

## Classroom Activity

# The Magic of Magnets

### Standards

Science (K-3): Science as Inquiry 1, 2, 3; Science, Technology and Society; Properties and Structures 1; Forms/Sources of Energy 3

Language Arts: 1, 3

Social Studies: Civics 3

### Skills

Observe, predict, reason, experiment, recording data

### Purpose

The students will be able to classify different objects according to their make-up.

The students will predict what materials are attracted by a magnet.

The students will observe how magnets react to each other and other objects.

The students will record data on their Science Log sheets.

### Background

Magnets attract iron and steel, but they can also attract cobalt and nickel. However, our five-cent coin, which is called a “nickel,” contains very little nickel metal (not enough to show much magnetic attraction).

Magnets are made of iron and steel, (usually) mixed with other metals such as nickel and cobalt. A piece of iron or steel which is touching a magnet becomes a magnet itself. The process of creating magnetism in this manner is called magnetic induction.

### What you need:

Set up 4 different centers.

#### Center One

Bar or horseshoe magnet

Pencil

Eraser

Paper clip

Spoon

Keys

Cloth

Pin or tack

Coins

Nail

Scissors

Combs

Aluminum can

Steel can

Plastic bottle

Any other object you want

#### Center Two

Iron or steel tacks

Staples

Bar magnet

Steel nail

#### Center Three

Horseshoe or bar magnet

Iron filings

Thin pieces of glass, Plexiglas, or other plastic

Thin pieces of wood

Paper

Cloth

Aluminum foil

# Classroom Activity

## Center 4

3 or 4 different size and shape magnets  
Paper clip  
Several 1/16" and 1/8" thick sheets of wood or cardboard

### What you do:

#### Center One

Touch the magnet to each of the things in the center.

Observe if the object sticks to the magnet.

Record your results in a table as follows:

#### OBJECTS ATTRACTED MATERIALS

Yes  No  comb

Yes  No  Rubber

Yes  No  pencil

Yes  No  wood

#### Extension

Have students continue their list at home with a magnet and find 5 other things a magnet is attracted to and 5 things a magnet is not attracted to.

#### Center Two

Spread some tacks on a sheet of paper.

Touch the point of the nail against some tacks. Does the nail attract the tacks?

Put the head of the nail against one end of the bar magnet and the point on the nail against some of the tacks. Does the nail attract the tacks?

Remove the head of the nail from contact with the magnet. What happens to the tacks?

Repeat the experiments, using a pencil instead of a nail.

#### Center Three

Spread some iron filings on top of a sheet of paper.

Place the horseshoe magnet over a thin pane of glass or Plexiglas or plastic.

Bring the glass and magnet down over the paper so that the glass is bearing down on the filings.

Raise the glass and magnet together, and slowly pull away the paper. What happens to the filings? Do they fall down?

Repeat, substituting other materials for the glass.

#### Center Four

Bring the paper clip close to each magnet. At a given distance each magnet will grab the clip. Can you detect any difference in the pull?

Now separate the paper clip from the magnet with a thickness of the cardboard or wood. Does the magnet attract the clip through the cardboard or wood? Does the strength of attraction remain the same?

Repeat the experiment using the different magnets.

Repeat the experiment using thicker cardboard or wood. What happens?

### Assessment

The students will record data in their science logs. Students need to answer the questions at each center. Students should predict what objects will be attracted by magnets.