**Electron Arrangements, Ionic and Covalent Bonds**

Electrons are arranged in specific energy shells around the nucleus of the atom. Here are the electron arrangements of 4 very common atoms found in organic molecules:



How many electrons can the first energy shell hold? \_\_\_ The second energy shell? \_\_\_\_\_\_\_\_

To be chemically stable, atoms react with other atoms in order to achieve \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

Here is the atomic structure of first 3 rows of the periodic table:



By looking at the periodic table, you can determine how many electrons each element will gain or lose in order to achieve stability. For example, how many electrons will magnesium lose in order to have a complete outer electron shell? \_\_\_\_\_ How many electrons will nitrogen gain in order to have a complete outer electron shell? \_\_\_

In chemical reactions, atoms react in order to achieve a complete outer electron shell.

If electrons are **transferred** between atoms in order to achieve complete outer shells, the result is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond, held together by the attraction between \_\_\_\_ and \_\_\_ ions.



Sodium chloride (table salt) is a good example of an ionic compound:If electrons are **shared** in order to achieve complete outer shells, the chemical bond is described as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond. The resulting structures are called ‘molecules’. Here are some sample covalently-bonded molecules:



If two pairs of electrons are shared between atoms, the result is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond. If three pairs of electrons are shared between atoms, the result is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond.