

2025 MCAS Sample Student Work and Scoring Guide

Grade 8 Science and Technology/Engineering Question 8: Constructed-Response

Reporting Category: Life Science

Practice Category: Evidence, Reasoning, and Modeling

Standard: [8.LS.4.4](#) - Use a model to describe the process of natural selection, in which genetic variations of some traits in a population increase some individuals' likelihood of surviving and reproducing in a changing environment. Provide evidence that natural selection occurs over many generations.

Item Description: Explain how a certain characteristic helps an animal survive, and explain how a population is expected to change due to natural selection as the environment changes.

This item can be found in the released item sets on the [MCAS Resource Center](#).

Scoring Guide

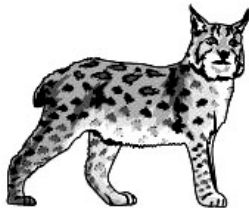
Select a score point in the table below to view the sample student response.

Score*	Description
3A	The response demonstrates a thorough understanding of natural selection. The response clearly explains how blending into an environment helps the snowshoe hare survive. The response also clearly describes how a change in the environment will affect the number of snowshoe hares that change fur color earlier in the spring and clearly explains the reasoning using knowledge of natural selection.
3B	
2	The response demonstrates a partial understanding of natural selection.
1	The response demonstrates a minimal understanding of natural selection.
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).

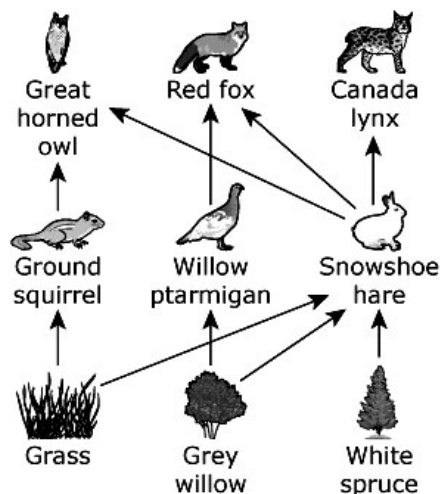
Score Point 3A

A Canada lynx is a mid-sized cat that lives mostly in the cold, snowy forests of Alaska and Canada. Its hind legs are longer than its front legs, making it a fast runner. The Canada lynx covers large areas to find prey at night and uses its excellent eyesight to spot prey. A picture of a Canada lynx is shown.



Canada lynx live and hunt alone, except for mothers raising their young. Mothers care for their young in dens inside hollow logs or under fallen trees and stay with them for about a year.

The Canada lynx is part of a Canadian forest ecosystem. Part of a food web for the ecosystem is shown.



This question has two parts.

Snowshoe hares change fur color depending on the season. In winter, their fur is mostly white, while in spring and summer their fur is mostly brown. The pictures show how the snowshoe hare blends into its environment in winter and in summer.

Winter



D. Gordon E. Robertson/
Wikimedia

Summer



National Park Service

Part A

Explain how blending into its environment most likely helps the snowshoe hare survive.

Blending into its environment helps the snowshoe hare survive because it makes it more difficult for it to be spotted by predators when the hare is the same color as its surroundings.

Part B

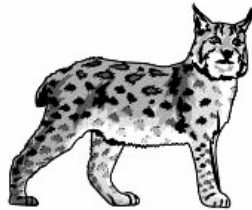
The timing of a snowshoe hare's color change is influenced by genetics. Some individual snowshoe hares change their fur color from white to brown earlier in the spring than other snowshoe hares. Because of climate change, the areas where snowshoe hares live are expected to have fewer days with snow on the ground in the spring.

Describe how the number of snowshoe hares that change fur color earlier in the spring is expected to change. Explain your reasoning using your knowledge of natural selection.

The number of snowshoe hares that change fur color earlier in the spring should be expected to increase, this is because of natural selection. Because the snow is melting earlier because of climate change, the hares with fur that stays white longer will be killed by predators because they can be seen easier and will die before passing on that gene, and the hares whose colors change earlier will survive, then those hares reproduce and their offspring have the same trait of changing color earlier.

