Body Systems and Traits

How body organization, reproduction, and selection shape living populations.

7.13 "Organisms and environments. The student knows how systems are organized and function to support the health of an organism and how traits are inherited..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle each named human system and the function phrase immediately connected to that system. Underline the four levels of organization, draw a box around the sentences comparing reproduction types, and write N or A beside each selection example for natural or artificial selection.

Connected Bodies, Changing Populations

1. During a run, body systems work together. The respiratory system brings oxygen into the body, and the circulatory system moves oxygen and nutrients in blood. The skeletal system provides support and protects organs, while the muscular system moves bones. The digestive system breaks food into nutrients. The urinary system removes liquid wastes and helps balance water. The integumentary system, including skin, forms a protective barrier. The nervous system receives information and directs quick responses. The endocrine system releases hormones that regulate longer-term body changes.

2. Other systems help keep the organism healthy. The immune system recognizes and fights many pathogens, such as disease-causing bacteria and viruses. The reproductive system produces sex cells and supports reproduction. In animals and plants, organization follows a hierarchy: cells are the smallest living units; similar cells form tissues; tissues combine into organs; and organs work together in organ systems. For example, muscle cells form muscle tissue, which is part of the heart, an organ in the circulatory system. Systems cooperate, so changes in one can affect others.

3. Asexual reproduction uses one parent and usually produces offspring genetically very similar to that parent, unless mutations occur. Sexual reproduction combines genetic information from two parents and usually creates more variation among offspring. Variation can change a population over generations. In natural selection, inherited traits that help organisms survive and reproduce can become more common. For example, plants with inherited drought-tolerant traits may leave more seeds during repeated dry years. In artificial selection, people choose parents with inherited traits. If growers breed tomato plants with inherited large-fruit traits, large-fruit plants become more common over generations.

2 ANSWER WITH EVIDENCE

Use the passage

1. List the levels of biological organization from smallest to largest. Then name the organ in the passage's example.

2. How do the respiratory and circulatory systems work together during a run?

3. Compare the offspring produced by asexual reproduction with those produced by sexual reproduction.

4. Why can large-fruit tomato plants become more common over generations in the artificial-selection example?

3 YOUR TURN

Your own words

In three panels, model a different plant or animal population across generations. Show a starting population, a natural pressure or human choice, and a later population. Write captions that identify the inherited trait and explain why it becomes more or less common.

ANSWER KEY

Body Systems and Traits

GRADE 7 · TEKS 7.13

PART 1 · READ AND MARK

Circle each named human system and the function phrase immediately connected to that system. Underline the four levels of organization, draw a box around the sentences comparing reproduction types, and write N or A beside each selection example for natural or artificial selection. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	List the levels of biological organization from smallest to largest. Then name the organ in the passage's example.	**cells, tissues, organs, organ systems; the heart**
2	How do the respiratory and circulatory systems work together during a run?	**The respiratory system brings oxygen into the body, and the circulatory system moves oxygen in the blood.**
3	Compare the offspring produced by asexual reproduction with those produced by sexual reproduction.	**Asexual reproduction usually produces offspring genetically very similar to one parent. Sexual reproduction usually produces more variation among offspring because it combines genetic information from two parents.**
4	Why can large-fruit tomato plants become more common over generations in the artificial-selection example?	**Growers choose and breed parents with inherited large-fruit traits. Over generations, this makes large-fruit plants more common in the population.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Panel 1: A rabbit population has inherited fur-color variation. Some rabbits have white fur, and others have brown fur. Panel 2: Natural selection acts after snow covers the ground. White rabbits are harder for predators to see, so more survive. Panel 3: The surviving white rabbits reproduce. Over generations, the population has more rabbits with inherited white fur.

Accept equivalent accurate wording for system functions and the hierarchy. For the three-panel model, accept any plausible inherited trait, selection agent, and explanation that connects survival or chosen parents to a population change over generations.