366856

Mass, Velocity, & Kinetic Energy Lab Activity

Aligned with All Published National Standards

ward's science

IMGN 250-8072

table of contents

Ward's in-house scientists are always on call to assist you with your questions. Our expert can provide personal solutions and product advice for your curriculum.
Email sciencehelp@vwr.com
or call 800-962-2660 to get started.

framework for K-12 science education © 2012

* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices

×	Asking questions (for science) and defining problems (for engineering)	×	Use mathematics and computational thinking
×	Developing and using models	×	Constructing explanations (for science) and designing solutions (for engineering)
×	Planning and carrying out investigations	×	Engaging in argument from evidence
×	Analyzing and interpreting data	×	Obtaining, evaluating, and communicating information

DIMENSION 2 Cross Cutting Concepts

×	Patterns	×	Energy and matter: Flows, cycles, and conservation
×	Cause and effect: Mechanism and explanation		Structure and function
×	Scale, proportion, and quantity	×	Stability and change
	Systems and system models		

DIMENSION 3 Core Concepts

Discipline	Core Idea Focus
Physical Science	PS2: Motion and Stability: Forces and Interactions
	PS3: Energy

× Indicates standards covered in activity

next generation science standards © 2013

NGSS STANDARDS

Middle School Standards Covered	High School Standards Covered
MS.PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	HS.PS2-1: Analyze data to support the claim that Netwon's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
MS.PS3-1: Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	HS.PS3-3: Design, build, and refine a device that works with given constraints to convert one form of energy into another form of energy.
MS.PS3-5: Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.	

(continued on next page)

standards and learning objectives

national science education standards © 1996

Content Standards (K-12)			
X	Systems, order, and organization		Evolution and equilibrium
X	Evidence, models, and explanation	X	Form and Function
X	Constancy, change, and measurement		

Physical Science Standards Middle School		Physical Science Standards High School	
X	Motions and Forces	X	Motions and Forces
X	Transfer of Energy	X	Interactions of Energy and Matter

X Indicates standards covered in activity

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
2. The Nature of Mathematics	2C: Mathematical Inquiry
4. The Physical Setting	4E: Energy Transformations
	4F: Motion
9. The Mathematical World	9B: Symbolic Relationships
11. Common Themes	11B: Models
	11C: Constancy and Change
	11D: Scale

activity objectives:

- Understand the concepts of potential and kinetic energy in objects, and recognize the relationship between kinetic energy, mass, distance travelled, and velocity.
- Make and test predictions based on experimental results.

time requirement:

This activity can be completed in one or two 45 minute class periods.