



Push-A-Cart

STEM Sims

Lesson 1: How does Force Affect the Distance an Object Moves?

Isaac Newton was a great scientist who studied how and why things move. Newton's Laws of Motion told about the link between an applied force on an object and the distance the object moved when pushed. Can you get pushy and discover what Newton did?

Here are some definitions to help you in your investigation.

Motion - tells how something changes its position over time

Force - a push or pull

Newton - a unit for measuring force

Applied Force - a force exerted on an object

Distance - how far something moves

Meters - a unit that measures length or distance moved

Doing the Science

1. Start the Push-A-Cart Simulation by selecting the Sim tab.
2. Note the current force value (1 N) on the pushing tool.
3. Click on the "Push Cart" button.
4. Note and record in Table 1 the distance moved by the cart.
5. Click the "Reset Cart" button to return it to the start position.
6. Change the force value on the pushing apparatus to 1 N by clicking on the value on the pushing tool.

7. Click on the "Push Cart" button.
8. Note and record the distance moved by the cart.
9. Click the "Reset Cart" button to return it to the start position.
10. Change the force value on the pushing tool by clicking on the value until all five force values have been tested. Make sure to record your data in Table 1.

Table 1.

Trial	Force (N)	Distance Moved (m)
1	1	
2	2	
3	3	
4	4	
5	5	

Do You Understand?

1. Which force caused the cart to move the farthest distance?
2. Which force caused the cart to move the shortest distance?
3. How are applied force and the distance moved related?
4. Why did the cart stop moving after a few seconds?
5. How far do you think the cart would move if a zero (0) N force was applied to the cart?

6. The investigation you did is defined as a "cause-effect" study. What was the "cause" in this experiment and what was the "effect?"