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# MAGNETS: A FIRST LOOK

Grade Levels: K-4

17 minutes

AIMS MULTIMEDIA 2000

2 Instructional Graphics Enclosed

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## DESCRIPTION

Introduces the basic principles of magnets. Discusses what they do and do not attract, and shows what poles and magnetic fields are. Explains how a compass works and how to make a magnet. Touches on electromagnets and their many uses. Simple experiments reinforce the information; pauses for viewer discussion.

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## INSTRUCTIONAL GOALS

1. To explain that magnets attract things made of steel and iron.
2. To describe how magnets can attract things made of iron and steel through things made of other materials, such as paper and glass.
3. To explain that magnets have poles.
4. To demonstrate that two poles that are alike repel each other.
5. To demonstrate that two poles that are not alike attract each other.
6. To demonstrate how to make a magnet.
7. To describe how compasses work.
8. To describe how electromagnets work.

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## VOCABULARY

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|-------------------|---------------|
| 1. compass        | 5. north pole |
| 2. electromagnet  | 6. pole       |
| 3. magnet         | 7. south pole |
| 4. magnetic field |               |

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## DURING SHOWING

### Discussion Items and Questions

1. Distribute pins and plastic buttons to groups of students and have them mix them together. Each group should also have a magnet. Encourage students to brainstorm and experiment how to separate out pins from a pile of pins and plastic buttons.
2. Provide groups of students three mystery boxes, only one which contains something made of iron or steel. Identify which of three boxes contains steel paper clips.

3. Distribute one of each marked and unmarked magnets to groups of students. Have students identify the poles of an unmarked magnet using a magnet whose poles are marked.

## **AFTER SHOWING**

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### **Discussion Items and Questions**

1. What kinds of things do magnets attract? Follow up discussion with the "Magnet Attraction" worksheet. (See INSTRUCTIONAL GRAPHICS.)
2. Must a magnet touch something to attract it?
3. Can a magnet attract things made of iron or steel through other things?
4. How is the earth like a magnet?
5. How does a compass work?
6. What happens when you put the north pole of one magnet near the north pole of another magnet, or if you put the south pole of one magnet near the south pole of another?
7. What happens when you put the north pole of one magnet near the south pole of another?
8. How does an electromagnet work?
9. How are electromagnets different from other magnets?
10. Describe some uses for magnets.

### **Applications and Activities**

1. Ask students to look around their homes to see if they can find other uses of magnets.
2. Ask students to put a paper clip on a steel baking pan. Then ask them to see if they can move the paper clip using a magnet under the pan.
3. Magnets can be used to find iron in iron-enriched foods. Have the students grind up an iron-enriched cereal. Then stir the ground cereal with a magnet. Ask them to carefully examine the magnet.
4. Experiment and play with some of the different kinds of magnetic levitation toys that are available from stores.
5. Review facts about magnets using the "Magnet Code" worksheet. (See INSTRUCTIONAL GRAPHICS.)

## **SUMMARY**

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What kinds of things do magnets attract?

Students in the video test magnets with different materials and determine that magnets attract things made of steel and iron.

They are asked how they could sort out all the pins from a pile that also includes plastic buttons.

Next, the video demonstrates that a magnet doesn't need to touch something to attract it.

Viewers are shown three boxes whose contents they cannot see. Students are asked how they could determine which box contains the steel paper clips.

They are shown sprinkling iron filings over a piece of glass placed on top of a bar magnet. The video demonstrates how the filings indicate where the magnet's magnetic field is. The filings also show how the field is strongest at the magnet's poles.

Graphics illustrate how the earth also has magnetic fields that are stronger near its poles and describes the magnet's north and south poles. Then it shows how a compass is a kind of magnet.

Using bar magnets, students demonstrate how like poles repel each other and unlike poles attract each other. Examples of horseshoe and round magnets are shown.

The video then poses another problem, showing one bar magnet whose north and south poles are marked and another whose poles are not marked. Viewers are asked how they can identify the poles of the unmarked magnet.

The video explains how to make a magnet by rubbing a needle with a magnet and how one magnet can make other things made of iron or steel magnetic.

The video also demonstrates how to use a battery to make an electromagnet.

The final segment shows how magnets are used in many things that students find around them, including doorbells, tape recorders, and telephones.

A brief summary reiterates the main points.

## RELATED RESOURCES

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### Captioned Media Program

- Magnets! Magnets! #2198

### World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **CANADA SCIENCE AND TECHNOLOGY MUSEUM**  
[http://www.science-tech.nmstc.ca/english/schoolzone/info\\_magnets.cfm](http://www.science-tech.nmstc.ca/english/schoolzone/info_magnets.cfm)
- **COOL EXPERIMENTS WITH MAGNETS**  
<http://www.execpc.com/~rhadley/magindex.htm>

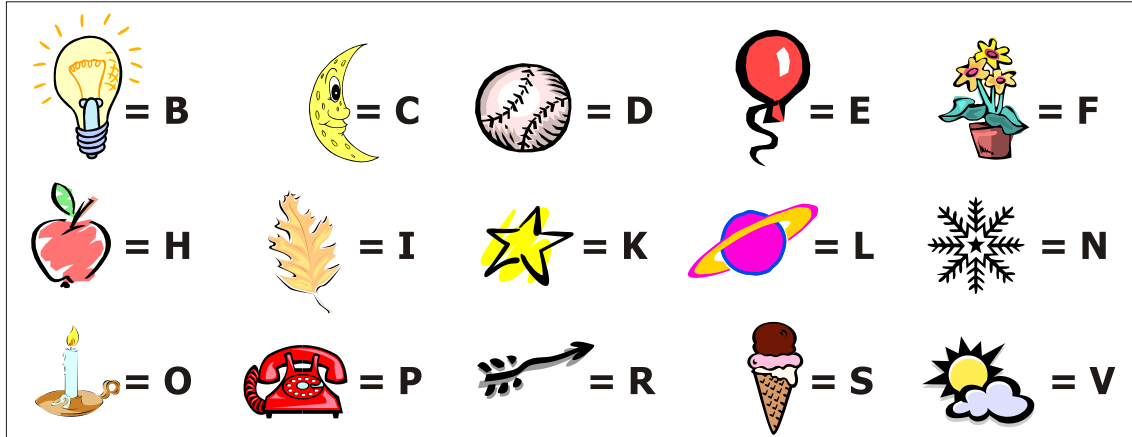
## INSTRUCTIONAL GRAPHICS

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- MAGNET CODE
- MAGNET ATTRACTION

# Magnet Code

Directions: Use the Secret Code below to read the facts about magnets.



1. Lodestone is a \_\_\_\_\_ that acts like a magnet.



2. The \_\_\_\_\_ were the first people to make a compass.



3. \_\_\_\_\_ use magnets to find their way at night.



4. A school \_\_\_\_\_ rings by using magnets.



5. A magnetic field is always \_\_\_\_\_.



6. The Earth's \_\_\_\_\_ are never in the exact same place.



