

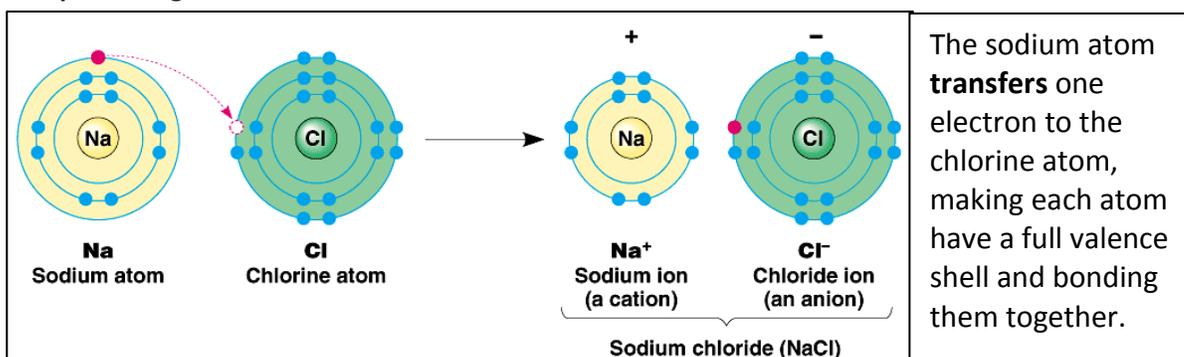
# CHEMICAL BONDS

## BONDS

What holds the atoms in compounds together? This is called chemical bonding. Two basic bonding concepts exist—ionic and covalent. Some chemical atoms more readily bond by one form than the other. The purpose of bonding is for each atom to obtain a full shell of valence electrons.

### IONIC BONDS

- Ionic bonds result from the formation of ions.
- Ions are formed when one or more electrons are removed from atoms of one element and transferred to atoms of a second element.
- This results in an actual electrical charge on those atoms.
- Atoms losing electrons are called cations and atoms gaining electrons are called anions.
- **The electrostatic attractions between the positively and negatively charged ions hold the solid compound together.**



### COVALENT BONDS (MOLECULAR)

- **Covalent bonds, by contrast, are formed by the sharing of electrons between two or more atoms.**
- The atoms may be of the same element (as in hydrogen, H<sub>2</sub>, or oxygen, O<sub>2</sub>), or they may be between atoms of differing elements (as in carbon monoxide, CO, or nitrogen dioxide, NO<sub>2</sub>).
- The sharing of electrons takes place because the resulting compound is more stable than the individual atoms.
- Covalent bonds do form discrete molecules and are called molecules.
- When two chlorine atoms combine to share electron density equally, as in Cl<sub>2</sub>, the Cl — Cl bond is called a covalent bond.
- Substances held together by covalent bonds are called molecules. Cl<sub>2</sub> is a molecule.

