

Explanation Tool

Question

What is the scientific question you are investigating?

Which graph best represents the pattern of interaction described in your scenario (Scenario 2)?

Evidence

What are the science observations or data that address your question?

Graphs A, D, and E are the only ones that show abiotic factors.

Only Graph A shows ups and downs every year with the time of year.

Science Concepts

What science concepts are connected to the evidence and might help answer the question?

Water temperature is an abiotic factor.

Abiotic interactions can affect populations.

Scientific Reasoning

How do the science concepts connect to the evidence and to the question you are trying to answer?

My reasoning is that the pattern every year shows that whenever the water temperature changes, the worm population changes in the opposite direction. So when the water temperature goes up, the worm population goes down and when the water temperature goes down, the worm population goes up. The information in the scenario said that the worm population increases in winter when the water temperature goes down. It also said that the population decreased in the summer when the water temperature went up. The pattern shown by Graph A therefore matches the information in Scenario 2.

Claim

What claim can you make based on the evidence and reasoning?

Graph A best matches the interaction between an abiotic factor (water temperature) and a population (worms) that that goes up in winter when water is cold and down in summer when water is warm.

Explanation Tool

Continued

Name _____

*SAMPLE STUDENT
RESPONSE*

Activity 1.5

Construct a Scientific Explanation

Using the information in the boxes you have completed, write a scientific explanation that includes:

- The scientific question
- Your claim
- Relevant evidence that supports your claim
- Science concepts that are connected to the evidence
- Scientific reasoning that links the evidence and science concepts to the claim

Scientific Explanation

The question is “Which graph best represents the pattern of interaction described in your scenario (Scenario 2)?”

My claim is that Graph A best matches the interaction between an abiotic factor (water temperature) and a population (worms) that that goes up in winter when water is cold and down in summer when water is warm (Scenario 2). The evidence to support my claim is that Graphs A, D, and E are the only ones that show abiotic factors and that only Graph A shows ups and downs every year with the time of year. The science concept connected to the evidence is that abiotic factors can affect populations. The reasoning that links the evidence and science concepts to my claim is that the pattern every year shows that whenever the water temperature changes, the worm population changes in the opposite direction. So when the water temperature goes up, the worm population goes down and when the water temperature goes down, the worm population goes up. The information in the scenario said that the worm population increases in winter when the water temperature goes down. It also said that the population decreased in the summer when the water temperature went up. The pattern shown by Graph A therefore matches the information in Scenario 2.