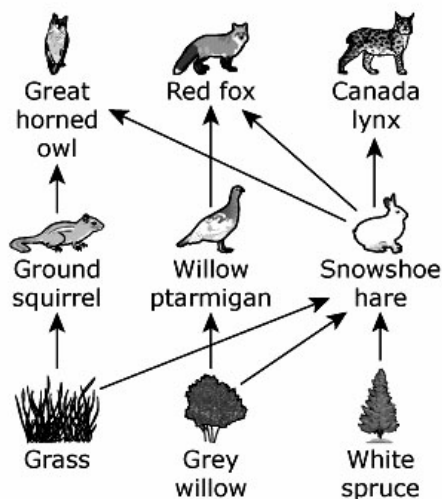
Score Point 3B

A Canada lynx is a mid-sized cat that lives mostly in the cold, snowy forests of Alaska and Canada. Its hind legs are longer than its front legs, making it a fast runner. The Canada lynx covers large areas to find prey at night and uses its excellent eyesight to spot prey. A picture of a Canada lynx is shown.



Canada lynx live and hunt alone, except for mothers raising their young. Mothers care for their young in dens inside hollow logs or under fallen trees and stay with them for about a year.

The Canada lynx is part of a Canadian forest ecosystem. Part of a food web for the ecosystem is shown.



This question has two parts.

Snowshoe hares change fur color depending on the season. In winter, their fur is mostly white, while in spring and summer their fur is mostly brown. The pictures show how the snowshoe hare blends into its environment in winter and in summer.

Winter



D. Gordon E. Robertson/
Wikimedia

Summer



National Park Service

Part A

Explain how blending into its environment most likely helps the snowshoe hare survive.

If the snowshoe hare blends in with the environment, it is less likely to be spotted and eaten by predators.

Part B

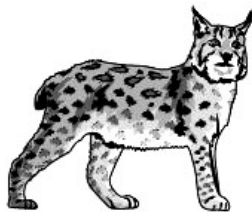
The timing of a snowshoe hare's color change is influenced by genetics. Some individual snowshoe hares change their fur color from white to brown earlier in the spring than other snowshoe hares. Because of climate change, the areas where snowshoe hares live are expected to have fewer days with snow on the ground in the spring.

Describe how the number of snowshoe hares that change fur color earlier in the spring is expected to change. Explain your reasoning using your knowledge of natural selection.

because there is going to be less snow on the ground because of climate change. The number snowshoe hares that change their fur color earlier will increase due to them being able to blend in better and not be spotted by predators, making them more likely to survive and reproduce.

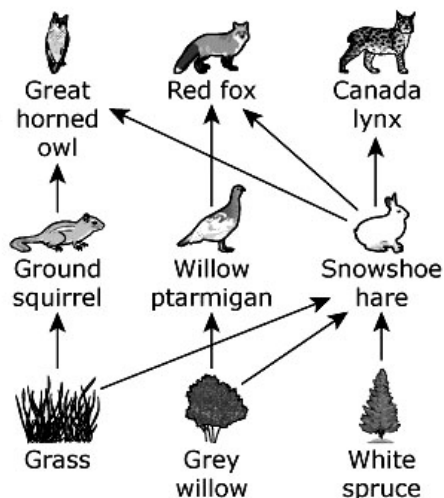
Score Point 2

A Canada lynx is a mid-sized cat that lives mostly in the cold, snowy forests of Alaska and Canada. Its hind legs are longer than its front legs, making it a fast runner. The Canada lynx covers large areas to find prey at night and uses its excellent eyesight to spot prey. A picture of a Canada lynx is shown.



Canada lynx live and hunt alone, except for mothers raising their young. Mothers care for their young in dens inside hollow logs or under fallen trees and stay with them for about a year.

The Canada lynx is part of a Canadian forest ecosystem. Part of a food web for the ecosystem is shown.



This question has two parts.

Snowshoe hares change fur color depending on the season. In winter, their fur is mostly white, while in spring and summer their fur is mostly brown. The pictures show how the snowshoe hare blends into its environment in winter and in summer.

Winter



D. Gordon E. Robertson/
Wikimedia

Summer



National Park Service

Part A

Explain how blending into its environment most likely helps the snowshoe hare survive.

Blending into its environment helps the snowshoe hare survive, because blending into the ground makes it easier to hide from predators like great horned owls, red foxes, or Canada lynxes.

Part B

The timing of a snowshoe hare's color change is influenced by genetics. Some individual snowshoe hares change their fur color from white to brown earlier in the spring than other snowshoe hares. Because of climate change, the areas where snowshoe hares live are expected to have fewer days with snow on the ground in the spring.

Describe how the number of snowshoe hares that change fur color earlier in the spring is expected to change. Explain your reasoning using your knowledge of natural selection.

