Ions Review

1. Give the name and symbol of the ion formed when
    a. a chlorine atom gains one electron.
    b. a potassium atom loses one electron.
    c. an oxygen atom gains two electrons.
    d. a barium atom loses two electrons.

2. How many electrons are lost or gained in forming each ion?
    a. Mg^{+2}
    b. Br^{-}
    c. Ag^{+}
    d. Fe^{+3}

3. Classify each of the following as a cation, anion or atom.
    a. Be
    b. Na^{+}
    c. Cu^{2+}
    d. I^{-}

4. Write the symbol for the ion formed by each of the following elements.

    a. oxygen

    b. iodine

    c. sodium

    d. aluminum

5. Write the formula (including charge) for each polyatomic ion.

    a. carbonate ion

    b. nitrate ion

    c. sulfate ion

    d. hydroxide ion

    e. phosphate ion

    f. ammonium ion

6. Write the electron configurations for the following transition metal ions.

    a. Hg^{+2}

    b. copper (I)

c. copper (II)

d. Zn^{+2}

7. What is oxidation state? What is the most common oxidation state of manganese (what is the most stable ion it will form)?

8. Predict the two possible ions formed by tin, Sn.

Naming and Formula Writing Hints:

Names and formulas for compounds give chemists a systematic way to organize matter. Here are some practice problems for you to work through. Refer to the following "hints" to solve these problems:

Binary: only two elements represented.

Ternary: three or more elements represented.

Writing formulas:

a. You can find the charges of many ions from their position on the periodic table.
b. Charges of all ions in a formula must balance. (charge = 0)
c. Polyatomic ions may need parenthesis ( ).

Naming:

a. Cations come first in the name and in the formula.
b. Anions have –ide ending in binary compounds.
c. Transition elements should have a "roman numeral" written after their name.

7. Write the formulas and the names for the following **binary** and **ternary** ionic compounds made from the following pairs of ions.

	Formula	Name
a. Ca^{2+}, P^{3-}	_____	_____
b. Na^{+}, O^{2-}	_____	_____
c. Al^{3+}, N^{3-}	_____	_____
d. Sn^{4+}, O^{2-}	_____	_____
e. Fe^{2+}, S^{2-}	_____	_____
f. Ca^{2+}, NO_3^{-}	_____	_____
g. K^{+}, SO_4^{2-}	_____	_____
h. Pb^{4+}, OH^{-}	_____	_____
i. Sn^{2+}, PO_4^{3-}	_____	_____