

## Writing Binary Formulas

Name \_\_\_\_\_ Period \_\_\_\_\_

A binary formula is a formula that contains two types of elements (the prefix bi- means two). A binary formula is typically an ionic compound. To write the formula of an ionic compound, you must know the charge of the ion that will form. Remember that you can determine charge from the location on the periodic table of element. To figure out how many atoms of an element are in a compound you must know the charges, and you must understand that the overall compound will not have any charge. So in forming the compound the positive charge from the cation cancels the negative charge from the anion.

### Steps:

1. Write the element symbol with the ionic charge for the cation (+) and the anion (-).
2. Determine the ratio that these must combine to cancel out the charge.  
(or \_\_\_\_\_ - \_\_\_\_\_)
3. Write the formula for the binary compound with the metal first and then the nonmetal. Use subscripts after the element if there are more than 1.
4. Reduce subscripts if possible.

### Example:

Magnesium & Nitrogen

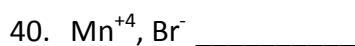
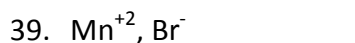
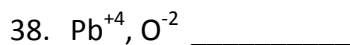
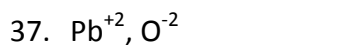
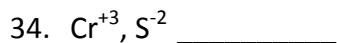
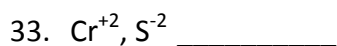
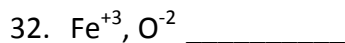
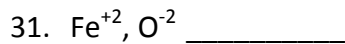
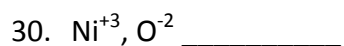
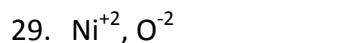
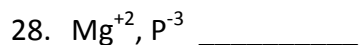
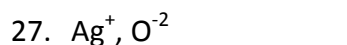
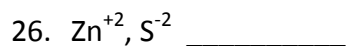
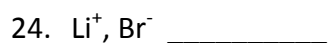
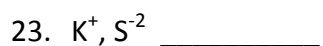
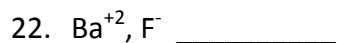
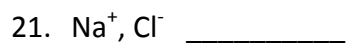
**Write the formulas for the compounds formed from the following elements:**

- |                               |                               |
|-------------------------------|-------------------------------|
| 1. Calcium & Phosphorus _____ | 11. Aluminum & Oxygen _____   |
| 2. Lithium & Sulfur _____     | 12. Potassium & Oxygen _____  |
| 3. Strontium & Bromine _____  | 13. Cesium & Phosphorus _____ |
| 4. Aluminum & Chlorine _____  | 14. Cesium & Arsenic _____    |
| 5. Francium & Oxygen _____    | 15. Hydrogen & Bromine _____  |
| 6. Gallium & Sulfur _____     | 16. Radium & Fluorine _____   |
| 7. Gallium & Nitrogen _____   | 17. Indium & Sulfur _____     |
| 8. Magnesium & Oxygen _____   | 18. Beryllium & Oxygen _____  |
| 9. Rubidium & Selenium _____  | 19. Magnesium & Oxygen _____  |
| 10. Sodium & Sulfur _____     | 20. Calcium & Chlorine _____  |

## Writing Binary Formulas (Part 2)

If the binary formula includes a transition metal, you will be told the charge (oxidation state) of the transition metal because you cannot predict by location on the PT. Remember to reduce when possible.

**Write the formulas for the compounds formed from the following ions:**



## Working Backwards:

You can look at a formula and determine what ions are involved in the bond by “un-criss-crossing” the subscripts. (Be careful, some of them may have been reduced.)

Write the ions (with charges) that are involved in these bonds.

