

Name \_\_\_\_\_

Date \_\_\_\_\_ Pd \_\_\_\_\_

## Chemistry – Unit 6 Worksheet 1

We have observed evidence that when M-NM compounds are dissolved, the metal particles tend to form positively charged ions (cations), while non-metal particles tend to form negatively charged ions (anions).

However, when these same metal and nonmetal particles are combined to form compounds they do not conduct electricity as solids. We will now examine the patterns that exist for the ratios in which these elements combine in order to determine the charges of the ions they form.

1. Write the formula and draw the particle diagram for each compound.

*Ratio of ions in compound:*

Atoms	1 calcium 1 oxygen	2 lithium 1 oxygen	2 aluminum 3 sulfur	1 beryllium 1 sulfur
formula				
particle diagram				

Atoms	2 boron 3 oxygen	1 magnesium 1 oxygen	2 sodium 1 sulfur
formula			
particle diagram			

2. What formula would you predict for each of the following compounds?

gallium and oxygen \_\_\_\_\_

potassium and oxygen \_\_\_\_\_

3. Write the formula and draw the particle diagram for each compound.

*Ratio of ions in compounds:*

Atoms	1 magnesium 2 chlorine	1 lithium 1 fluorine	1 beryllium 2 bromine	1 boron 3 chlorine
formula				
particle diagram				

Atoms	1 sodium 1 chlorine	1 calcium 2 bromine	1 aluminum 3 chlorine
formula			
particle diagram			

4. Write the formula of these compounds in the appropriate boxes in the table below. The compounds formed by sodium have been done for you.

1A	2A	3A	4A	5A	6A	7A	8A
Hydrogen 1 <b>H</b>							Helium 2 <b>He</b>
Lithium 3 <b>Li</b>	Beryllium 4 <b>Be</b>	Boron 5 <b>B</b>	Carbon 6 <b>C</b>	Nitrogen 7 <b>N</b>	Oxygen 8 <b>O</b>	Fluorine 9 <b>F</b>	Neon 10 <b>Ne</b>
Sodium 11 <b>Na<sub>2</sub>S</b> <b>NaCl</b>	Magnesium 12 <b>Mg</b>	Aluminum 13 <b>Al</b>	Silicon 14 <b>Si</b>	Phosphorus 15 <b>P</b>	Sulfur 16 <b>S</b>	Chlorine 17 <b>Cl</b>	Argon 18 <b>Ar</b>
Potassium 19 <b>K</b>	Calcium 20 <b>Ca</b>	Gallium 31 <b>Ga</b>	Germanium 32 <b>Ge</b>	Arsenic 33 <b>As</b>	Selenium 34 <b>Se</b>	Bromine 35 <b>Br</b>	Krypton 36 <b>Kr</b>

5. Make whatever generalizations you can about the charge of the ions formed by elements in columns 1A, 2A, 3A and 7A based on the ratio of atoms in each of the compounds they form.
  
  
  
  
  
  
  
  
  
  
6. How does a neutral atom become a positive ion? a negative ion?
  
  
  
  
  
  
  
  
  
  
7. Do the elements in group 1A behave more like top or bottom tape? How about the elements in group 7A? How so?
  
  
  
  
  
  
  
  
  
  
8. Account for the fact that the ions combine in the ratios you have listed in the table in #4. Provide a couple of specific examples to support your explanation.