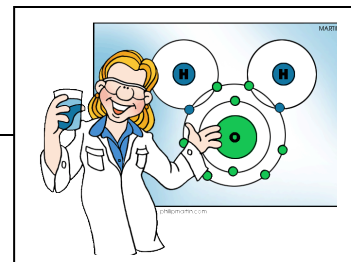


Week 13 – SCIENCE NOTE PAGE

Chemical Bonds



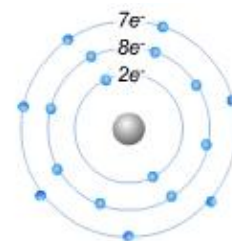
Review –

- **Atoms** – fundamental building block of matter
- **Elements** – made up of only ONE type of atom
- **Molecule:** A molecule forms when two or more atoms **join together** to form a **chemical bond**.
 - **Chemical bonds** form when atoms share or exchange _____ to complete each other's outer shell of electrons.
- **Compound:** a substance containing atoms of **two** or more different **elements**; always a molecule
 - Compounds have **different properties** (behave differently) than the elements that make them up.
 - **Chemical bonds** form when atoms **share** or **exchange** electrons to complete outer shells.
 - Most elements **WANT** to have a **full** _____ **shell**; usually 8 electrons in the outer shell.
- **Chemical formulas** are how compounds are represented using element symbols (Fe_2O_3).

Chemical Bonds

Properties of Bonded Elements

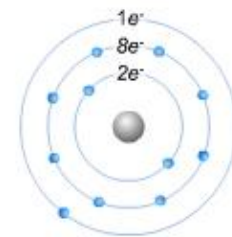
- Sodium + Chlorine = Sodium Chloride (aka salt)
- WHY is Sodium Chloride (salt) EDIBLE?
 - Sodium is a metal that vigorously react with water
 - Chlorine is a poisonous gas that was used as a weapon in World War I
 - ...because of _____!



Chlorine (Cl)

Electrons in Bonding

- Bonding allows atoms to combine to form _____ electron arrangements.
 - For atoms, the MOST stable arrangement is **eight** outer shell electrons.
- The _____ electrons of an atom are the electrons in the outermost shell.



Sodium (Na)

Ionic Bonds

- An _____ is formed when an atom **gains or loses** one or more electrons.
 - It has either a positive or negative charge.
- When sodium chloride is made
 - Na becomes a positive ion (Na^+) – lost an electron
 - Cl becomes a negative ion (Cl^-) – gained an electron
- **Ionic bonds** form when oppositely charged ions attract; electrons are _____
 - The resulting compound is an **IONIC compound**

Covalent Bonds

- Bonding between _____ is called **covalent** bonding.
 - Nonmetals tend to gain electrons.
- **Covalent bonds** form when atoms _____ one or more pairs of electrons to get eight electrons in their valence (outermost) shell.
 - The resulting compound is a **COVALENT compound**.

