

2026 MCAS Sample Student Work and Scoring Guide

Grade 8 Science and Technology/Engineering

Question 6: Constructed-Response

Reporting Category: Earth and Space Science

Practice Category: Mathematics and Data

Standard: [7.ESS.3.4](#) Construct an argument supported by evidence that human activities and technologies can mitigate the impact of increases in human population and per capita consumption of natural resources on the environment.

Item Description: Analyze data to explain why a certain crop contributes the most to increasing global temperatures, explain why a certain crop allows for the greatest number of species in the ecosystem, and describe one way to reduce the environmental impact of a certain crop.

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 3B	The response demonstrates a thorough understanding of how human activities can impact the environment. The response correctly identifies the crop that has the greatest impact on global warming and uses evidence from the table to support the answer. The response correctly identifies the crop that would allow for the greatest number of species in the ecosystem and uses evidence from the table to support the answer. The response also clearly describes one way farmers could improve the environmental impact of a cornfield grown for biofuel.
2	The response demonstrates a partial understanding of how human activities can impact the environment.
1	The response demonstrates a minimal understanding of how human activities can impact the environment.
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

This question has three parts.

Ethanol is a biofuel made from plant crops. Farming biofuel crops can affect the health and the biodiversity of the ecosystem where the crops are grown.

Scientists are investigating the best ways to grow biofuel crops. The table compares the environmental impact of four crops on an ecosystem.

Environmental Impact of Four Crops

Crop	Fertilizer and Pesticide Usage	Erosion of Soil	Amount of CO ₂ from Farming Machines	Biodiversity of Fields
corn	high	high	high	low
switchgrass	low	low	low	medium
elephant grass	low	low	low	low
mixture of native grasses	low	low	low	high

Part A

Identify the crop that would contribute the most to an increase in global temperatures. Use evidence from the table to support your answer.

The crop that contributes to an increase in global warming is corn. Corn has the highest amount of CO₂ from farming and a lot of CO₂ adds to a temperature increase.

Part B

Identify the crop that would allow for the greatest number of species in the farm ecosystem. Use evidence from the table to support your answer.

The mixture of native grasses would bring a number of species to the farm ecosystem because it has the greatest amount of biodiversity.

Part C

Describe one way farmers could reduce the environmental impact of a cornfield grown for biofuel.

One way the farmers could reduce the environmental impact of a cornfield is by lowering the use of pesticides and fertilizer. The farmers can let the corn naturally grow with bees and nutrients from the soil. All the farmers would have to do is make sure the soil stays healthy for the corn.

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Score Point 3B

This question has three parts.

Ethanol is a biofuel made from plant crops. Farming biofuel crops can affect the health and the biodiversity of the ecosystem where the crops are grown.

Scientists are investigating the best ways to grow biofuel crops. The table compares the environmental impact of four crops on an ecosystem.

Environmental Impact of Four Crops

Crop	Fertilizer and Pesticide Usage	Erosion of Soil	Amount of CO ₂ from Farming Machines	Biodiversity of Fields
corn	high	high	high	low
switchgrass	low	low	low	medium
elephant grass	low	low	low	low
mixture of native grasses	low	low	low	high

Part A

Identify the crop that would contribute the most to an increase in global temperatures. Use evidence from the table to support your answer.

Corn would contribute the most easily. With the highest amount of CO₂ from the farming machines required to harvest them in mass quantities, that would be horrible for the atmosphere and global warming.

Part B

Identify the crop that would allow for the greatest number of species in the farm ecosystem. Use evidence from the table to support your answer.

The mixture of native grasses, because the "biodiversity of fields" section has the mixture of native grasses labeled as high in that category.

Part C

Describe one way farmers could reduce the environmental impact of a cornfield grown for biofuel.

Use electronic farming machines or much simpler ones that don't emit CO₂ into the atmosphere at huge quantities.

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Score Point 2

This question has three parts.

Ethanol is a biofuel made from plant crops. Farming biofuel crops can affect the health and the biodiversity of the ecosystem where the crops are grown.

Scientists are investigating the best ways to grow biofuel crops. The table compares the environmental impact of four crops on an ecosystem.

Environmental Impact of Four Crops

Crop	Fertilizer and Pesticide Usage	Erosion of Soil	Amount of CO ₂ from Farming Machines	Biodiversity of Fields
corn	high	high	high	low
switchgrass	low	low	low	medium
elephant grass	low	low	low	low
mixture of native grasses	low	low	low	high

Part A

Identify the crop that would contribute the most to an increase in global temperatures. Use evidence from the table to support your answer.

corn because if you see the chart the "amount of CO₂ from farming machines" is high.

Part B

Identify the crop that would allow for the greatest number of species in the farm ecosystem. Use evidence from the table to support your answer.

mixture of native grasses because in "Biodiversity of fields" is high.

Part C

Describe one way farmers could reduce the environmental impact of a cornfield grown for biofuel.

elephant grass will be good because it will not harm a lot of thing around it.

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Score Point 1

This question has three parts.

Ethanol is a biofuel made from plant crops. Farming biofuel crops can affect the health and the biodiversity of the ecosystem where the crops are grown.

Scientists are investigating the best ways to grow biofuel crops. The table compares the environmental impact of four crops on an ecosystem.

Environmental Impact of Four Crops

Crop	Fertilizer and Pesticide Usage	Erosion of Soil	Amount of CO ₂ from Farming Machines	Biodiversity of Fields
corn	high	high	high	low
switchgrass	low	low	low	medium
elephant grass	low	low	low	low
mixture of native grasses	low	low	low	high

Part A

Identify the crop that would contribute the most to an increase in global temperatures. Use evidence from the table to support your answer.

Mixture of native grass will have the most increase in global temperature because the temperature was low and then the temperature started to increase to a higher temperature.

Part B

Identify the crop that would allow for the greatest number of species in the farm ecosystem. Use evidence from the table to support your answer.

Crop mixture of native grasses will allow the greatest number of species in the farm ecosystem because it has the highest Biodiversity .

Part C

Describe one way farmers could reduce the environmental impact of a cornfield grown for biofuel.

The farmers could stop growing cornfield for biofuel because it has affects the health of the ecosystem and the biodiversity in the ecosystem.

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Score Point 0

This question has three parts.

Ethanol is a biofuel made from plant crops. Farming biofuel crops can affect the health and the biodiversity of the ecosystem where the crops are grown.

Scientists are investigating the best ways to grow biofuel crops. The table compares the environmental impact of four crops on an ecosystem.

Environmental Impact of Four Crops

Crop	Fertilizer and Pesticide Usage	Erosion of Soil	Amount of CO ₂ from Farming Machines	Biodiversity of Fields
corn	high	high	high	low
switchgrass	low	low	low	medium
elephant grass	low	low	low	low
mixture of native grasses	low	low	low	high

Part A

Identify the crop that would contribute the most to an increase in global temperatures. Use evidence from the table to support your answer.

The mixture of native grasses because it says on the table that the biodiversity of fields is high.

Part B

Identify the crop that would allow for the greatest number of species in the farm ecosystem. Use evidence from the table to support your answer.

Corn because species of animals can eat it and gain protein and be stronger.

Part C

Describe one way farmers could reduce the environmental impact of a cornfield grown for biofuel.

One way farmers can do this is by growing more of it to make larger cornfields.

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