

# What Is Energy?

Investigation Data Sheet



## Observe Different Forms Of Energy At Work

Energy is the ability to do, move or change things. Any time we do work, we use energy. Our lives are filled with different forms of energy — heat, chemical, mechanical, electromagnetic and nuclear. These different forms of energy help us to heat homes, cook meals, power cars, operate machines and do many other things.

### Objective

Use pinwheels to demonstrate how different forms of energy work.

### Materials

To make the paper pinwheel, you will need:

- scissors
- a ruler
- single-hole puncher
- a stapler
- a pencil
- tape
- a 2 inch-long piece of straw
- a square of construction paper, sized 8 1/2" x 8 1/2"

To make the metal pinwheel, you will need:

- an aluminum pie pan
- scissors
- an adult helper

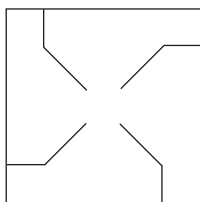
You will also need:

- a dinner plate
- a handful of clay
- 4 birthday candles
- a wooden skewer
- a paper clip
- a magnet

**Safety Notice:** All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

### Procedure

1. First, make a paper pinwheel. Take the square of construction paper and draw where you will be cutting the blades of the pinwheel. Use the diagram below as a guide for drawing the lines.



2. Cut the paper on your guidelines. Punch holes into the four corners and the center of the paper.
3. Fold each of the corners so they meet in the center of the pinwheel and staple them in place.
4. Slide the plastic straw piece through the hole in the center of the pinwheel. Set the pointed end of a pencil in the straw.

5. Next, get a metal pinwheel or ask an adult helper to make one for you (see materials list).
6. Use the lump of clay to roll five balls. Place four balls of clay along the edge of the dinner plate. They should be equally distant from each other. These four balls are candleholders. Place one candle in the center of each ball of clay so that it stands up. Place the fifth ball of clay in the center of the dinner plate. Push the flat end of a wooden skewer into the center ball. Face the metal pinwheel towards the plate and rest its center on the pointed end of the skewer. You are now ready to see if you can turn your pinwheels by using different forms of energy.

7. Use your hand to spin the blades of the paper pinwheel. What form of energy is being used?

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8. Spin the blades of the paper pinwheel by blowing on it. What form of energy is being used?

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9. Attach a paperclip to a blade of the paper pinwheel and use a magnet to make the wheel turn. What form of energy is being used?

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10. Ask your adult helper to light the candles on the dinner plate. Wait a few moments to see the blades of the metal pinwheel move. What form of energy is being used?

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### Conclusions

• Describe how heat energy caused the metal pinwheel to move.

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• When did the blade of the pinwheel spin the fastest? Why do you think this happened?

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### Extension

Design your own investigation to demonstrate how a form of energy does work.