**NAMING IONS**

**IONIC COMPOUNDS versus MOLECULAR COMPOUNDS**

**Ionic compound:** consist of **cations** (positive ions) and **anions** (negative ions) held together by electrostatic attraction

* usually **metal + non-metal(s)**
* made of monatomic ions, polyatomic ions, and/or both
  + **monatomic ions**: consist of a single atom
  + **polyatomic ions**: consist of more than one atom

**molecular compound**: consist of **non-metal atoms** bonded together by shared electrons (**covalent bonding**)

* **acid:** a molecular compound that releases hydrogen ions (H+) when dissolved in water

**NAMING MONATOMIC CATIONS:**

Metal atoms lose valence electrons to form positively charged ions called cations.

An ion formed from an individual atom is a **monatomic cation**.

1. Groups IA to IIIA elements, including silver (Ag), zinc (Zn), and cadmium (Cd) form only one type of ion each:
   * Group IA elements form +1 ions: Li+, Na+, K+, Rb+, Cs+
   * Group IIA elements form +2 ions: Be+2, Mg+2, Ca+2, Sr+2, Ba+2
   * Group IIIA elements form +3 ions: Al+3
   * Silver ion = Ag+; zinc ion = Zn+2; cadmium ion = Cd+2

When a Group IA–IIIA element, silver, zinc, or cadmium forms an ion, it is named:

**element name + ion**

e.g. Na+ = sodium ion Sr+2 = strontium ion Zn+2 = zinc ion

2. The stock system is used to name transition metals and other metals that form more than one ion:

* Iron (Fe) forms two ions: Fe+2 and Fe+3
* Lead (Pb) forms two ions: Pb+2 and Pb+4

When a metal can form more than one ion, each ion is named:

**element name (charge in Roman numerals) + ion**

e.g. Fe+2 = iron (II) ion Pb+2 = lead (II) ion Cu+ = copper (I) ion

Fe+3 = iron (III) ion Pb+4 = lead (IV) ion Cu+2 = copper (II) ion

Name each of the following monatomic cations

Li+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cd+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ag+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cu+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Al+3 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mg+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mn+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SN+4 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

H+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Co+3 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fe+3 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Na+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

K+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ti+4 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ca+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ni+2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_