# Unit 3.1: Periodic Table of Elements

**Further Reference: 5.1, 5.2, and 5.3 – Exploring, Organizing, and Families of the PT**

**THREE MAIN CATEGORIES**

1. The three main categories of the periodic table are
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Properties of **METALS**
   1. Metals are found on the \_\_\_\_\_\_\_\_\_\_\_\_ side of the periodic table
      1. Except for \_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Metals are:
      1. Good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (can be stretched into thin wires)
      4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (can be pounded into thin sheets)
   3. A chemical property of metal is its reaction with \_\_\_\_\_\_\_\_\_\_\_\_\_ which results in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Properties of **NON-METALS**
   1. Non-Metals are found on the \_\_\_\_\_\_\_\_\_\_\_\_ side of the periodic table
      1. Except for \_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Non-Metals are:
      1. Poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. Not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      3. Solid nonmetals are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      4. Many non-metals are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Properties of **METALLOIDS**
   1. Metalloids are located \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Have properties of both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Metalloids are:
      1. Solids can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. They are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      3. They conduct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ better than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but not as well as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ORGANIZING THE PERIODIC TABLE**

1. **PERIODS**
   1. Each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. The elements in a period \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in properties
   3. Each element in the same period has the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. The first elements in a period (the far left side of the PT) is always an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The last element in a period (the far right side of the PT) is always an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   5. As you travel right across a period, you increase the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus by \_\_\_\_\_\_\_
2. **FAMILIES**
   1. Columns of elements are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Elements in each family have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. All elements in a family have the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. As you moved down a family, each new elements has an extra \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. **HYDROGEN**
   1. The hydrogen square sits atop \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but it is \_\_\_\_\_\_\_\_\_\_\_\_\_ of that family
      1. Hydrogen is in a class of its own.
   2. It is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ at room temperature
   3. It has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in its one and only energy level.
   4. Hydrogen only needs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to fill up its valence shell
4. **SPECIFIC FAMILIES**
   1. Group 1: Alkali Metals have \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Hydrogen is not a member; it is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. Often react with Halogens because they have \_\_\_ valence electrons
      3. Very \_\_\_\_\_\_\_\_\_\_\_\_\_, especially with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Group 2: Alkaline Earth Metalshave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Often reactive with the \_\_\_\_\_\_\_\_\_\_\_\_\_ family
   3. Group 3-12: Transition Metalshave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Valence electrons (and oxidation number) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Group 13: Boron Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( Boron is a \_\_\_\_\_\_\_\_\_\_\_\_\_ )
   5. Group 14: Carbon Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Group 15: Nitrogen Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Group 16: Oxygen Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. Reactive with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. Group 17: Halogen Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. All are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. Very reactive: both with elements from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   9. Group 18: Nobel Gas Familyhave \_\_\_\_\_\_\_\_\_\_ valence electrons
      1. Exist as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: All of them are \_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with other elements because their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is full.
         1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the outer shell means they are full
         2. Helium(He) has only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the outer shell to be full.

# Unit 3.2: Oxidation Numbers and Bonding

**Further Reference: 6.2 Ionic and Covalent Bonding**

**“HAPPY” ELEMENTS**

* + - 1. All elements want to be happy
      2. An atom wants \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make them happy
         1. Atoms will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in order to become stable
         2. The most stable configuration involves having \_\_\_\_\_\_\_\_ valence electrons
         3. 8 valence electrons = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
         4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ do not need to transfer/share any electrons because

they already have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and are \_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. **OCTET RULE** means that atoms will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with other atoms in order to have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
       1. Atoms can \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ electrons with other elements
       2. Elements will not just \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons. They will give to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or take from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**OXIDATION NUMBERS**

1. The oxidation number indicated how many \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are going to be \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_ during bonding
   1. Ranges from \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_
2. Steps to predicting oxidation numbers:
   1. First, determine how many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the neutral atom has
   2. Determine if the atom will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      1. Will it be faster to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Count the number of electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      1. If you lose electrons, the charge will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_
      2. If you gain electrons, the charge will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Practice!
   1. Lithium = \_\_\_\_\_\_\_\_\_\_\_
   2. Sulfur = \_\_\_\_\_\_\_\_\_\_\_
   3. Aluminum = \_\_\_\_\_\_\_\_\_\_\_
   4. Iodine = \_\_\_\_\_\_\_\_\_\_\_
   5. Phosphorous = \_\_\_\_\_\_\_\_\_\_\_
   6. Carbon = \_\_\_\_\_\_\_\_\_\_\_
   7. Neon = \_\_\_\_\_\_\_\_\_\_\_
4. Transition metals have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oxidation number

# Unit 3.3: Bonding: Ionic and Covalent Bonds

**Further Reference: 6.2 Ionic and Covalent Bonding**

**CHEMICAL STABILITY**

1. Nobel gases are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ elements
   1. They have \_\_\_\_\_ valence electrons and don’t want to \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_ any electrons

