

# ACTIVITIES

## Student Activities *continued*

- 3** to the cue ball to the 8 ball. Other similar examples: golf, baseball, kicking a soccer ball.
- C** Show students your collection of balls. Make a chart on the board using each ball. Predict how high the students think each ball will drop when dropped from the same height. Drop each of the balls you have collected on the sidewalk. Most balls won't bounce back higher than the height from which you dropped it. This is because of the Law of Conservation of Energy. The energy transfers as sound energy and heat energy.
- d** Show students the Seismic Accelerator. Take the top red ball OFF of the apparatus. Predict the height at which it will bounce back. Drop the ball and record the results. Now put the red ball back on the Seismic Accelerator.
- Ask students to predict the height based on the Law of Conservation of Energy. (hint: Each of the balls have energy that can be transferred to the red ball!
- The red ball will jump FIVE TIMES the height at which you dropped it!  
Amazing!



# T E A C H E R S G U I D E



**SEISMIC ACCELERATOR**  
ITEM # 7050-00

## ENERGY - MOTION

Check out this cool product! Watch the red ball rockets into the air up to five times the original drop height! Explore the Law of the Conservation of Energy with this educational but fun product!

# Materials

- Yard stick or measuring tape
- Seismic Accelerator
- Safety Goggles
- Collection of Different types of balls ranging in different sizes and materials: small, medium, large, bouncy, rubber, sports balls, plastic balls, ping pong balls, etc.
- Optional toys: Various Toys-yo-yo, matchbox/hot wheel cars, Frisbee, hula hoop, jump rope, slinky, paddle ball, etc.

# Goals & Objectives

## Students will:

- review the different forms of energy.
- review the difference between potential and kinetic energy.
- understand the law of conservation of energy.

# DISCUSSION

## Optional Real World Application/Discussion

- 1 Discuss the Law of Conservation of Energy in a 4-5 car pile up on the road. How is the energy transferred from one car to another.
- 2 Discuss the Law of Conservation of Energy in a game of bowling. For a fun treat, take the class out bowling!

# ACTIVITIES

- 1 Review the different forms of energy. Energy can be in different forms: gravitation, electric, heat, magnetic, sound.

- 2 Review the basics of kinetic and potential energy.

**a** Potential energy is “stored” energy. Kinetic energy is energy in motion or “active” energy.

**b** Hold a ball out at arms length in your hand. Review with students that the ball you are holding has potential energy. Drop the ball. As the ball drops, it now has kinetic energy.

**c** Ask students what other examples in everyday life demonstrate the difference between potential and kinetic energy. (a wheel barrow at the top of a hill, water behind a dam about to break, a hot wheel on a race track, etc.)



## Note

Please use Safety Goggles!

**d** Optional Activity: pull out different toys that you have collected and discuss which toys demonstrate potential and kinetic energy. Example:

A wind-up toy has potential energy. When it is released it has kinetic energy.

## Note

It is always best to DO an experiment ahead of time to be able to best present it to the class.



- 3 Introduce The Law of Conservation of Energy :

**a** Discuss the scenario of playing a game of pool. The 8 ball is positioned on the table, the cue stick (in the player’s hands) hits the white cue ball transferring the energy from the stick to the ball. The cue ball rolls to the 8 ball, hits the 8 ball, transfers the energy from itself to the 8 ball – the cue ball stops, the 8 ball rolls away powered by the energy that began with the player swinging the cue stick.

**b** The Law of Conservation of Energy states that energy cannot be created or destroyed but can be changed from one form to another. In the example above, the energy goes from the stick