

LESSON NOTES

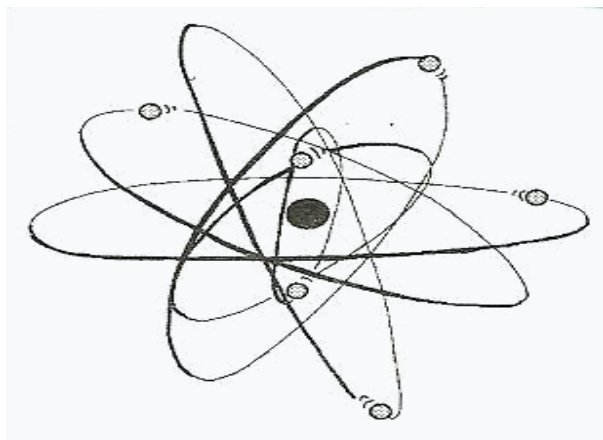
Subject: Basic Science

Year/Level: 9

|                          |   |
|--------------------------|---|
| Strand                   | 2: MATTER   |
| Sub Strand               | 2.1 : INVESTIGATING MATTER  |
| Content Learning Outcome | <b>Describe</b> the structure and properties of matter using particle model of atoms and molecules and <b>account</b> for the behavior of matter when heat is added or removed. |

Week 17

The structure of an atom



Two numbers tell us important things about an atom:

a) Atomic number (smaller number)

- ❖ number of protons in the atom
- ❖ determines which element the atom is.
- ❖ For example:
  - ✓ atoms of hydrogen always have one proton
  - ✓ helium always have two
  - ✓ carbon have six
  - ✓ oxygen have eight

MASS NUMBER

<sup>23</sup><sub>11</sub>Na

ATOMIC NUMBER

b) Mass number (Bigger Number)

- ❖ number of protons plus the number of neutrons in an atom of that element.
- ❖ For example:  
Magnesium
  - ✓ 12 (protons) + 12 (neutrons) = **24 (Mass Number)**
  - ✓ Number of Protons = **12 (equals atomic number)**
  - ✓ Number of Neutrons = 24 – 12 = **12**
  - ✓ Number of Electrons = **12 (same as protons)**

NOTE:

*Since the electrons have insignificant mass, they are never counted but must always be equal in number to the protons.*

### **Structure and Properties of Matter**

- Matter comes in three forms/ state:
  - a) Solids
  - b) Liquids
  - c) gases.

#### **Particle theory of matter**

states that everything is made up of particles which are in constant motion.

- These particles vibrate, or move.
- How much they move depends on how much energy they have.
- The theory can be used to explain different the **properties of matter**.
- The easiest way to understand the properties of solids, liquids and gases is to imagine what is happening to the particles they are made up of.

### **ACTIVITY:**

1. What are the **atomic number** and **mass number** of an atom with **13 protons** and **14 neutrons**?

---

---

---

---

---

2. Find the **number of protons, neutrons and electrons** in the atom with the symbol  $^{23}_{11}\text{X}$ .

---

---

---

---

---

---

---

3. Define Particle Theory Of Matter

---

---

---

---

