

Unit 3 Chemistry – Lessons 1 & 2 Study Guide

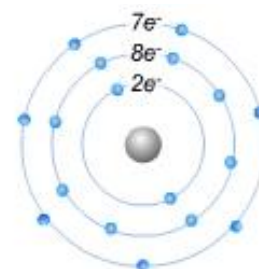
Unit 3 Lessons 1 & 2 VOCABULARY

| Lesson | Term | Definition |
|--------|-----------------------------|---|
| 1 | Ionic Bond | The force of attraction between a charged atom (or group of connected atoms) and another with the opposite charge |
| 2 | Endothermic Reaction | A chemical reaction in which energy is absorbed from its surroundings |
| 2 | Exothermic Reaction | A chemical reaction in which energy is released to its surroundings |
| 2 | Products | The molecules that result from a chemical reaction |
| 2 | Reactants | The starting molecules in a chemical reaction |

Lesson 1 Chemical Bonding

Properties of Two Substances

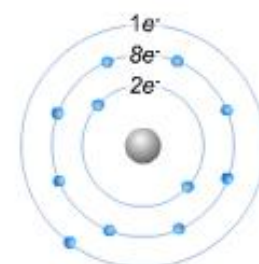
- Sodium + Chlorine = Sodium Chloride (aka salt)
- WHY is Sodium Chloride (salt) EDIBLE?
 - Sodium is a metal that vigorously react with water
 - Chlorine is a poisonous gas that was used as a weapon in World War I
 - ...because of _____!



Chlorine (Cl)

Electrons in Bonding

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



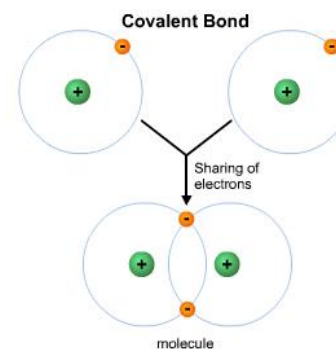
Sodium (Na)

Ionic Bonds & Compounds

- 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 transferred
 - The resulting compound is an _____ compound

Covalent Bonds

- Bonding between nonmetals is called _____ 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.



Shared Electrons

The dots in this diagram (far right) symbolize the _____ **pair** of electrons.



Lesson 2 Chemical Reactions

Chemical Reaction

- A chemical _____ is when bonds break between reactants and form again to create products.
 - **Reactants** – the _____ molecules in a chemical reaction
 - **Products** – the molecules that _____ from a chemical reaction

Exothermic Reactions

- A chemical reaction where more energy is _____ than is needed to get the reaction started is an exothermic reaction.
 - The result is _____ is released.

Endothermic Reactions

- A chemical reaction where energy is _____ to get the reaction started is an endothermic reaction.
 - The result is HEAT is absorbed and the container feels _____.

Types of Reactions

- Combustion Reactions: an exothermic reaction in which _____ are usually formed.
- Decomposition Reactions: a chemical reaction where a _____ compound is broken down into **two or more** simpler compounds.
- Forming a Precipitate: a chemical reaction where a _____ is formed from liquids

Indicators of Chemical Reactions... Don't Be Fooled

A chemical reaction has **not** occurred when you:

- See the _____ when a bottle of soft drink is opened.
 - This is not a chemical reaction because the carbon dioxide gas was already there, and it was just dissolved.
- Mix a yellow and a blue solution to give a green solution.
 - The pigments yellow and blue make green, but no chemical reaction has taken place.