

GRADE 8 TERM 2 NOTES

INTEGRATED SCIENCE

The PDF Comprises part of the notes for the Named Learning Area

**FOR COMPLETE NOTES & SCHEMES OF
WORK FOR GRADES 1-8**

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GRADE 8 INTEGRATED SCIENCE NOTES – TERM 2

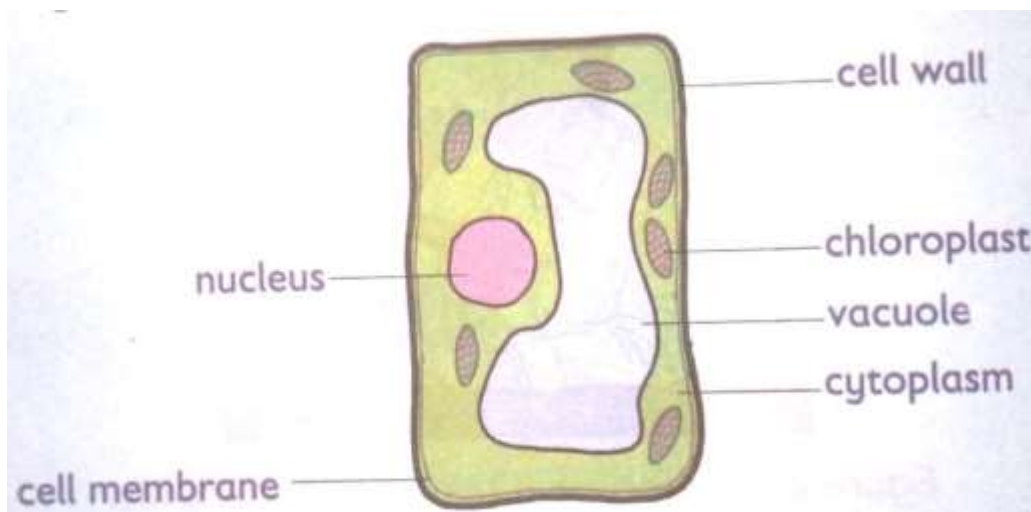
Strand 2 LIVING THINGS & THEIR ENVIRONMENT.

2.1 The Cell.

- Cells make up the structure of living organisms and carry out various biological processes.
- Organisms such as amoeba are composed of a single cell hence are said to be unicellular.
- Organisms such as plants and animals are composed of many cells hence are said to be multicellular.
- Therefore, *a cell is defined as the basic unit of structure and functions in organisms.*
- To observe the cell, a powerful magnifying instrument called **a microscope** is used.
- A microscope enlarges the image of objects when observed and improves the resolution of the image.

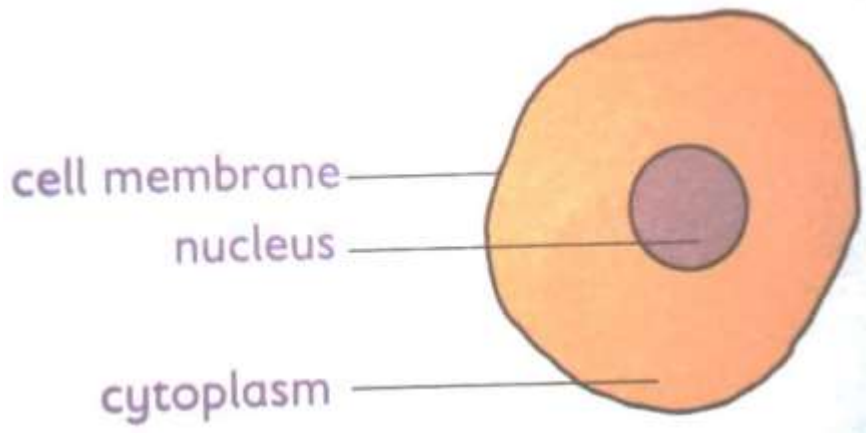
Plant and animal cell structures as seen under a light microscope.

- The following diagram shows the components of a plant cell as seen under a light microscope.



Components of a plant cell.