The number of snowshoe hares that change color earlier in the spring will go up, because due to climate change, snow melts a lot earlier, meaning that hares that are trying to blend into the snow will be easy to find with no snow around. This means the hares that change fur color later will be killed off in greater numbers, while the hares that change color earlier will be able to survive.

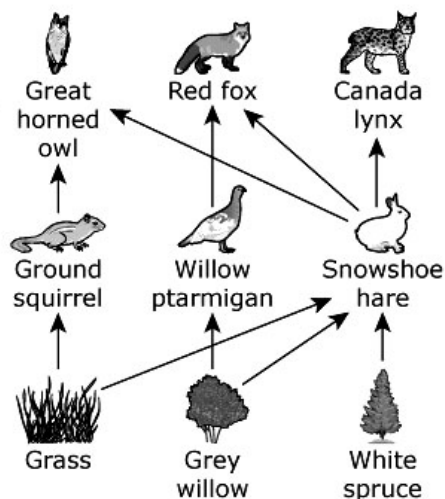
Score Point 1

A Canada lynx is a mid-sized cat that lives mostly in the cold, snowy forests of Alaska and Canada. Its hind legs are longer than its front legs, making it a fast runner. The Canada lynx covers large areas to find prey at night and uses its excellent eyesight to spot prey. A picture of a Canada lynx is shown.



Canada lynx live and hunt alone, except for mothers raising their young. Mothers care for their young in dens inside hollow logs or under fallen trees and stay with them for about a year.

The Canada lynx is part of a Canadian forest ecosystem. Part of a food web for the ecosystem is shown.



This question has two parts.

Snowshoe hares change fur color depending on the season. In winter, their fur is mostly white, while in spring and summer their fur is mostly brown. The pictures show how the snowshoe hare blends into its environment in winter and in summer.

Winter



D. Gordon E. Robertson/
Wikimedia

Summer



National Park Service

Part A

Explain how blending into its environment most likely helps the snowshoe hare survive.

Blending into the environment helps the Hare survive in the wild by using its white winter coat as camouflage to hide from predators.

Part B

The timing of a snowshoe hare's color change is influenced by genetics. Some individual snowshoe hares change their fur color from white to brown earlier in the spring than other snowshoe hares. Because of climate change, the areas where snowshoe hares live are expected to have fewer days with snow on the ground in the spring.

Describe how the number of snowshoe hares that change fur color earlier in the spring is expected to change. Explain your reasoning using your knowledge of natural selection.

The number of Snowshoe Hares changing fur color earlier is expected to change because of climate change. The climate is now getting warmer and that means shorter winters that are getting less cold.

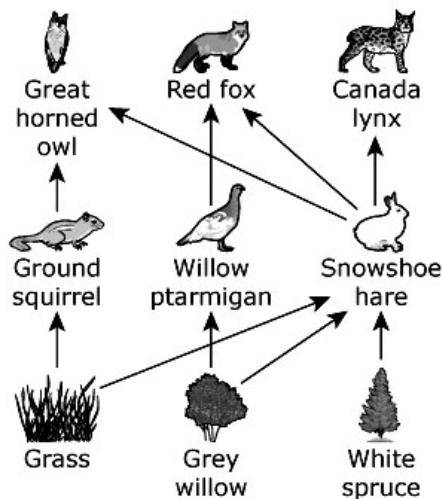
Score Point 0

A Canada lynx is a mid-sized cat that lives mostly in the cold, snowy forests of Alaska and Canada. Its hind legs are longer than its front legs, making it a fast runner. The Canada lynx covers large areas to find prey at night and uses its excellent eyesight to spot prey. A picture of a Canada lynx is shown.



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Winter



D. Gordon E. Robertson/
Wikimedia

Summer



National Park Service

Part A

Explain how blending into its environment most likely helps the snowshoe hare survive.

It uses camouflage to blend in with the environment

Part B

The timing of a snowshoe hare's color change is influenced by genetics. Some individual snowshoe hares change their fur color from white to brown earlier in the spring than other snowshoe hares. Because of climate change, the areas where snowshoe hares live are expected to have fewer days with snow on the ground in the spring.

Describe how the number of snowshoe hares that change fur color earlier in the spring is expected to change. Explain your reasoning using your knowledge of natural selection.

It changes because the climate is getting hotter and warmer so more snow melts and winter will be different

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