

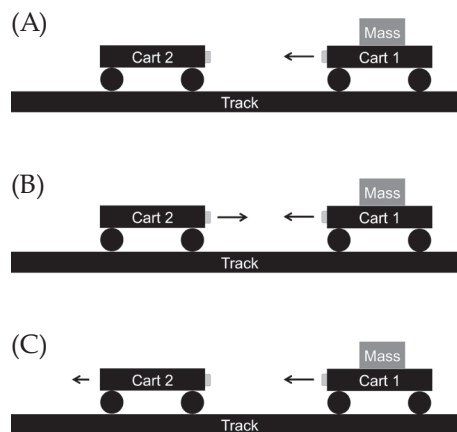
LAB 16

Checkout Questions

Lab 16. Linear Momentum and Collisions: When Two Objects Collide and Stick Together, How Do the Initial Velocity and Mass of One of the Moving Objects Affect the Velocity of the Two Objects After the Collision?

The images below show the motion of two carts on a track before they collide with each other. Assume that both carts stick together after the collision. Use this information to answer questions 1 and 2.

1. How would the magnitude of the velocity of the carts after the collision in situation A compare with the magnitude of the velocity of the carts after the collision in situation B? For situation B, assume the magnitude of the velocity for cart 1 equals the magnitude of the velocity for cart 2.
 - a. The velocity will be greater in A than in B.
 - b. The velocity will be less in A than in B.
 - c. The velocity will be equal in A and B.



How do you know?

2. How would the magnitude of the velocity of the carts after the collision in situation A compare with the magnitude of the velocity of the carts after the collision in situation C? For situation C, assume the magnitude of the velocity for cart 1 is greater than the magnitude of the velocity for cart 2.
 - a. The velocity will be greater in A than in C.
 - b. The velocity will be less in A than in C.
 - c. The velocity will be equal in A and C.

Linear Momentum and Collisions

When Two Objects Collide and Stick Together, How Do the Initial Velocity and Mass of One of the Moving Objects Affect the Velocity of the Two Objects After the Collision?

How do you know?

3. The mass of the carts did not change while they were moving during your investigation. Are there instances where the mass of a moving object changes as it moves?
 - a. Yes
 - b. No

Explain your answer using an example.

4. How does decreasing the mass of a moving object as it moves affect the momentum of that object?
 - a. It decreases the momentum of the object.
 - b. It increases the momentum of the object.
 - c. It has no effect on the momentum of the object.

How do you know?

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5. In science, there is a difference between inferences and observations.
 - a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation about linear momentum and collisions.

6. Scientists share a set of values, norms, and commitments that shape what counts as knowing, how to represent or communicate information, and how to interact with other scientists.
 - a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation about linear momentum and collisions.

Linear Momentum and Collisions

When Two Objects Collide and Stick Together, How Do the Initial Velocity and Mass of One of the Moving Objects Affect the Velocity of the Two Objects After the Collision?

7. Scientists often need to need to define the system under study as part of the investigation. Explain why this is useful to do, using an example from your investigation about linear momentum and collisions.
8. Scientists often need to track how matter moves within a system. Explain why this is useful to do, using an example from your investigation about linear momentum and collisions.
9. Scientists often focus on proportional relationships. Explain what a proportional relationship is and why these relationships are useful, using an example from your investigation about linear momentum and collisions.