2025 MCAS Sample Student Work and Scoring Guide

High School Biology
Question 42: Constructed-Response

Reporting Category: Ecology
Practice Category: Evidence, Reasoning, and Modeling
Standard: HS.LS.2.4 - Use a mathematical model to describe the transfer of energy from one trophic level to another. Explain how the inefficiency of energy transfer between trophic levels affects the relative number of organisms that can be supported at each trophic level and necessitates a constant input of energy from sunlight or inorganic compounds from the environment.
Item Description: Interpret a food web to determine the trophic level of an organism and explain why a population would be most affected if another population became extinct.

This item can be found in the released item sets on the MCAS Resource Center.

Scoring Guide

Select a score point in the table below to view the sample student response.

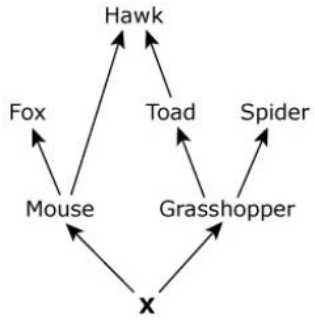
Score*	Description
2A	The response demonstrates a thorough understanding of the transfer of energy from one trophic level to another. The response correctly identifies the trophic level of the organism labeled X in the food web. The response correctly identifies the population that would decrease the most if the mouse population became extinct and clearly explains the reasoning.
2B	
1	The response demonstrates a partial understanding of the transfer of energy from one trophic level to another.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 3A and 3B).

Score Point 2A

This question has two parts.

A part of a food web for an ecosystem is shown. One of the organisms is labeled **X**.



Part A

Select from the drop-down menu to correctly complete the sentence.

The trophic level of the organism labeled **X** in the food web is producer.

Part B

Identify the organism in the food web whose population size would likely **decrease** the most if the mouse population became extinct. Explain your reasoning.

The fox population is most likely to decrease because the foxes only source of food is the mice, so, without the mice, the foxes would not have any food. This means the foxes won't get the nutrients they need to survive, so they would starve, become malnurished, and die.

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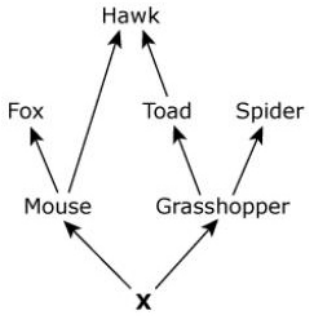
Score Point 2B

This question has two parts.

A part of a food web for an ecosystem is shown. One of the organisms is labeled **X**.



Part A

Select from the drop-down menu to correctly complete the sentence.

The trophic level of the organism labeled **X** in the food web is producer.

Part B

Identify the organism in the food web whose population size would likely **decrease** the most if the mouse population became extinct. Explain your reasoning.

The Fox would likely decrease the most as on the web, the mouse are shown as their only prey they feed on.

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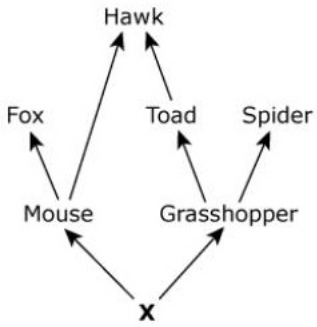
Score Point 1

This question has two parts.

A part of a food web for an ecosystem is shown. One of the organisms is labeled **X**.



Part A

Select from the drop-down menu to correctly complete the sentence.

The trophic level of the organism labeled **X** in the food web is producer.

Part B

Identify the organism in the food web whose population size would likely **decrease** the most if the mouse population became extinct. Explain your reasoning.

for one, the fox and the hawk species would not be able to servive as well

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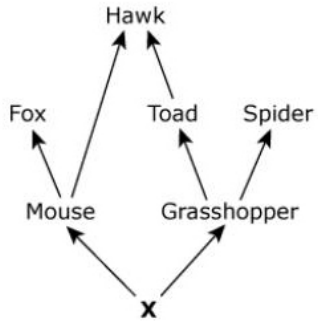
Score Point 0

This question has two parts.

A part of a food web for an ecosystem is shown. One of the organisms is labeled **X**.



Part A

Select from the drop-down menu to correctly complete the sentence.

The trophic level of the organism labeled **X** in the food web is primary consumer.

Part B

Identify the organism in the food web whose population size would likely **decrease** the most if the mouse population became extinct. Explain your reasoning.

hawks would quickly ecrease because they ae hunted and killed by 2 other species while the rest of them are hnted by one species.

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