

Why are Electrons Important?

Name _____

Date _____

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_____ are found in the outer shell of an atom. Each atom WANTS to have a FULL outer shell (8 electrons).

1. Look on your electron diagram in column 1 (farthest left). How many valence electrons does each element in the first column have? _____
2. Look in the second column. How many valence electrons does each element in the second column have? _____

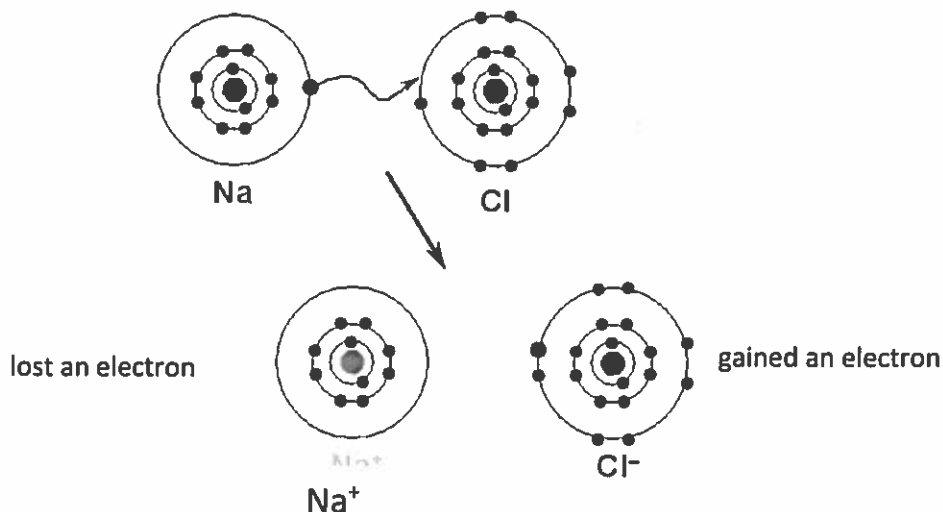
VALENCE ELECTRONS determine how elements will BOND with each other. Atoms that want to lose one electron to have a full outer energy level will bond with atoms that want to gain one electron. These create ionic bonds. (see below)

3. In order to have a full outer energy level, do the elements in the first column want to **gain** an electron or **lose** an electron? _____

4. Look at the column that has Chlorine. How many valence electrons does each element in that group have? _____ Do they want to **gain** an electron or **lose** an electron in order to be full? _____

If an element gains an electron it will pick up a negative charge. We call a particle with a charge an ION. If it loses an electron, the atom will now be positive. Atoms that are no longer neutral (where electrons and protons balance) are called IONS.

The **oxidation number** comes from the number of electrons gained or lost. If an element gains an electron, it will have an oxidation number of 1-. If it gains two electrons it will have an oxidation number of 2-. If an element loses one electron it will have an oxidation number of 1+, etc...



| Element | Atomic Symbol | Total # of Electrons | # of Valence Electrons | # of Electrons Needed to Gain or Lose (to fill outer shell) | Oxidation Number |
|-----------|---------------|----------------------|------------------------|---|------------------|
| Chlorine | | | | | |
| Potassium | | | | | |
| Magnesium | | | | | |
| Fluorine | | | | | |
| Aluminum | | | | | |
| Sodium | | | | | |
| Nitrogen | | | | | |
| Oxygen | | | | | |
| Hydrogen | | | | | |
| Carbon | | | | | |
| Iodine | | | | | |

Follow- Up Questions:

1. An atom that gains one or more electrons will have a _____ charge.
2. An atom that loses one or more electrons will have a _____ charge.
3. An atom that gains or loses one or more electrons is called an _____.