Body Systems Network

Trace evidence from cells to interacting body systems.

MS-LS1-3 "Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. Clarification Statement: Emphasis is on the conceptual understanding that cells form tissues and tissues form organs..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two details that show a cell, tissue, organ, or body system level. Number three details that show one body system helping another system, so you can use the passage as evidence for an argument.

Working Together Inside You

1. Your body is not one single machine. It is a system made of smaller, interacting subsystems. Cells with similar jobs form tissues. Different tissues join to make organs, and organs work together in body systems. For example, cardiac muscle cells form heart muscle tissue. That tissue is part of the heart, an organ in the circulatory system. The heart's pumping sends blood through vessels, connecting its work to other systems during every moment of the day.

2. After you eat a sandwich, the digestive system breaks food into small nutrient molecules that can enter the blood. The circulatory system carries those nutrients to body cells. At the same time, the respiratory system adds oxygen to the blood in the lungs. Muscle cells use nutrients and oxygen to release energy for movement. Nervous system signals can tell muscles when to contract, such as when you lift a backpack. These linked actions are evidence that the subsystems depend on one another.

3. As cells use nutrients, they produce wastes. Blood carries some wastes to the kidneys, organs of the excretory system. The kidneys remove wastes and extra water from the blood, producing urine. This process helps keep the blood's conditions suitable for cells throughout the body. If the circulatory system did not deliver blood to the kidneys, waste removal would be less effective. Thus, the cell, tissue, organ, and system levels provide evidence for one claim: normal body functions require organized parts that interact.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the heart example show that body systems are made of organized levels? Name the cell, tissue, organ, and system levels.

2. After someone eats a sandwich, which three systems work together to help muscle cells receive nutrients and oxygen? Explain each system's job.

3. What would happen to waste removal if the circulatory system did not deliver blood to the kidneys? Use evidence from the passage.

4. State the passage's main claim about normal body functions. Give two pieces of evidence from the passage that support the claim.

3 YOUR TURN

Your own words

Choose swimming, climbing stairs, or dancing. Write exactly four sentences that make a claim about how the body works as an interacting system, include cell-to-system evidence, and explain at least two interactions between body systems.

ANSWER KEY

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GRADES 6-8 · MS-LS1-3

PART 1 · READ AND MARK

Underline two details that show a cell, tissue, organ, or body system level. Number three details that show one body system helping another system, so you can use the passage as evidence for an argument. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the heart example show that body systems are made of organized levels? Name the cell, tissue, organ, and system levels.	**Cardiac muscle cells form heart muscle tissue. The tissue is part of the heart, the organ, and the heart belongs to the circulatory system.**
2	After someone eats a sandwich, which three systems work together to help muscle cells receive nutrients and oxygen? Explain each system's job.	**The digestive system breaks food into nutrient molecules, the respiratory system adds oxygen to the blood, and the circulatory system carries nutrients and oxygen to muscle cells.**
3	What would happen to waste removal if the circulatory system did not deliver blood to the kidneys? Use evidence from the passage.	**Waste removal would be less effective because blood carries wastes to the kidneys, where the excretory system removes wastes and extra water.**
4	State the passage's main claim about normal body functions. Give two pieces of evidence from the passage that support the claim.	**Normal body functions require organized parts that interact. Evidence includes the heart pumping blood through vessels and the circulatory system carrying nutrients and oxygen to muscle cells.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The body works as an interacting system when a person climbs stairs. Muscle cells form muscle tissue, and muscle tissue is part of leg muscles, organs in the muscular system. The respiratory system brings oxygen into the blood, and the circulatory system carries it to the leg muscles. Nervous system signals tell the muscles to contract, so these systems work together to produce movement.

Accept equivalent evidence-based explanations of the levels from cells to systems and of interactions among the listed body systems. For Part 3, accept different accurate activities and system combinations when the response includes a claim, organized levels, and at least two explained interactions.