

2.1 Levels of Organisation

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1. KEY VOCABULARY

TERM	MEANING
Organelle	A small structure inside a cell with a particular job.
Cell	The basic building block of all living organisms.
Tissue	A group of similar cells working together.
Organ	Several tissues working together for one function.
Organ system	A group of organs working together.
Organism	A complete individual living thing.

2. THE HIERARCHY



...and many organ systems together make up the whole ORGANISM.
A tissue = a group of similar cells. An organ = several tissues working together.

3. WORKED EXAMPLE

Following one example through:

ribosome → muscle cell → muscle tissue → the heart → the circulatory system → a human.
Each level is built from the one before it.

4. SPECIALISED CELLS

Cells are specialised — their structure is adapted to their job.

Red blood cell: no nucleus, packed with haemoglobin to carry oxygen.

Root hair cell: long extension → large surface area to absorb water.

5. WHY ORGANISMS ARE ORGANISED

Large organisms are made of trillions of cells. Organising them into tissues, organs and systems lets each part specialise and work efficiently.

Division of labour: different parts do different jobs, so the whole organism works well.

6. THE WHY

Why specialised cells matter: a cell shaped for its job does that job far more efficiently than a general cell could.

Why we group cells into tissues and organs: it allows division of labour — each structure focuses on one function.

7. COMMON EXAM MISTAKES

- ✗ "A tissue and an organ are the same thing."
- ✓ A tissue is similar cells; an organ is several tissues together.
- ✗ "An organelle is a tiny organ."
- ✓ An organelle is a structure INSIDE a cell.
- ✗ "The heart is an organ system."
- ✓ The heart is an organ; the circulatory system is the system.

8. SELF-CHECK · cover & quiz

Can you...

1. List the levels of organisation from organelle to organism?
2. Define tissue, organ and organ system?
3. Give a worked example through all the levels?
4. Describe one specialised cell and its adaptation?
5. Explain why large organisms need this organisation?