Performance Assessment—Unit 1.3

Down the Ramp

Grade 7 Science

Overview
Students describe a car's motion as it rolls down a ramp and across a table surface. Students do this task with the car in two different starting positions.

Content Standards
GLE 0707.11.3 Distinguish between speed and velocity.
GLE 0707.11.4 Investigate how Newton's laws of motion explain an object's movement.
Science GLE 0707.Inq.2 Use appropriate tools and techniques to gather, organize, analyze, and interpret data.
Science GLE 0707.Inq.5 Communicate scientific understanding using descriptions, explanations, and models.
MCS Learning Outcomes: Identify and describe the forces acting on a car. Demonstrate and describe applications of Newton's laws of motion.

Materials
Pegboard assembly, K'NEX car, tape, several books

Resources
See STCMS Energy, Machines and Motion, Lesson 1, Inquiry 1.8, for a description of this activity. Use the following questions on the instruction card:

1. Describe the car's motion when it is released from position 1 (high end).
2. Describe the car's motion when it is released from position 2 (low end).
3. Compare the car's motion when it is released from the two positions.
4. Use your knowledge of Newton's laws of motion to explain why they are different.

Assessment Rubric

Criteria	Advanced	Proficient	Below standard
Descriptions and Comparison	Correct use of both speed and acceleration	Correct use of either speed or acceleration	No mention or inappropriate use of speed and/or acceleration
Explanation	Provides evidence of deep understanding of Newton's laws and their application in both tasks Explains the roles of gravity, inertia, mass, and friction in the car's motion	Provides some understanding of Newton's laws and their application in both tasks Attempts to explain the roles of gravity, inertia, mass, and/or friction in the car's motion	Minimal reference to Newton's law No use or mostly inappropriate use gravity, inertia, mass, and/or friction to explain the car's motion