LEARNING AS ONE NATION

Expanded Project

SHS LEARNING ACTIVITY

Name: _____ **Score/Mark:** _____

Grade and Section: _____ **Date:** _____

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

Subject: _____

Type of Activity: ☑ Concept Notes ☐ Skills: Exercise/Drill ☑ Illustration ☐ Performance Task ☐ Essay/Report ☐ Others: _____

Activity Title: **LA01: Review: Atomic Theory of Matter**

Learning Target: To review concepts related to the atomic theory of matter.

References: *(Author, Title, Pages)*
1) Chang, R. (2010). *Chemistry*, 10th edition, pp. 49-50;
2) Sadudaquil, J. A. *CVIF–DLP Learning Activities*

Atomic Writing Conventions		Examples	
${}^{A}_{Z}\mathrm{X}$	**X-A**	${}^{14}_{6}\mathrm{C}^{1+}$	**C-14**

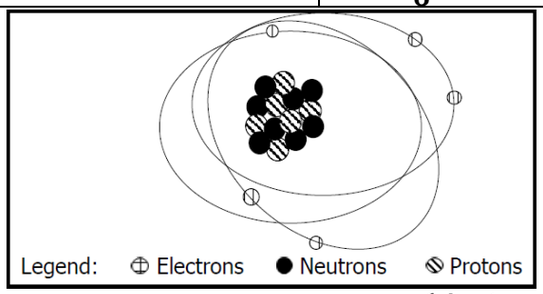

Figure 1. Simplified representation of ${}^{14}_{6}\mathrm{C}^{1+}$, a carbon cation.
(*Note: An electron is much smaller than protons and neutrons.*)

Symbols & Concepts Involved	Example: ${}^{14}_{6}\mathrm{C}^{1+}$
X • Element **symbol**	• **C** is the symbol for **carbon.**
Z • **Atomic number** • Number of **protons** • **Identity** and **placement** in the periodic table of elements	• The atomic number of carbon is **6**. • Carbon has exactly **6 protons** (**Fig. 1**). • Since the atomic number is fixed for any element, there is no other element that has 6 protons and is the 6th element in the periodic table of elements.
A • **Mass number** • Number of protons (**Z**) + number of neutrons (**N**) • **A = Z + N**	• This atomic species of carbon has a mass number of **14**. • The **6 protons** and **8 neutrons** are found in the **nucleus** surrounded by the electrons revolving outside (**Fig. 1**).
N • Number of **neutrons** • **N = A – Z**	• This atomic species has **8** neutrons (**Fig. 1**).
Over-all Charge • Written as a **superscript to the right of the element symbol** • **Magnitude** (or number) is written **before** the + or – sign. • Two types of atomic species: (i) **neutral atoms** – no charge (ii) **ions** – have charges • **(+)** charged are **cations** • **(–)** charged are **anions**	• **Atom Accounting**: For each sub-atomic particle, **count the number** of particles then **multiply** this with **its charge**. Then, **add** the resulting values.

Particle	Charge	Atom Accounting	
Protons	+1	6 x (+1)	**+6**
Neutrons	0	8 x 0	**0**
Electrons	–1	5 x (–1)	**–5**
Over-all Charge			**+1**