Pond Count Puzzle

Use field data to investigate a changing frog count.

ENV.1.8 "Utilize data to communicate changes within a given population and the environmental factors that may have impacted these changes (e.g., weather patterns, natural disasters)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the years in the table from the lowest frog count to the highest, underline the passage's explanation of how rain could affect frogs, and circle one other possible cause of a change in the count.

Frogs at the Prairie Pond

1 At a prairie pond, northern leopard frogs gather to breed each spring. In this fictional field study, volunteers walked the same shoreline route for one hour on a mild April night each year. They counted adult frogs they could see. Each count is a snapshot, not a complete census, because some frogs stay hidden.

2 The table pairs each April count with total rainfall from the previous December through March. Winter rain helps keep the pond deep enough for frogs to gather and breed. A dry winter can shrink shallow water and leave fewer places for adults to hide. Tadpoles also need lasting water, which could affect future counts.

WINTER RAINFALL AND APRIL FROG COUNTS

April survey year	Winter rainfall (mm)	Adult frogs counted
2021	240	80
2022	110	43
2023	70	21
2024	210	60

3 The smallest count followed the driest winter, and the count rose after a wetter winter. This pattern is consistent with rainfall affecting frogs near the pond, but it does not prove rain was the only cause. Disease, predators, or differences in which frogs were visible could also change a count. Repeated surveys would strengthen the comparison.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did the frog count and winter rainfall change from 2021 to 2023?

2. What happened to both measurements from 2023 to 2024? What environmental explanation fits this pattern?

3. How could a dry winter affect the frogs counted at this pond, based on the passage?

4. Why do the counts and rainfall data not prove that rain alone caused the change in frog counts?

3 YOUR TURN

Your own words

Imagine that winter rainfall reaches 220 mm before the 2025 survey, but a severe storm strips plants from the pond's shore. In four sentences, predict whether the frog count will be higher or lower than in 2024, cite two values from the table, explain how the storm could affect your prediction, and name one measurement that could help test your explanation.

ANSWER KEY

Pond Count Puzzle

HIGH SCHOOL · ENV.1.8

PART 1 · READ AND MARK

Number the years in the table from the lowest frog count to the highest, underline the passage's explanation of how rain could affect frogs, and circle one other possible cause of a change in the count. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did the frog count and winter rainfall change from 2021 to 2023?	**The count fell from 80 to 21 frogs, a decrease of 59. Winter rainfall fell from 240 to 70 mm, a decrease of 170 mm.**
2	What happened to both measurements from 2023 to 2024? What environmental explanation fits this pattern?	**Rainfall rose from 70 to 210 mm, and the count rose from 21 to 60 frogs. More rain may have kept more water and shelter available near the pond.**
3	How could a dry winter affect the frogs counted at this pond, based on the passage?	**A dry winter could shrink shallow water and reduce places where adult frogs gather, breed, or hide.**
4	Why do the counts and rainfall data not prove that rain alone caused the change in frog counts?	**Disease, predators, or differences in which frogs were visible could also affect the counts.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I predict fewer than 60 frogs in 2025, despite the 220 mm of winter rain. In 2024, volunteers counted 60 frogs after 210 mm of rain, so water alone might suggest a higher count. Yet the loss of shoreline plants could leave frogs with less shelter and lower their numbers or visibility. Measuring plant cover before the April survey would help test whether shelter loss mattered.

For the marking job, the years rank 2023, 2022, 2024, 2021 by frog count. Accept other plausible 2025 predictions if students use two table values, account for the storm, and propose a relevant measurement without claiming the data prove a single cause.