

NOEO
SCIENCE
PHYSICS 2
EXPERIMENT GUIDE

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SCIENCE
PHYSICS 2
EXPERIMENT GUIDE**

Created by Dr. Randy Pritchard

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MOSCOW, IDAHO

Noeo Science Packages

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800-488-2034 | www.noeoscience.com
Email us at service@noeoscience.com

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WEEK 1: WHAT MAKES THINGS CHANGE

Experiment: Circular Motion

Our Question

How can we create uniform circular motion?

Materials

Included in Kit

- yarn

From Home

- Something weighted, like a battery or marble
- Copy paper
- Tape
- Scissors

Instructions

1. Twist a piece of paper into a cone, and tape it so it doesn't unravel.
2. Open the tip of the cone slightly--just enough so that the yarn can fit through.
3. Thread the string through up from the bottom of the cone through the tip, about an inch. Tape the inch of string down to the outside of the cone very securely.
4. Tie something weighted to the bottom of the string.
5. Hold the cone, and move the cone in a circle, to get the hanging object to start swinging in a circle.

6. Spin the cone steadily, and note the path of the object. What do you notice about it?

What We Learned

The hanging object, when you swung it enough times, in a steady enough motion, achieved uniform circular motion! Circular motion is incredibly important, and we'll be exploring it more in future experiments.



WEEK 1: WHAT MAKES THINGS CHANGE

Experiment: Matchbox Boat

Our Question

How can we demonstrate forms of energy?

Materials

Included in Kit

- Matchbox
- Rubber band
- Paperboard

From Home

- Bowl or tub of water

Instructions

Follow the instructions on page 107 of Science Encyclopedia.

What We Learned

This experiment demonstrated two different types of energy: potential, and kinetic energy. The twisted rubber band demonstrated potential energy, and the turn of the rubber band and paperboard demonstrated kinetic energy, which caused the boat to move.



WEEK 1: WHAT MAKES THINGS CHANGE

Optional Activity: Merry-Go-Round

Materials

From Home

- Plastic soda bottle, with cap
- 2 or 3 rubber bands
- Plastic straw
- Tape
- Paperclip
- Washer
- Pencil or chopstick
- Dried beans
- Paper
- Scissors
- Thread

Instructions

Follow the instructions on pages 112-113 of Gizmos & Gadgets.



WEEK 1: WHAT MAKES THINGS CHANGE

Experiment: Rubber Band Racer

Our Question

What is another way we can use potential and kinetic energy?

Materials

Should loop together 2 rubber bands

Included in Kit

- 2 rubber bands
- Paperclip

From Home

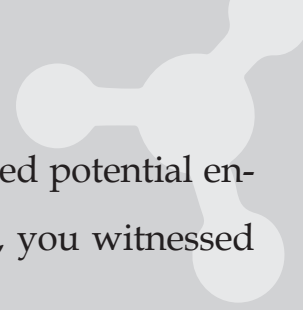
- Soup can, opened at both ends
- 2 DVDs (if you would rather not ruin some old DVDs, trace DVDs onto cardboard and cut them out)
- Duct tape
- Pencil
- Scissors
- (Optional) Washer

Instructions

Follow the instructions on pages 116-117 of Gizmos & Gadgets.

What We Learned

By twisting the pencil and rubber band you harnessed potential energy, and when you allowed the racer to roll away, you witnessed kinetic energy.





WEEK 2: HOW WE USE ENERGY

Experiment: Scary Surprises

Our Question

You can just use markers or paint to decorate the box, if you would like.

Materials

Included in Kit

- 2 rubber bands

From Home

- Small cardboard box (a toaster pastry box would work very well)
- Scissors
- (Optional) Construction paper
- Glue

Instructions

Follow the instructions on page 118 of Gizmos & Gadgets.

What We Learned

For every action there is an equal and opposite reaction. When you release the rubber bands, it lets them release and causes a reaction.



WEEK 2: HOW WE USE ENERGY

Experiment: Knock It Off!

Our Question

How can we move a marble without touching it?

Materials

Included in Kit

- 6 marbles

From Home

- Egg carton
- Lid (Could be from a milk carton or orange juice jug; anything with pretty high walls.)
- Scissors
- Tape

Instructions

Follow the instructions on page 128 of Gizmos & Gadgets.

What We Learned

This experiment demonstrates the law of the conservation of energy: energy cannot be created or destroyed, only transformed or transferred. When the marble that was rolling bumped into the other marbles, the energy of the moving marble was transferred, all the way to the marble at the end of the line. The marble at the end of the line moved because the energy from the first marble was transferred into it!



WEEK 2: HOW WE USE ENERGY

Experiment: Pinwheel Power

Our Question

How do we capture the power of moving air?

Materials

Included in Kit

- Construction paper
- Jumbo paperclip
- Cork
- Plastic straw

From Home

- Scissors
- Tape
- Cracker or snack box
- Glue
- Holepunch

Instructions

Follow the instructions on pages 132-133 of Gizmos & Gadgets.

What We Learned

The shapes of the pinwheel's sails caught the moving air, which caused the wheel to move, and helped the attached figure move as well!

