

S U M M A R I E S

INVESTIGATION 1: Potential and Kinetic Energy

In Investigation One, you began to explore the difference between potential and kinetic energy. During this Investigation, you:

1. determined the effect of mass and height on potential energy by rolling plastic and steel marbles down an inclined plane into a flowerpot.
2. determined the effect of the mass of an object on its ability to transfer kinetic energy by measuring how far the flowerpot moved.

Through these experiments, you concluded that:

1. the potential energy of an object increases as its mass increases.
2. the kinetic energy of an object increases as its mass increases.
3. the total mechanical energy of an object is the sum of its potential and kinetic energies.
4. the potential energy of an object decreases as its kinetic energy increases.
5. the potential energy of an object increases as its kinetic energy decreases.

INVESTIGATION 2: Energy of Sound

In Investigation Two, you investigated sound energy. During this Investigation, you:

1. placed an activated tuning fork in water to observe how sound energy moves through liquids.
2. plucked a rubber band with varying amounts of force to observe how amplitude affects volume.
3. placed an activated tuning fork against a ping-pong ball suspended on a string to observe how sound moves through objects.
4. held an activated tuning fork over pepper to observe how sound energy can move air.
5. tapped a pencil against beakers containing different amounts of water to explore the pitch of sound.

Through these experiments, you concluded that:

1. sound energy travels through solids, liquids and gases as vibrations.
2. sound energy takes the form of a wave.
3. increasing the amplitude of a sound wave increases the volume of the sound.
4. increasing the frequency of a sound wave increases the pitch of the sound.

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INVESTIGATION 3: Electricity and Energy

In Investigation Three, you explored electrical energy. During this Investigation, you:

1. created a simple circuit from a battery, wire, and a light bulb.
2. created a series circuit from a battery, wire, and two light bulbs.
3. created a parallel circuit from a battery, wire, and two light bulbs.
4. explored the differences and similarities between simple, parallel and series circuits and a flashlight circuit.

Through these experiments, you concluded that:

1. electrical energy is a form of kinetic energy.
2. a battery is a form of chemical potential energy that can be used to generate an electrical current.
3. a circuit must be complete for electrical energy to be converted from chemical potential energy.
4. circuits require conductors and energy sources.
5. electrical energy can be transformed into light energy and heat by a light bulb.

INVESTIGATION 4: Chemical Energy and Heat

In Investigation Four, you explored chemical energy and heat, two forms of kinetic energy. During this Investigation, you:

1. observed that heating sugar over high heat causes it to caramelize but that sugar on a table top or on the palm of a hand does not.
2. dissolving non-chlorine powdered bleach in water causes the water temperature to rise.

Through these experiments, you concluded that:

1. endothermic reactions must absorb heat from their surroundings in order to take place.
2. exothermic reactions release heat into their surroundings.
3. chemicals contain energy.

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INVESTIGATION 5: Energy and Motion

In Investigation Five, you explored how mechanical energy can result from the transformation of other forms of energy. During this Investigation, you:

1. compared the distance traveled by a model car without a source of power to a model car powered by air escaping a balloon.
2. observed how the reaction of baking soda and vinegar can release a gas that can push a stopper out of a falcon tube.
3. explored how the baking soda/vinegar reaction can be used to push a model car by forcing the falcon tube away from the rubber stopper.

Through these experiments, you concluded that:

1. gravity is a form of potential energy.
2. increasing the amount of potential energy increases the kinetic energy of an object.
3. chemical energy can be converted to mechanical energy.