



Coherence and Alignment Among Science Curriculum, Instruction, and Assessment (CASCIA) Project

Grade 8 Unit 1: Forces and Energy

Task 1 Prompt 2 Parts C & D Scored and Annotated Anchor Set

July 2024

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CASCIA Grade 8 EOU Assessment 1 Task 1: Storing Grocery Carts

Prompt 2 Parts C & D Score Point 3

Prompt 2 Parts C & D Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part C. & Part D.	No aspect of the response is correct	Response includes one (1) of the three (3) key aspects	Response includes two (2) of the three (3) key aspects	Response includes the following key aspects: Part C - Describes that the force of the bumper causes the cart to bounce back Part D - Explains that the interacting forces are between the cart and the bumper - Explains the effectiveness of the design solution based on the application of Newton's third law of motion	NA

Score Point 3 (3/3 aspects met)

- Part C
 - Describes that the force of the bumper causes the cart to bounce back.
- Part D
 - Explains that the interacting forces are between the cart and the bumper.
 - Explains the effectiveness of the design solution based on the application of Newton's third law of motion (i.e., The student correctly describes the law; therefore, its name was not needed. Use of ALL terms is not required.).

Part C.

The store owner selects Design Solution #2. After the vinyl bumpers are installed, the store owner tests the solution by pushing an empty cart toward the wall. When the cart hits the bumper, it slowly bounces back.

Describe the force that causes the cart to bounce back.

The cart hit the wall and the wall and bumper pushed back with the same force. This caused the cart to move back, but slower and going backwards.

Part D.

Explain how the vinyl bumpers protect the wall from the force of the moving cart. Use Newton's laws of motion to describe the interacting forces.

Select from the following terms to include in your response:

- | | |
|-----------|-----------|
| Direction | Wall |
| Force | Bumper |
| Opposite | Cart |
| Equal | Collision |

The bumpers protect the wall from getting hit by the carts because now that the cart is colliding with a big force on the bumper, the bumper gives an equal and opposite reaction to push the cart in a backwards direction.

CASCIA Grade 8 EOU Assessment 1 Task 1: Storing Grocery Carts

Prompt 2 Parts C & D Score Point 2

Prompt 2 Parts C & D Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part C. & Part D.	No aspect of the response is correct	Response includes one (1) of the three (3) key aspects	Response includes two (2) of the three (3) key aspects	Response includes the following key aspects: Part C - Describes that the force of the bumper causes the cart to bounce back Part D - Explains that the interacting forces are between the cart and the bumper - Explains the effectiveness of the design solution based on the application of Newton's third law of motion	NA

Score Point 2 (2/3 aspects met)

- Part C
 - Does **NOT** describe that the force of the bumper causes the cart to bounce back (i.e., The student answers, "...causes the force to bounce back ...").
- Part D
 - Explains that the interacting forces are between the cart and the bumper.
 - Explains the effectiveness of the design solution based on the application of Newton's third law of motion.

Part C.

The store owner selects Design Solution #2. After the vinyl bumpers are installed, the store owner tests the solution by pushing an empty cart toward the wall. When the cart hits the bumper, it slowly bounces back.

Describe the force that causes the cart to bounce back.

The force that causes the force to bounce back is the laws of motion.

Part D.

Explain how the vinyl bumpers protect the wall from the force of the moving cart. Use Newton's laws of motion to describe the interacting forces.

Select from the following terms to include in your response:

- | | |
|---|---|
| ☒ Direction | ☒ Wall |
| ☒ Force | ☒ Bumper |
| ☒ Opposite | ☒ Cart |
| ☒ Equal | ☒ Collision |

The bumper protects the wall from a collision from a cart because when you push the cart into the bumper it will stop the cart and with the energy from the cart its going to put a force on the cart causing it to go the opposite direction.

CASCIA Grade 8 EOU Assessment 1 Task 1: Storing Grocery Carts

Prompt 2 Parts C & D Score Point 1

Prompt 2 Parts C & D Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part C. & Part D.	No aspect of the response is correct	Response includes one (1) of the three (3) key aspects	Response includes two (2) of the three (3) key aspects	Response includes the following key aspects: Part C - Describes that the force of the bumper causes the cart to bounce back Part D - Explains that the interacting forces are between the cart and the bumper - Explains the effectiveness of the design solution based on the application of Newton's third law of motion	NA

Score Point 1 (1/3 aspects met)

- Part C
 - Does **NOT** describe that the force of the bumper causes the cart to bounce back (i.e., The student answers, "... the wall has more mass" than the cart, but the student does not relate this to "force" or the bumper.).
- Part D
 - Explains that the interacting forces are between the cart and the bumper.
 - Does **NOT** explain the effectiveness of the design solution based on the application of Newton's third law of motion (i.e., The student does not include force and direction.).

Part C.
The store owner selects Design Solution #2. After the vinyl bumpers are installed, the store owner tests the solution by pushing an empty cart toward the wall. When the cart hits the bumper, it slowly bounces back.

Describe the force that causes the cart to bounce back.

The wall pushes back on the cart since the wall has more mass.

Part D.
Explain how the vinyl bumpers protect the wall from the force of the moving cart. Use Newton's laws of motion to describe the interacting forces.

Select from the following terms to include in your response:

- Direction
- Force
- Opposite
- Equal
- Wall
- Bumper
- Cart
- Collision

When the cart has a collision with a bumper with Newton's 3rd law because there will be a opposite reaction.

CASCIA Grade 8 EOU Assessment 1 Task 1: Storing Grocery Carts

Prompt 2 Parts C & D Score Point 0

Prompt 2 Parts C & D Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part C. & Part D.	No aspect of the response is correct	Response includes one (1) of the three (3) key aspects	Response includes two (2) of the three (3) key aspects	Response includes the following key aspects: Part C - Describes that the force of the bumper causes the cart to bounce back Part D - Explains that the interacting forces are between the cart and the bumper - Explains the effectiveness of the design solution based on the application of Newton's third law of motion	NA

Score Point 0 (0/3 aspects met)

- Part C
 - Does **NOT** describe that the force of the bumper causes the cart to bounce back (i.e., The student inaccurately states that the cart “gives off” a force, and the bumper “makes a force.”).
- Part D
 - Does **NOT** explain that the interacting forces are between the cart and the bumper.
 - Does **NOT** explain the effectiveness of the design solution based on the application of Newton's third law of motion (i.e., The student states that the force is “not equal.”).

Part C.
The store owner selects Design Solution #2. After the vinyl bumpers are installed, the store owner tests the solution by pushing an empty cart toward the wall. When the cart hits the bumper, it slowly bounces back.

Describe the force that causes the cart to bounce back.

They bounce back because of the force that it gives off also the bumper is squishy so then it makes a force.

Part D.
Explain how the vinyl bumpers protect the wall from the force of the moving cart. Use Newton's laws of motion to describe the interacting forces.

Select from the following terms to include in your response:

• Direction	• Wall
• Force	• Bumper
• Opposite	• Cart
• Equal	• Collision

The vinyl bumpers run into the wall with the cart connected and then they make a force but they are not equal they are opposite and they go different directions from a collision.