**8.1 – Lewis Symbols and the Octet Rule**

Octet rule does not necessarily apply to nonrepresentative elements

**8.2 – Ionic Bonding**

Reactions are shown as follows:

\[
\text{Na}^+ + \text{Cl}^- \rightarrow \text{NaCl}(s)
\]

Subscripts are used when necessary to balance equations and superscripts are for charges.

Heat of formation of ionic compounds is very exothermic.

**Lattice Energy** - Energy required to completely separate a mole of solid ionic compound into its gaseous ions (always positive)

Magnitudes of Lattice Energies: \( E_{el} = \frac{\kappa Q_1 Q_2}{d} \) where \( \kappa \) is a constant, \( Q_1 \) and \( Q_2 \) are charges and \( d \) is the distance between the particles' centers.

**Lattice energy increases as the charges on the ions increase and as the atomic radii decrease in size.**

Can calculate lattice energies by summing up energies (like with Hess’ equation) or with a diagram like the Born-Haber Cycle: