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Exploring Light's Properties Lab Activity

Aligned with All Published National Standards

ward's science

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standards alignment

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

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Middle School Standards Covered	High School Standards Covered
MS.PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	HS.PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other components and energy flows in and out of the system are known.
MS.PS3-2: Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	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.

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

Physical Science Standards Middle School		Physical Science Standards High School	
×	Transfer of Energy	×	Interactions of Energy and Matter

× Indicates standards covered in activity

learning objectives

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1B: Scientific Inquiry
4. The Physical Setting	4E: Energy Transformations
	4F: Motion
11. Common Themes	11A: Systems
	11B: Models
	11C: Constancy and Change

activity objectives:

- Describe what happens when light is reflected or refracted.
- Recognize that white light is made up of a mixture of many different colors of light.
- Use a compass to draw circles and use a protractor to measure angles.
- Explore light absorption and reflection.
- Synthesize (make) white light from colored light.
- Explore the straight line motion of light.

time requirement:

This activity can usually be completed in four 45-minute class periods.

Investigation 1: One 45-minute class period.

Investigation 2: Two 45-minute class periods.

Investigation 3: One 45-minute class period.

Each of the optional challenge activities takes an additional 20-30 minutes.