🧬 SS1 Biology – Week 2

📚 Topic: Recognizing Living Things

Theme: Organization of Life
Term: First Term

✳️ Introduction

Biology is the study of living things. But how can we tell whether something is living or non-living? What makes a goat different from a stone? Or a tree different from a fish? To answer this, we need to understand the **characteristics** that all living things share and how they're organized.

🔍 PART 1: Characteristics of Living Things

All living things carry out certain **life processes**. These are the basic features that distinguish **living organisms** from **non-living things**.

✅ The 7 Major Characteristics of Living Things (acronym: MRS GREN):

Characteristic	Explanation	Example
Movement	Living things can move parts or their whole body (plants move slowly toward light, animals move freely).	A dog walks; a plant bends toward sunlight.
Respiration	Breaking down food (glucose) to release energy for life activities.	A boy breathes in oxygen to release energy.
Sensitivity (Irritability)	Detecting and responding to changes in the environment (stimuli).	Pulling your hand away from a hot object.
Growth	Increase in size, mass, and complexity.	A baby growing into an adult.
Reproduction	Ability to produce offspring.	Humans give birth; plants grow from seeds.
Excretion	Removal of waste products made in the body.	Sweating or urinating.

Characteristic	Explanation	Example
Nutrition	Taking in and using food to get energy.	Humans eat rice; plants make food via photosynthesis.

Mnemonic: **MRS GREN** — Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition.

🌿 PART 2: Differences Between Plants and Animals

Although both are living things, **plants and animals** differ in many ways based on structure, behavior, and life processes.

Feature	Plants	Animals
Nutrition	Autotrophic (make their food via photosynthesis).	Heterotrophic (depend on others for food).
Movement	Generally fixed in one place; slow movement.	Move actively from place to place.
Cell Wall	Present (made of cellulose).	Absent.
Chloroplast	Present (for photosynthesis).	Absent.
Response to stimuli	Respond slowly and less obviously.	Respond quickly and visibly.
Growth	Continuous throughout life.	Growth stops at maturity.
Storage of food	Store excess food as starch.	Store excess food as glycogen.
Examples	Mango tree, maize, aloe vera.	Goat, fish, man, bird.

🧬 PART 3: Levels of Organization in Living Things

Life is organized in a **hierarchy**, from the simplest cell to the most complex organisms.

🔢 Levels of Biological Organization:

1. **Cell** – The basic structural and functional unit of life.

- Example: Red blood cell, nerve cell, muscle cell, palisade cell.

2. **Tissue** – A group of similar cells performing a common function.
    - Example: Muscle tissue, epithelial tissue, xylem in plants.
3. **Organ** – Made up of different tissues working together.
    - Example: Heart (muscle + nerve + blood), leaf (mesophyll + vascular tissue).
4. **Organ System** – Group of organs performing related functions.
    - Example: Digestive system, respiratory system.
5. **Organism** – A complete living individual that can carry out all life functions.
    - Example: A cat, a human, a tree.

Note: **Unicellular organisms** like *Amoeba* carry out all life processes in a single cell. **Multicellular organisms** have specialized structures (organs and systems) for different functions.