

Built to Work

Trace how living things are organized from cells to whole organisms.

7.13.B “describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB In each paragraph, underline one complete hierarchy chain and number its levels 1 through 5, from cell to organism. This will help you track how small living parts build larger working units.

From Tiny Parts to Whole Living Things

- ① Living things are built in levels, from small parts to larger working units. A cell is the smallest unit that carries out life processes. Cells with similar structures and jobs form a tissue. Different tissues combine to make an organ, which performs a major job. Organs that cooperate form an organ system. All the organ systems together make one organism. This hierarchy helps scientists explain how a change in a tiny cell can affect an entire plant or animal.
- ② Consider a dog chasing a ball. Muscle cells contract, and many muscle cells together form muscle tissue. Muscle tissue, connective tissue, nerve tissue, and blood vessels are parts of the heart, an organ. The heart pushes blood through vessels. It works with the vessels and blood as the circulatory system, which delivers oxygen and nutrients to body cells. The circulatory system also works with other systems, such as the respiratory system, to keep the dog alive and active.
- ③ Plants have the same levels of organization, although their organs differ from animal organs. In a sunflower, leaf cells include cells that capture light and cells that control openings for gases. Similar leaf cells form tissues. Several tissues, including an outer protective layer and transport tissues, make a leaf, an organ. Roots, stems, leaves, and flowers are organs. The root system and shoot system work together to supply water, make food, move materials, and support the whole sunflower plant.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Write the five levels of organization in order, starting with the smallest level.

2 Trace the dog example from a muscle cell to the whole dog. Write the levels and the example at each level.

3 Name two kinds of tissue that are part of the heart in the passage.

4 How do the root system and shoot system help the sunflower as part of the whole organism?

3 YOUR TURN _____ Your own words

Choose an animal or plant that is not the dog or sunflower in the passage. Fill in the table to show one complete hierarchy, from a cell to the whole organism, and explain how each level connects to the next.

LEVEL	EXAMPLE IN YOUR ORGANISM	HOW IT CONNECTS UPWARD

PART 1 • READ AND MARK

In each paragraph, underline one complete hierarchy chain and number its levels 1 through 5, from cell to organism. This will help you track how small living parts build larger working units. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Write the five levels of organization in order, starting with the smallest level.	cell, tissue, organ, organ system, organism
2	Trace the dog example from a muscle cell to the whole dog. Write the levels and the example at each level.	muscle cell → muscle tissue → heart → circulatory system → dog
3	Name two kinds of tissue that are part of the heart in the passage.	Any two: muscle tissue, connective tissue, nerve tissue.
4	How do the root system and shoot system help the sunflower as part of the whole organism?	They work together to supply water, make food, move materials, and support the whole sunflower plant.

PART 3 • YOUR TURN (SAMPLE ANSWER)

LEVEL	EXAMPLE IN YOUR ORGANISM	HOW IT CONNECTS UPWARD
Cell	root hair cell	Root hair cells are part of epidermal tissue.
Tissue	epidermal tissue	Epidermal tissue is one tissue in a root.
Organ	root	Roots belong to the root system.
Organ system	root system	The root system works with the shoot system in a bean plant.
Organism	bean plant	Its organ systems make one organism.

Accept any scientifically accurate cell-to-tissue-to-organ-to-organ-system-to-organism sequence for the student's chosen plant or animal. Students may use a different valid tissue or organ as long as each connection moves upward correctly.