Forces & motion

Lesson 1 of 2: Motion is not the same as a change in motion

Grades 6-8 | 45 minutes per lesson | Standard

Template sample

Name _____ Date _____

LEARNING GOALS

- Distinguish motion from change in motion.

QUESTION 01

In an ideal friction-free model, a cart is moving right. Net force becomes zero. Predict its motion over the next few seconds and explain.

QUESTION 02

A cart moves right while a constant net force acts left. Describe what happens first and what could happen later if the force continues.

EXIT TICKET

Is this always true: a moving object must have a nonzero net force in its direction of motion? Give a counterexample.

Explain your thinking with words, diagrams, or both.

Forces & motion

Lesson 2 of 2: Plan a fair comparison

Grades 6-8 | 45 minutes per lesson | Standard

Template sample

Name _____ Date _____

LEARNING GOALS

- Compare changes in motion while controlling mass or net force.
- Plan a one-variable investigation with meaningful measurements and controls.

QUESTION 01

Plan a comparison of how mass affects changes in motion under the same net force. Specify what you change, measure, and control, and explain how the force is established.

QUESTION 02

A light cart receives a small push and a heavy cart a much bigger push. The heavy cart speeds up more. Why does this not show that more mass always causes more acceleration? Improve the comparison.

EXIT TICKET

Two carts have different masses but equal constant net force, initial velocity and observation time. Which has the larger change in velocity? Name one condition to check.

Explain your thinking with words, diagrams, or both.