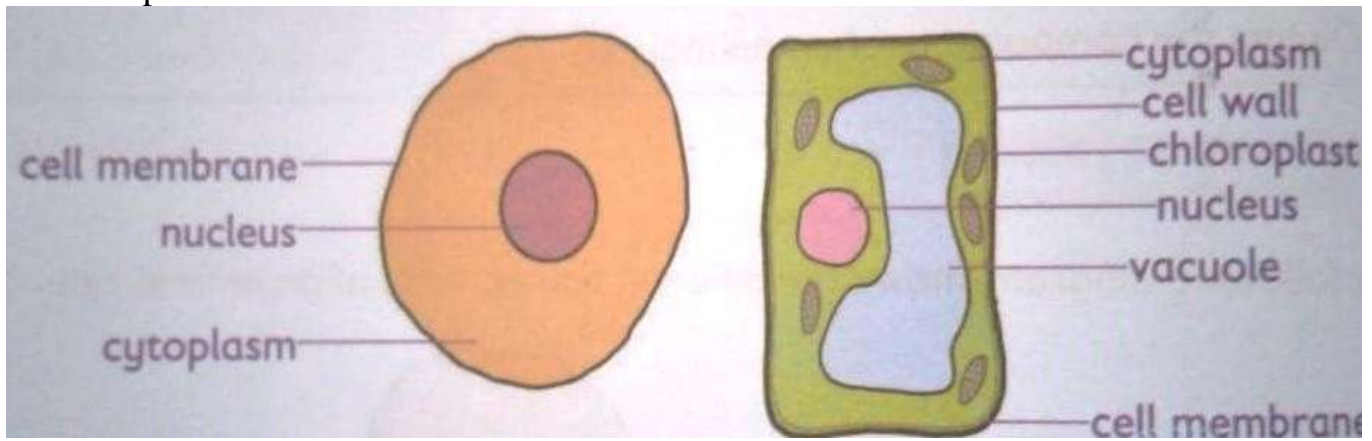
- The following diagram shows different components of the animal cell as seen under a light microscope.



Components of an animal cell.

Comparing plant and animal cells.

- › Plant and animal cells have slight differences in their internal structures while some features are common in both.
- › The figures below show the components of both plant and animal cells as seen under a light microscope.



Plant cells	Animal cells.
They are large in size.	They are small compared to plant cells.
It has a cell wall.	It does not have a cell wall.
Some plant cells have chloroplast that give the plant its green colour.	It lacks chloroplast.
Plant cells have a permanent vacuole that occupies a large part of the cell.	Animal cells usually do not have vacuoles, however, small temporary vacuoles may occur

Similarities between a plant cell and an animal cell.

They both have the cell membrane.
Both have nucleus within them

Functions of the cell structures found in plants and animals' cells.

Part/structure	Function	Found in
Vacuole	It is the space that has a watery fluid (cell sap) that contains dissolved water, mineral salts and waste products.	Both plant and animal cells.
Cell membrane	Cell membrane is a thin layer around the cell that holds the cell together. It acts like a fence and controls what goes in and out of the cell. Therefore, the cell can take in substances it needs and get rid of waste products.	Both plant and animal cells.
Cytoplasm.	It is a jelly-like liquid that fills inside the cell. The cytoplasm is where chemical reactions of the cell take place. It also contains small structures called organelles which have special functions	Both plant and animal cells.
Nucleus	The nucleus carries genetic information and controls what happens or all the activities of the cell.	Both plant and animal cells.
Cell wall	It is a thick, tough layer made from cellulose found on the outside of the cell. It covers the cell membrane in plants cells. Cell wall helps the cell to keep its shape. It protects the cell form mechanical damages.	Plant cells.
Chloroplast	It is an organelle in the cytoplasm of plant cells. Chloroplast contain green pigment called chlorophyll . Chlorophyll absorbs light that is used by plants to make their own food through photosynthesis .	Plant cells.

Magnification of Cells.

- › Magnification of a specimen is the measure of how much bigger a specimen is when it is viewed through a hand lens or microscope compared to its original size.
- › Magnification is usually expressed using “X” before the digits, for example, **X2**, **X10** and **X20**. The X stands for ‘times.’
- › It is a measure of how much bigger an object appears when viewed through a hand lens or microscope, for example X2 means the object has been magnified or enlarged two times or the image is twice bigger than the actual object.
- › For alight microscope, the final magnified image of an object as seen by the observer is the product of the magnifying power of the lenses that are used. These lenses include eyepiece **lens** and the **objective lens**.
- › The magnifying power of each of these lenses is marked on the sides of the objective and eye piece lens holder.

- › In a light microscope, the revolving nosepiece holds three different objective lenses, each with a specific magnifying power of **X4**, **X10** and **X40**. The eyepiece lens further magnifies the image formed by the objective lens.

Calculating the Total magnification.

- Finding total magnification of an image you are viewing in a light microscope is done by:
- Take the power of the objective lens you are using e.g., X4, or X10 or X40 and multiply it by the power of the eyepiece lens, which is usually X10.

Total magnification = magnification of eyepiece lens x magnification of objective lens.

Example.

Fill the table below with the correct magnification.