**CHEMICAL BONDS**

1. Involve only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The nucleus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Elements will not just \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. They will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ OR \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. There will always be at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_ involved in this process
   3. **Binary compound** = compound with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in it
      1. Example: \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_
3. When atoms bond, they will always form new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with

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

* 1. The final product has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than either of the

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

**IONIC BONDS**

1. Form when one atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and another atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. One atom \_\_\_\_\_\_\_\_\_\_\_\_\_ their \_\_\_\_\_\_\_\_\_\_\_\_\_ to another atom
2. Occur between \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. Two \_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The product of an ionic bond is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. The oxidation numbers must add up to \_\_\_\_\_\_\_\_\_\_\_\_\_
4. Properties of Ionic Bonds
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ melting points
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ electricity when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at room temperature
5. Drawing:
   1. 1st – Determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 2nd – Draw the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for each atom
   3. 3rd – Draw the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ being transferred in the \_\_\_\_\_\_\_\_\_\_\_\_\_
   4. DOUBLE CHECK: Does each atom have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ orbital?

**Drawing Practice:** Draw the ionic bonding structure for Na and Cl

Oxidation number Lewis Dot Electrons being Transferred

**COVALENT BONDS**

1. Occur between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. Formed when two atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with one another.
2. Can be between two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or two atoms of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. Covalent Bonds are also called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (aka Molecule)
3. Properties of Covalent Bonds
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ melting points and boiling points
   3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electricity when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at room temperature
4. Drawing:
   1. 1st – Draw the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for each atom
   2. 2nd – Draw the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. 3rd – Draw each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as a \_\_\_\_\_\_\_\_\_ between two atoms
   4. DOUBLE CHECK: Does each atom have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ orbital?

**Drawing Practice:** Draw the covalent bonding structure for H and Cl.

Lewis Dot Electrons being Shared Bonds as Lines

**Drawing Practice:** Draw the covalent bonding structure for H2O

Lewis Dot Electrons being Shared Bonds as Lines

**Drawing Practice:** Draw the covalent bonding structure for CH4

Lewis Dot Electrons being Shared Bonds as Lines

1. **DIATOMIC MOLECULES**
   1. Two atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ covalently bonded together.
      1. Cannot exist as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and must bond together
      2. Called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. The 7 diatomic molecules are:
      1. \_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_

**Unit 3 Study Guide**

**Define the following terms:**

1. **Valence Electrons**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. **Oxidation Number**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. **Octet Rule**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. **Ionic Bond**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. **Covalent Bond**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. **Binary Compound**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Practice solving for the element’s oxidation number. Write the oxidation number above the element symbol:

Ca K O Ba P F Li Sr Se I N Be Cl

**Ionic Bonding Practice**

**Write the correct chemical formula for the following compounds. Simplify if possible!**

A) Lithium Sulfide B) Gallium Arsenide

C) Potassium Nitride D) Beryllium Phosphide

**Write the correct name of the following compounds**.

A) LiBr B) BaI2

C) Fe2S D) AlP

G) MnCl F) Na2O

**Covalent Bonding Practice:**

**Write the correct formula for the following covalent bonds:**

A) Nitrogen Monoxide B) TribromineTetraoxide

C) Carbon Pentafluoride D) DisiliconMonoiodide

E) TetrasulfurOctachloride F) HeptaseleniumPentaphosphide

**Write the correct name for the following compounds. USE PREFIXES and DO NOT CRISS CROSS:**

A) NO B) CO2

C) Te3N5 D) HCl

E) H3F9 F) Br2S2

**Compound Name: Ionic/Covalent? Write the Formula:**

1. Potassium Flouride \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Pentabrominediphosphide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. HexaflouroineTrisulfide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Copper (II) Oxide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Compound Formula Ionic/Covalent? Write the Name:**

1. MgBr2 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. NaCl \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. S2O2 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Fe2O3 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CHARACTERISTICS:**Contrast the differences between Ionic and Covalent Bonds. You should have at least 5 things listed.

IONIC COMPOUNDS COVALENT COMPOUNDS

**Miscellaneous – Periodic Table**

1. What is a family on the periodic table?
2. What is similar about a family on the periodic table?
3. What is a period on the periodic table?
4. What is similar about a period?
5. Where are the metals located?
6. Where are the nonmetals located?
7. What is a cation?
8. What is an anion?

**Fill in the rest of the table.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Name of Group | Valence Electrons | Oxidation Numbers |
| A |  |  | 1+ |
| B | Alkalia Earth Metals |  |  |
| C |  | 3 |  |
| D | Carbon Family |  |  |
| E | Nitrogen Family |  |  |
| F |  | 6 |  |
| G |  |  | 1- |
| H |  | 8 |  |