

Built for Life

Trace how organized cell levels support life processes.

LS.3.a "patterns of cellular organization support life processes;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB In each complete organization sequence, number the levels from smallest to largest, starting with 1. Underline words that explain how the organized levels support a life process.

Cells Working Together

- ① Life depends on cells working in organized levels. In a maple leaf, palisade cells contain many chloroplasts and capture light energy. Similar palisade cells form a tissue, a group of cells that work together. Leaf tissues join with other tissues, including transport tissue, to make the leaf an organ. The leaf's layers and veins have different jobs, yet their organization allows the organ to make sugars and move materials. This pattern connects cell structures to a life process: photosynthesis.
- ② In a person, muscle cells have protein fibers that let them shorten. Many muscle cells arranged in the same direction form muscle tissue. Muscle tissue is one of several tissues in the stomach, an organ. When the stomach's muscle tissue contracts, it churns food. The stomach works with the mouth, intestines, liver, and other organs in the digestive system. Organization matters because each level contributes a related action, from cell contraction to moving and breaking down food.
- ③ Plant roots show that organization also supports transport and growth. A root hair cell has a long extension that increases contact with soil water. Groups of cells, including root hair cells and transport cells, form root tissues. These tissues make up roots, organs in a plant's root system. Water enters root hair cells, passes through root tissues, and travels into larger transport tissues. The repeated arrangement of specialized cells, tissues, organs, and systems helps the whole plant obtain materials needed for life.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Using the stomach example, list the four levels of organization from smallest to largest.

2 How does the organization of muscle cells and tissues help the stomach do its job?

3 What feature of a root hair cell helps it take in water from the soil, and how does that feature help?

4 Trace water through the root example, beginning with a root hair cell.

3 YOUR TURN _____ Your own words

Choose a body or plant system that is not named in the passage. In 3 or 4 sentences, describe a cell, tissue, organ, and organ system in order, and explain how their organization supports one life process.

PART 1 • READ AND MARK

In each complete organization sequence, number the levels from smallest to largest, starting with 1. Underline words that explain how the organized levels support a life process. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Using the stomach example, list the four levels of organization from smallest to largest.	Muscle cell, muscle tissue, stomach, digestive system.
2	How does the organization of muscle cells and tissues help the stomach do its job?	Muscle cells shorten, and organized muscle tissue contracts to churn food.
3	What feature of a root hair cell helps it take in water from the soil, and how does that feature help?	Its long extension increases contact with soil water, helping the cell take in water.
4	Trace water through the root example, beginning with a root hair cell.	Water enters root hair cells, passes through root tissues, and travels into larger transport tissues.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A cardiac muscle cell can contract. Similar cells form cardiac muscle tissue in the heart, an organ of the circulatory system. The organized contractions of these cells and tissues help the heart pump blood.

Accept equivalent descriptions that correctly order cell, tissue, organ, and organ system and connect the organization to a valid life process. For the open response, accept different accurate body or plant systems not named in the passage.