ion?
11. When two ions bond, what is the charge of the resulting compound?
12. When two ions form a compound, which ion is listed first?
13. When two ions form a compound, how do you know if the ending should be “…ide” or “…ate”?
14. What are some common properties if ionic compounds?
15. How can you tell how many covalent bonds an atom can form?
16. Why are some covalent compounds considered “polar” molecules? How does this affect the molecule?
17. Why don’t we usually see lone atoms of oxygen or nitrogen in nature, instead observing oxygen (O2) or nitrogen (N2) molecules? What types of covalent bonds allow these molecules?
18. What are some common properties of covalent molecules?
19. When plants undergo photosynthesis, they use energy from the Sun to convert carbon dioxide and water into glucose and oxygen. The chemical formula for glucose is shown below. Identify the elements that make up a molecule of glucose and the number of atoms for each.

C6H12O6 Element Number of Atoms

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

1. Write the correct charge for the following elements when they form ions:
   1. Li \_\_\_\_\_ b. O \_\_\_\_\_ c. Cl \_\_\_\_\_
2. Write CORRECT NAME for the following IONIC compounds:
   1. MgF2
   2. Al2O3
   3. K2SO4
3. Write the CORRECT FORMULA for the following IONIC compounds:
   1. ammonium fluoride
   2. sodium bicarbonate
   3. calcium chloride
4. Write the CORRECT NAME for the following COVALENT molecules:
   1. SO2
   2. N2O3
   3. CCl4
5. Write the CORRECT FORMULA for the following COVALENT molecules:
   1. carbon monoxide
   2. nitrogen trioxide
   3. dihydrogen monoxide
6. Identify the following molecules/compounds as IONIC or COVALENT:
   1. H2S
   2. K2O
   3. Al2S3
   4. CO2
   5. N2O
   6. CaBr2