

- Sodium ion has 11 protons and 10 electrons
- Sodium ion has charge of 1+
- Symbol is written Na^{1+} , or Na^+
- Ion with a pos charge is cation
- Naming cation is easy, you use the element name as in the sodium ion

Cation

3. Formation of Ionic Bonds

-When an anion and cation are close together, chemical bond forms between them

Chemical
Bond
Ionic Bond

- The force that holds atoms or ions together as a ion (Chem Bond)
- The force that holds cations and anions together (Ionic Bond)
- Ionic bond forms when e^- are transferred from one atom to another

4. Ionization Energy

- e^- can move to higher energy lvl when an atom absorbs energy
- Cations form when e^- gains enough energy to escape from atoms
- Energy allows e^- to overcome the attraction of protons in the nucleus
- Amount of energy used to remove an e^- is called ionization energy
- Varies from element to element
- Lower the ionization energy; easier it is to remove an electron from atom
- Ionizing energies tend to increase from left to right across period
- It takes more energy to remove electron from a nonmetal than from a metal in the same period
- Ionization energies tend to decrease from the top of a group to the bottom
- Potassium has a lower ionization energy than sodium, so easier to remove e^- from potassium than from sodium, potassium is more reactive than sodium

C. Ionic Compounds

Compounds that contain ionic bonds are ionic compounds, which can be represented by chemical formulas

- A notation that shows what elements a compound contains and the ratio of the atoms or ions of these elements in the compounds
- Chem formula for sodium chloride is NaCl
- From formula, can tell that there is one sodium ion for each chloride ion in sodium chloride
- Magnesium atom can't reach a stable electron config by reacting with just one chlorine atom
- Must transfer electrons to two chlorine atoms
- After transfer, charge on mag ion is $2+$ and its symbol is Mg^{2+}
- The formula for the compound is MgCl_2
- 2 written to right and below symbol is subscript
- Subscript is used to show the relative # of atoms of the elements present
- If only one atom of an element in formula, no subscript needed
- $\text{Mg} + \text{Cl} \text{ Cl} \rightarrow \text{Mg}^{2+} \text{Cl}^- \text{Cl}^-$

Chemical
Formula

1. Crystal Lattices

- Chem formula for ionic compound tells ration of ions in compound
- Doesn't tell you how ions are arrange in compound
- If at sample of sodium chloride with hand lens or microscope, able to see that pieces of salt are shaped like cubes