

New Dimensions in Science Education

PROGRAM OBJECTIVES	SUBJECT OBJECTIVES AND ACTIVITIES	LEGO Dacta PRODUCTS
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Topic: Physical Science (Kinetic and Potential Energy) Grades 4 - 5

<p>The students will recognize that objects in the classroom and home have potential and kinetic energy.</p>	<p>Subject Objective Describing and categorizing objects in the classroom and home which have potential and kinetic energy.</p>	<p>#9603, #1030 #917, #1032 #9606, #9604 #976, #977</p>
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Activity
Use various toys to classify and demonstrate examples of potential and kinetic energy.

<p>The students will recognize that inventions which use principles of potential and kinetic energy change our lives.</p>	<p>Subject Objective Identifying a problem, which involves potential and kinetic energy, creating an invention to solve the problem and predicting how the invention may affect our lives.</p>	<p>#9603, #1030 #917, #1032 #9606, #9604 #976, #977</p>
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Activities
Use various common materials to create inventions. Demonstrate inventions and share predictions. Examine inventions and modify them to create new ones and new uses.

<p>The students will be able to recognize that toy manufacturers rely on science and energy principles.</p>	<p>Subject Objective Generalizing that a moving object will change its speed or direction only when a force is applied.</p>	<p>#9603, #1030 #917, #1032</p>
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Activity
Use a variable incline to study the effects of gravitational force on a rolling ball.

Topic: Physical Science (Energy and Motion) Grades 6 - 8

The students will recognize that the products of science and technology often become controls on individual life-styles.

Subject Objective	#9603, #1030
Inferring and justifying the need for seat belts, air bags, head restraints, and other safety items in terms of kinetic energy developed by the automobile.	#917, #1032 #976, #977

Activity
Control and manipulate the variables of mass and velocity, to test the effects of force on toy cars.

Topic: Physical Science (Kinetic and Potential Energy) Grades 4 - 5

The students will realize that the benefits of new products often bring problems in other areas.

Subject Objective	#917, #1032
Inferring and predicting the benefits of using light-weight materials for building automobiles and the potential hazards that also result in terms of involvement of kinetic energy.	#976, #977

Activity
Develop an operational formula for velocity and speed.

The students will be able to use numbers and calculate the kinetic energy of an object and its relationship with the mass and velocity of objects.

Subject Objective	#9603, #1030
Controlling and manipulating to discover the relationship between mass, velocity, and kinetic energy.	#917, #1032

Activities
Use variable inclined planes and automobiles of different masses to calculate the investigate kinetic energy.