Pond Resource Puzzle

Use seasonal data to connect resources with frog growth and population numbers.

MS-LS2-1 "Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline details that show whether water, plants, or insects were abundant or scarce. Circle each numerical result about young frogs, then write 1 and 2 beside the two seasonal data sets.

Two Springs at Willow Pond

1 At Willow Pond, scientists tracked a population of leopard frogs for two spring seasons. Frogs need insects for food, clean water, shelter among plants, and places to lay eggs. In the first season, heavy winter snow and spring rain kept the pond full. Thick water plants grew along the edge, and insect counts were high. In May, researchers counted 18 insects in a one-minute sweep near the shore and found 42 young frogs. By late summer, 31 of those young frogs had grown large enough to leave the pond.

2 In the next season, little snow fell, and a dry spring lowered the pond's water level. Fewer water plants remained, so frogs had less shelter and fewer places to lay eggs. The dry edge also supported fewer insects. In May, the same type of sweep found 7 insects per minute, and researchers found 19 young frogs. By late summer, only 9 young frogs had grown large enough to leave the pond. Some eggs may not have hatched, and some young frogs may have lacked food or safe, wet shelter.

3 The two seasons do not prove that one resource alone caused every change. Temperature, disease, and predators can also affect frogs. However, the data show a pattern: when water, plants, and insects were more available, more young frogs were counted and more survived to leave the pond. When these resources were scarce, both numbers were lower. Scientists can use this evidence to support a cause-and-effect claim. Resource availability affected individual young frogs because fewer had enough food and shelter to grow. It also affected the population because the number of young frogs was smaller.

2 ANSWER WITH EVIDENCE

Use the passage

1. What insect-count data show that food availability changed between the two seasons?

2. How did the number of young frogs that grew large enough to leave the pond change from the first season to the dry season?

3. Use two pieces of data from the passage to support a claim that scarce resources affected the frog population.

4. Why do the scientists say that the data do not prove that one resource alone caused the changes in frog numbers?

3 YOUR TURN

Your own words

A meadow survey found that in April, grass samples averaged 18 cm, 14 young rabbits were counted, and their average mass was 0.9 kg. During a dry July, grass samples averaged 5 cm, 8 young rabbits were counted, and their average mass was 0.6 kg. Write exactly two sentences that make a cause-and-effect claim about grass availability and use the data as evidence for effects on both individual rabbits and the rabbit population.

ANSWER KEY

Pond Resource Puzzle

GRADES 6-8 · MS-LS2-1

PART 1 · READ AND MARK

Underline details that show whether water, plants, or insects were abundant or scarce. Circle each numerical result about young frogs, then write 1 and 2 beside the two seasonal data sets. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What insect-count data show that food availability changed between the two seasons?	**The insect count decreased from 18 insects per minute in the first season to 7 insects per minute in the dry season.**
2	How did the number of young frogs that grew large enough to leave the pond change from the first season to the dry season?	**It decreased from 31 young frogs to 9 young frogs, which was 22 fewer frogs.**
3	Use two pieces of data from the passage to support a claim that scarce resources affected the frog population.	**When resources were scarcer, the May count of young frogs decreased from 42 to 19, and the number that grew large enough to leave the pond decreased from 31 to 9.**
4	Why do the scientists say that the data do not prove that one resource alone caused the changes in frog numbers?	**Temperature, disease, and predators can also affect frogs.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

As average grass height fell from 18 cm in April to 5 cm in July, young rabbits' average mass fell from 0.9 kg to 0.6 kg. The number of young rabbits also fell from 14 to 8, so the data support the claim that lower food availability limited individual growth and population size.

Accept claims that use cautious language such as supports or suggests, rather than claims that say the data prove a single cause. For Part 3, students should cite the grass data and include evidence about both rabbit mass and rabbit numbers.