Objective lens magnification.	Eyepiece lens magnification	Total magnification.
X4	10	X40
X10	10	
	X10	

2.2 Movement of Material in and Out of the Cell.

Diffusion and Osmosis.

Meaning of Terms.

a.) Solutes and solvent.

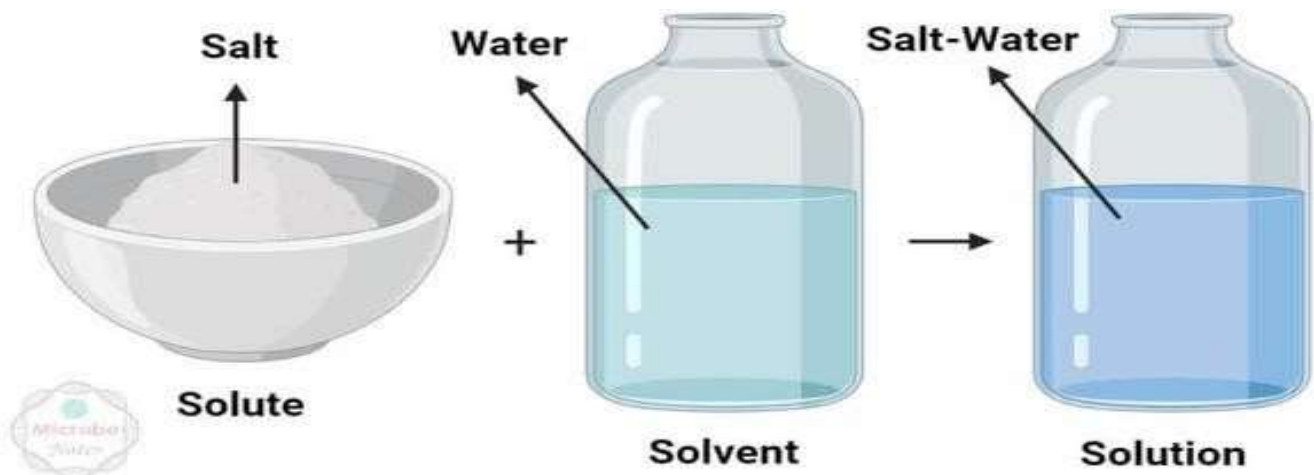
When a solid is dissolved in a liquid, we get a solution formed.

The solid that dissolves in this solution is called the **solute**.

The liquid that dissolves the solid is known as the **solvent**.

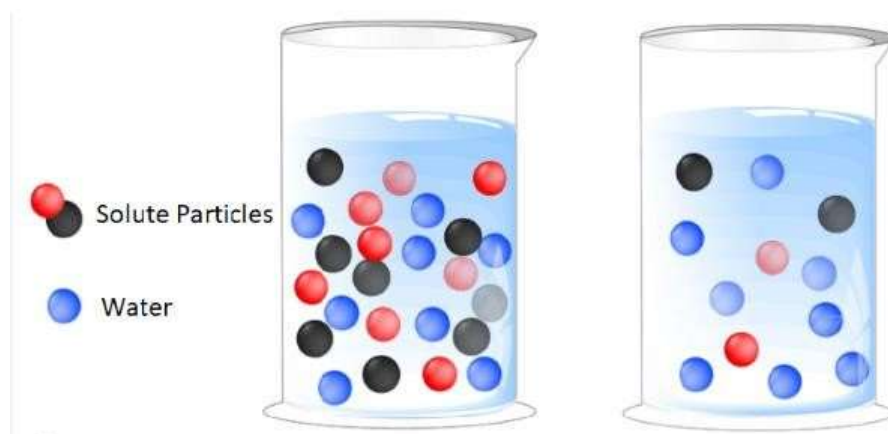
For example,

Sugar and salt are examples of substances (solutes) that are soluble in water (solvent)



b.) Concentration.

- When there are more solute molecules compared to solvent molecules, a solution is said to be concentrated.
- When there are more solvent molecules compared to solute molecules, then the solution is said to be **dilute**.



DIFFUSION.

An experiment to demonstrate diffusion in liquids.

Requirements:

- A beaker.
- Water.
- Dye or ink.
- A dropper.
- writing materials.

Procedure:

- ↗ pour some water in a beaker.
- ↗ Put a drop of the dye or ink in the water.
- ↗ What observations do you make after a few minutes?

Observation, explanation and conclusion.

- › After a few minutes, the ink or dye spread throughout the water in the beaker.
- › The ink or dye spread from the region where it was highly concentrated to region in water where it was in low concentration.



Diffusion is *defined as the movement of molecules from a region of high concentration to a region of low concentration.*

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