



SHS LEARNING ACTIVITY

CHEM1-04-02

Name: _____ Score/Mark: _____

Grade and Section: _____ Date: _____

Strand: STEM ABM HUMSS ICT (*TVL Track*)

Type of Activity : Concept Notes Skills: Exercise/Drill Illustration
 Laboratory Report Essay/Task Report Other: _____

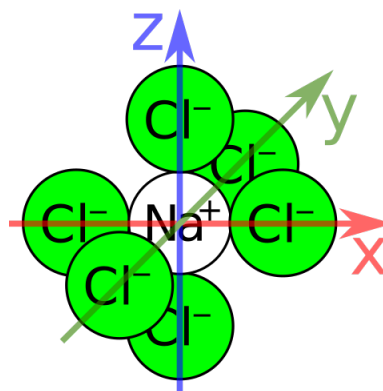
Activity Title: 04-02.Ionic, covalent, and metallic bonds v03

Learning Target: To identify the different types of chemical bonds

Authors/References: Victor Sojo / Wikipedia: Bond; Brown, *Chemistry* 14ed.

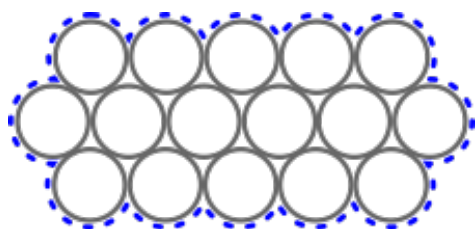
There are **three main types of bonds** in chemical substances: **ionic**, **covalent**, and **metallic**.

Ionic bonds: Saltwater contains many Sodium cations Na^+ and chloride anions Cl^- . If we fill a pot with seawater and evaporate all the water, the ions Na^+ and Cl^- can no longer float around in the water. Instead, they now move towards each other because of their opposite charges and form a **crystal** of NaCl "sodium chloride". This union formed because of the **attraction between negative and positive particles (e.g. in salts)** is called an **ionic bond**.



Covalent bonds: Water is a **molecule** with formula H_2O . Atoms in molecules are **bound** to each other by **pairs of shared electrons**. We call these pairs **covalent bonds**, and we normally draw them as sticks. Remember: **each bond** or stick corresponds to **two electrons**. Sometimes we draw double sticks, which are simply **double bonds**, made of two electrons each, four in total.

Metallic bonds: Metals do not form molecules. Instead, they form large three-dimensional networks or **lattices** in which all the atoms share electrons. The **metallic bond** is caused by the sharing of these electrons. And the **shared-electron cloud** is also **why metals are so good at conducting electricity**.



Question: What type of bonds do atoms in these compounds form?

a) 18K gold in a ring. b) CO_2 . c) KF (potassium fluoride) d) Steel in a ship.

