Meadow Matter Paths

Trace how matter and energy move through a meadow.

5-LS2-1 "Develop a model to describe the movement of matter and energy among producers, consumers, decomposers, and the environment. (SEP: 2; DCI: LS2.A, LS2.B; CCC: Systems)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline where energy enters the meadow, circle each living thing that eats another living thing or its remains, and number the steps that return nutrients to the grass. Use your marks to plan arrow paths.

What Moves Through a Meadow?

1. In a sunny meadow, grass is a producer. It uses sunlight as an energy source and takes in water from the soil and carbon dioxide from the air. With these materials, grass makes sugars that store some of the sun's energy. The grass also takes in nutrients from the soil. In a model, an arrow from sunlight to grass shows energy entering this meadow system.

2. A grasshopper eats grass, and a frog eats the grasshopper. Both animals are consumers. When grass becomes part of a grasshopper's body, matter moves from producer to consumer. The grasshopper also gains energy stored in the grass. When the frog eats the grasshopper, matter and stored energy move again. As each living thing uses energy, some energy moves into the surroundings as heat.

3. When a frog dies, fungi and bacteria in the soil break down its remains. These decomposers get matter and energy from the dead frog. They release nutrients into the soil, where grass can take them in again. Matter can move through the meadow and return to producers. Energy does not follow that same loop: it enters as sunlight and eventually leaves the system as heat.

2 ANSWER WITH EVIDENCE

Use the passage

1. Write three arrows into grass from the environment. Label each arrow matter or energy.

2. Write one arrow path for matter moving from grass to frog. Then write an arrow path for energy moving from its source to frog.

3. After a frog dies, write two arrow paths: one for matter returning to grass and one for energy leaving the meadow as heat.

4. Should energy form a loop from soil back to the sun? Give one energy path and one matter path that better fit the meadow.

3 YOUR TURN

Your own words

Draw an arrow model of a garden with a plant, a plant-eating animal, its predator, decomposers, sunlight, air, and soil. Label arrows for matter and energy, show heat leaving and nutrients returning to the plant, then write one sentence comparing the paths of matter and energy.

ANSWER KEY

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GRADE 5 · 5-LS2-1

PART 1 · READ AND MARK

Underline where energy enters the meadow, circle each living thing that eats another living thing or its remains, and number the steps that return nutrients to the grass. Use your marks to plan arrow paths. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Write three arrows into grass from the environment. Label each arrow matter or energy.	**Sunlight → grass: energy. Carbon dioxide in air → grass: matter. Water in soil → grass: matter.**
2	Write one arrow path for matter moving from grass to frog. Then write an arrow path for energy moving from its source to frog.	**Matter: grass → grasshopper → frog. Energy: sunlight → grass → grasshopper → frog.**
3	After a frog dies, write two arrow paths: one for matter returning to grass and one for energy leaving the meadow as heat.	**Matter: dead frog → fungi or bacteria → soil nutrients → grass. Energy: dead frog → fungi or bacteria → surroundings as heat.**
4	Should energy form a loop from soil back to the sun? Give one energy path and one matter path that better fit the meadow.	**No. Energy moves from sunlight to grass and eventually into the surroundings as heat. Matter can move from decomposers to soil nutrients and back to grass.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Sunlight → tomato plant (energy); air and soil → tomato plant (matter); tomato plant → caterpillar → robin (matter and energy in food); dead robin → fungi (matter and energy); fungi → soil → tomato plant (nutrients); living things → surroundings (heat). Matter can return to the plant, but energy enters as sunlight and leaves as heat.

Accept other accurate garden organisms and food relationships. Arrows should distinguish matter that can return to a producer from energy that enters as sunlight and leaves as heat.