Weekly Graphing and Data Practice: Predator Prey

A graph of different types of population

AI-generated content may be incorrect.Background  
In an ecosystem, predator and prey populations are closely connected. Predators, the animals that hunt and eat the prey. Scientists have closely studied the predator-prey relationships in various ecosystems to understand how the populations influence each other. One highly studied relationship is the gray wolf and elk populations in Yellowstone National Park. In the early 1900s, wolves were eliminated from the park, which influenced the elk population. Scientists collected data on wolf and elk populations before removal and after removal of gray wolves to determine how predator and prey populations influence each other.  
  
Experimental Design

1. What is the independent variable in this experiment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the dependent variable in this experiment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Write a testable question for this experiment: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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Data interpretation

1. What were the wolf and elk populations in 1850? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What was the wolf population when the elk population was 14,000? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which population peaks first, predator or prey? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What year were the wolves eliminated from Yellowstone National Park? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Describe the trend in the elk population after wolves were eliminated.

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1. Write a CER summarizing the results of the experiment, using evidence from the graph to support your claim and explaining with reasoning.

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Application

When the wolves were eliminated from the park in the early 1900s, elk populations were not the only population in the ecosystem impacted. As elk numbers increased, they overgrazed young willow and aspen trees, which disrupted the entire ecosystem—including habitats for birds and beavers.

1. Fill in the blanks to describe the population interactions in the Yellowstone ecosystem *before* wolf removal:

When elk populations increase, wolf populations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and willow and aspen tree populations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When wolf populations increase, elk populations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and willow and aspen tree populations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Explain why the pattern you filled in above occurs:

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1. Describe the population interactions in the Yellowstone ecosystem *after* wolf removal:

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1. In 1995, conservationists reintroduced wolves to Yellowstone in an attempt to restore a healthier, balanced ecosystem. Predict how reintroducing wolves to Yellowstone will impact elk populations and other aspects of the ecosystem. Do you agree or disagree with the conservationists’ decision? Support your answer with reasoning.

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