

2023 MCAS Sample Student Work and Scoring Guide

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

Reporting Category: Technology/Engineering

Practice Category: Investigations and Questioning

Standard: [6.ETS.2.3](#) - Choose and safely use appropriate measuring tools, hand tools, fasteners, and common hand-held power tools used to construct a prototype.

Item Description: Identify an appropriate tool and fastener and describe how to use them; identify a piece of safety equipment and explain how it can keep a person safe.

[View item in MCAS Digital Item Library](#)

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 choosing and safely using appropriate tools and fasteners. The response correctly identifies one tool and one fastener the student should use and clearly describes how the students would attach two pieces of wood together using the tool and fastener. The response also correctly identifies one piece of safety equipment that should be worn and clearly explains how the safety equipment will keep a student safe when building the model.
3B	
2	The response demonstrates a partial understanding of choosing and safely using appropriate tools and fasteners.
1	The response demonstrates a minimal understanding of choosing and safely using appropriate tools and fasteners.
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.

A group of engineering students entered a competition to build a model of a two-story building. The model must support a large amount of weight. The students will use pieces of wood to construct the model and will also have the following equipment:

- drill
- dust masks
- earmuffs
- goggles
- hammer
- jigsaw
- nails
- sander
- screwdriver
- screws
- tape
- wrench

Part A

The students use a tool and a fastener to attach two pieces of wood together when building their model. From the equipment listed above, identify one tool and one fastener the students should use.

Tool:

Fastener:

Part B

Describe how the students would use the tool and the fastener you identified in Part A to attach two pieces of wood together.

The students would first take the nail(s) and set them in the right place, then the students would hit the head of the nail with the hammer until it is in the wood enough to stay.

Part C

Identify one piece of safety equipment from the list that should be worn when building the model. Explain how this piece of safety equipment will keep a student safe when building the model.

Goggles should be worn during this process to ensure that you don't get any wood material or dust in your eye.

Score Point 3B

This question has three parts.

A group of engineering students entered a competition to build a model of a two-story building. The model must support a large amount of weight. The students will use pieces of wood to construct the model and will also have the following equipment:

- drill
- dust masks
- earmuffs
- goggles
- hammer
- jigsaw
- nails
- sander
- screwdriver
- screws
- tape
- wrench

Part A

The students use a tool and a fastener to attach two pieces of wood together when building their model. From the equipment listed above, identify one tool and one fastener the students should use.

Tool:

Fastener:

Part B

Describe how the students would use the tool and the fastener you identified in Part A to attach two pieces of wood together.

You would use the drill and screws by drilling the screws into both pieces of wood to attach them.

Part C

Identify one piece of safety equipment from the list that should be worn when building the model. Explain how this piece of safety equipment will keep a student safe when building the model.

The safety item that should be worn is a dust mask. I think that because as you are screwing in the screws then a bunch of wood dust would come out and you could use the dust mask so you don't breathe it in.

Score Point 2

This question has three parts.

A group of engineering students entered a competition to build a model of a two-story building. The model must support a large amount of weight. The students will use pieces of wood to construct the model and will also have the following equipment:

- drill
- dust masks
- earmuffs
- goggles
- hammer
- jigsaw
- nails
- sander
- screwdriver
- screws
- tape
- wrench

Part A

The students use a tool and a fastener to attach two pieces of wood together when building their model. From the equipment listed above, identify one tool and one fastener the students should use.

Tool:

Fastener:

Part B

Describe how the students would use the tool and the fastener you identified in Part A to attach two pieces of wood together.

The students will use the screws to position and attach the two pieces of wood together and the drill will be used to tighten and drill the screws into place.

Part C

Identify one piece of safety equipment from the list that should be worn when building the model. Explain how this piece of safety equipment will keep a student safe when building the model.

Ear muffs should be worn when building the model, this is because the loud drilling of the screws and drill may cause damage to the students ears. The ear muffs will prevent this by muffling the sound of the drilling out.

Score Point 1

This question has three parts.

A group of engineering students entered a competition to build a model of a two-story building. The model must support a large amount of weight. The students will use pieces of wood to construct the model and will also have the following equipment:

- drill
- dust masks
- earmuffs
- goggles
- hammer
- jigsaw
- nails
- sander
- screwdriver
- screws
- tape
- wrench

Part A

The students use a tool and a fastener to attach two pieces of wood together when building their model. From the equipment listed above, identify one tool and one fastener the students should use.

Tool:

Fastener:

Part B

Describe how the students would use the tool and the fastener you identified in Part A to attach two pieces of wood together.

Part C

Identify one piece of safety equipment from the list that should be worn when building the model. Explain how this piece of safety equipment will keep a student safe when building the model.

Score Point 0

This question has three parts.

A group of engineering students entered a competition to build a model of a two-story building. The model must support a large amount of weight. The students will use pieces of wood to construct the model and will also have the following equipment:

- drill
- dust masks
- earmuffs
- goggles
- hammer
- jigsaw
- nails
- sander
- screwdriver
- screws
- tape
- wrench

Part A

The students use a tool and a fastener to attach two pieces of wood together when building their model. From the equipment listed above, identify one tool and one fastener the students should use.

Tool:

Fastener:

Part B

Describe how the students would use the tool and the fastener you identified in Part A to attach two pieces of wood together.

Part C

Identify one piece of safety equipment from the list that should be worn when building the model. Explain how this piece of safety equipment will keep a student safe when building the model.