

2026 MCAS Sample Student Work and Scoring Guide

Grade 8 Science and Technology/Engineering

Question 5: Constructed-Response

Reporting Category: Technology/Engineering

Practice Category: Evidence, Reasoning, and Modeling

Standard: [7.ETS.1.2](#) Evaluate competing solutions to a given design problem using a decision matrix to determine how well each meets the criteria and constraints of the problem. Use a model of each solution to evaluate how variations in one or more design features, including size, shape, weight, or cost, may affect the function or effectiveness of the solution.

Item Description: Analyze a decision matrix to describe an advantage of using a certain material, explain why a material from the decision matrix should be used to make a certain object, and explain why a property of the material makes it a good choice to use.

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 a decision matrix that is used to determine how well possible solutions meet given criteria of a problem. The response clearly describes one advantage of using cardboard instead of wood or plastic. The response correctly identifies which material the company should use and clearly explains the reasoning. The response also correctly identifies one property of plastic that makes it a good choice for the company to use and clearly explains the reasoning.
2	The response demonstrates a partial understanding of a decision matrix that is used to determine how well possible solutions meet given criteria of a problem.
1	The response demonstrates a minimal understanding of a decision matrix that is used to determine how well possible solutions meet given criteria of a problem.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

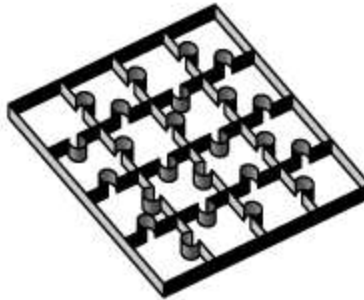
*Letters are used to distinguish between sample student responses that earned the same score (e.g., 3A and 3B).

Module Introduction

A company makes three types of puzzles: wooden, cardboard, and plastic. Wooden puzzles are made using a jigsaw. An example of a wooden puzzle is shown in the picture.



Cardboard and plastic puzzles are made using a steel cutting die. The cutting die is a sharp tool used to cut out puzzle pieces. A steel cutting die is shown in the picture.



Score Point 3A

This question has three parts.

Workers at the company made a decision matrix to choose the material for a new puzzle design. The decision matrix scores each material on three equally important criteria: cost, durability, and weight. The workers' decision matrix is shown. The total points are missing.

Scoring Key

Worst —————> Best

1	2	3
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Material	Criteria			Total Points
	Cost	Durability	Weight	
wood	1	3	1	
cardboard	3	1	2	
plastic	2	3	3	

Part A

Based on the decision matrix, describe **one** advantage of using cardboard instead of wood or plastic.

Cardboard is cheaper than wood or plastic, so costs are cut down.

Part B

Based on the decision matrix, identify which material the company should use. Explain your reasoning.

Since these materials are graded on a scale of 1-3 where 3 is the best, when adding up the total points of all materials you want the highest score. Wood=5, cardboard=6, plastic=8. So the company should use plastic as their material.

Part C

Other than the criteria listed in the decision matrix, identify one property of the material you identified in Part B that makes it a good choice for the company to use. Explain your reasoning.

Plastic is water proof unlike cardboard and wood, so if any drink is spilled onto the puzzle, the image would last and survive.

[Back to Scoring Guide](#)

Score Point 3B

This question has three parts.

Workers at the company made a decision matrix to choose the material for a new puzzle design. The decision matrix scores each material on three equally important criteria: cost, durability, and weight. The workers' decision matrix is shown. The total points are missing.

Scoring Key

Worst —————> Best

1	2	3
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Material	Criteria			Total Points
	Cost	Durability	Weight	
wood	1	3	1	
cardboard	3	1	2	
plastic	2	3	3	

Part A

Based on the decision matrix, describe **one** advantage of using cardboard instead of wood or plastic.

it does not cost as much as wood or plastic.

Part B

Based on the decision matrix, identify which material the company should use. Explain your reasoning.

plastic because it has the highest score and it has best durability and weight while also having good cost.

Part C

Other than the criteria listed in the decision matrix, identify one property of the material you identified in Part B that makes it a good choice for the company to use. Explain your reasoning.

it is flexible and easy to use.

[Back to Scoring Guide](#)

Score Point 2

This question has three parts.

Workers at the company made a decision matrix to choose the material for a new puzzle design. The decision matrix scores each material on three equally important criteria: cost, durability, and weight. The workers' decision matrix is shown. The total points are missing.

Scoring Key

Worst —————> Best

1	2	3
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Material	Criteria			Total Points
	Cost	Durability	Weight	
wood	1	3	1	
cardboard	3	1	2	
plastic	2	3	3	

Part A

Based on the decision matrix, describe **one** advantage of using cardboard instead of wood or plastic.

One advantage of using cardboard instead on plastic and wood is that it costs the least amount of money.

Part B

Based on the decision matrix, identify which material the company should use. Explain your reasoning.

Based on the decision matrix, the company should use plastic. They should use plastic because it is good in all three criteria. It also has the most points out of all with 8 points. The second highest is card board with 6 points. In conclusion plastic is the best material.

Part C

Other than the criteria listed in the decision matrix, identify one property of the material you identified in Part B that makes it a good choice for the company to use. Explain your reasoning.

Another criteria the show plastic is better is that they are made faster and don't need to be made one by one. This is better becuse the company can make a lot of them.

[Back to Scoring Guide](#)

Score Point 1

This question has three parts.

Workers at the company made a decision matrix to choose the material for a new puzzle design. The decision matrix scores each material on three equally important criteria: cost, durability, and weight. The workers' decision matrix is shown. The total points are missing.

Scoring Key

Worst —————> Best

1	2	3
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Material	Criteria			Total Points
	Cost	Durability	Weight	
wood	1	3	1	
cardboard	3	1	2	
plastic	2	3	3	

Part A

Based on the decision matrix, describe **one** advantage of using cardboard instead of wood or plastic.

The wood is very durable compared to cardboard.

Part B

Based on the decision matrix, identify which material the company should use. Explain your reasoning.

The company should use plastic because it has the highest score on the decision matrix.

Part C

Other than the criteria listed in the decision matrix, identify one property of the material you identified in Part B that makes it a good choice for the company to use. Explain your reasoning.

Plastic is the best choice for the company because it is durable which makes it easier to work with.

[Back to Scoring Guide](#)

Score Point 0

This question has three parts.

Workers at the company made a decision matrix to choose the material for a new puzzle design. The decision matrix scores each material on three equally important criteria: cost, durability, and weight. The workers' decision matrix is shown. The total points are missing.

Scoring Key

Worst —————> Best

1	2	3
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Material	Criteria			Total Points
	Cost	Durability	Weight	
wood	1	3	1	
cardboard	3	1	2	
plastic	2	3	3	

Part A

Based on the decision matrix, describe **one** advantage of using cardboard instead of wood or plastic.

cardboard has less durability

Part B

Based on the decision matrix, identify which material the company should use. Explain your reasoning.

wood because it cost less and it has less weight then both

Part C

Other than the criteria listed in the decision matrix, identify one property of the material you identified in Part B that makes it a good choice for the company to use. Explain your reasoning.

because the weight it wont be that hard to transport

[Back to Scoring Guide](#)