Systems on the Trail

Compare how body systems meet different needs during a hike.

HS-AP1-5 "Compare and contrast the major organ systems and describe their basic functional importance."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each organ system named in the passage, then number two pairs of systems that work together. Circle the words that show how each system in a pair has a different job.

Maya's Uphill Hike

1. On a steep trail, Maya steps over a fallen branch. Her skeletal system includes bones and joints; it supports her body and allows movement at the joints. Muscles pull on bones to lift her leg. Her nervous system senses the branch and sends quick signals that coordinate the step. Meanwhile, glands of the endocrine system release hormones into the blood that help adjust energy use during the hike. Nerve signals can guide an immediate step, while hormonal effects often last longer. Her skin, part of the integumentary system, forms a barrier and releases sweat to cool her.

2. As the hill grows steeper, Maya breathes faster. Her respiratory system brings air into the lungs, where oxygen enters the blood and carbon dioxide leaves it. The circulatory system pumps and carries that blood, delivering oxygen to working muscles and taking carbon dioxide back to the lungs. The two systems share a task, but only the respiratory system exchanges gases with the outside air. Earlier, Maya ate an apple. Her digestive system broke down food and absorbed nutrients, which the blood carries to cells. Her urinary system filters blood through the kidneys, removing wastes and adjusting how much water leaves in urine.

3. A twig scratches Maya's arm. Her skin's barrier has been broken, so microbes may enter. Cells of her immune system identify and fight invaders; the lymphatic system transports some of these cells and returns fluid from tissues to the bloodstream. This defense is different from the urinary system's filtering of dissolved wastes from blood. Not every system is busy solving the same immediate problem. The reproductive system produces sex cells and supports reproduction, a function important to the continuation of a species rather than to this particular hike. When Maya finishes, she can trace how distinct systems protected her, supplied her cells, and helped her move.

2 ANSWER WITH EVIDENCE

Use the passage

1. When Maya steps over the branch, how do the skeletal and muscular systems have different but connected roles?

2. How do the nervous and endocrine systems differ in the way they help Maya during the hike?

3. Compare the jobs of the respiratory and circulatory systems as Maya climbs the hill. How do they work together?

4. How do Maya's skin and immune system protect her in different ways when the twig scratches her?

3 YOUR TURN

Your own words

Imagine biking to school on a chilly morning after breakfast. In 5 to 7 sentences, compare the roles of at least four body systems, explain two ways they work together, and include one system whose basic job does not directly turn the pedals.

ANSWER KEY

Systems on the Trail

HIGH SCHOOL · HS-AP1-5

PART 1 · READ AND MARK

Underline each organ system named in the passage, then number two pairs of systems that work together. Circle the words that show how each system in a pair has a different job. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	When Maya steps over the branch, how do the skeletal and muscular systems have different but connected roles?	**The skeletal system provides support and includes joints where movement occurs. Muscles pull on bones to lift Maya's leg.**
2	How do the nervous and endocrine systems differ in the way they help Maya during the hike?	**Quick nervous system signals coordinate Maya's step. Endocrine glands release hormones into the blood that help adjust energy use, often with longer-lasting effects.**
3	Compare the jobs of the respiratory and circulatory systems as Maya climbs the hill. How do they work together?	**The respiratory system exchanges oxygen and carbon dioxide with the air. The circulatory system carries oxygen to muscles and carbon dioxide back to the lungs.**
4	How do Maya's skin and immune system protect her in different ways when the twig scratches her?	**Skin forms a barrier against microbes. If a scratch breaks that barrier, immune cells identify and fight invaders that may enter.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

On a chilly ride to school, my nervous system senses traffic and sends signals that guide my leg movements. My muscles pull on bones across joints in my skeletal system to turn the pedals. The respiratory system moves oxygen into my blood, and the circulatory system delivers it to those working muscles. After breakfast, my digestive system absorbs nutrients that my blood carries to cells. These links show how moving, breathing, and transporting materials work together. My urinary system does not turn the pedals, but it filters blood and helps control how much water leaves my body.

Accept other accurate system comparisons supported by the passage. For Part 3, check for distinct roles, two clear interactions, and a basic function that does not directly produce pedaling.