

Subject: Science

Grade: First

Standard: #3 The Physical Setting

Key Concept: Magnetism is a force of nature.

Generalization: Magnets can be used to make some things move without being touched.

Background:

This is an introductory lesson on magnets. The teacher should use a pre-test to determine group membership. Questions should ascertain whether students know what materials are attracted by magnets, the meaning of “attract” and “repel” with respect to magnets, the concept of poles, and magnetic fields.

Students who do not have an understanding of what a magnet is and what materials are attracted by magnets should be placed in the **Basic** tier. Those who show an understanding of magnetic attraction should be placed in the **Grade Level** tier. Students who understand “attract” and “repel,” and the concept of magnetic poles should complete the activities in the **Advanced** tier.

This lesson is tiered in **content** according to **readiness**

Tier I: **Basic**

What do magnets do? Students are given bar magnets and a variety of objects. Students determine whether or not the magnet can pick up the object. Students record their answers on a prepared chart or table that lists the name of each object down the side and Yes/No across the top. Students should place a check in the appropriate column and write a statement about the types of objects that are attracted by magnets.

Tier II: *Grade Level*

A magnet's power is contained within its magnetic field. For each group you will need a clear plastic container about the size of an index card, although size isn't critical, lid for the container, spoon, two horseshoe magnets and two bar magnets. In advance, prepare a mixture of $\frac{2}{3}$ cup clear honey and 1 teaspoon of iron filings. Stir until completely mixed. Have students pour this mixture into the clear plastic container. Tape may be used to anchor the lid to the container to prevent spills.

Students place a set of magnets under or at the sides of the container, observe and record the results. Students repeat with the other set of magnets. Explain to students that the filings are more concentrated at the poles of the magnets.

Have students take two bar magnets and hold two North poles together and describe the results. Repeat with two South poles. Repeat with one North and one South pole. Repeat the entire investigation with the horseshoe magnets.

See [My First Batteries and Magnet Book](#), ISBN: 1-56458-133-0, for extensions of the two experiments.

Tier III: *Advanced*

Does the size of a magnet affect its strength? Students need a variety of magnets in various sizes and strengths, and a box of paper clips. Students should design a chart that lists the type of magnet, a prediction about the number of paper clips it will pick up, and the actual number picked up. Before beginning, students should hypothesize about the relationship of size and strength of magnets. Upon completing the experiment, they should write a conclusion based on the hypothesis and their data.

Assessment:

The teacher may assess through observation while moving through the groups. Completed data sheets from the groups may be checked for accuracy. The teacher should conduct a whole group discussion so students may share results. In addition, teacher should use questioning strategies to lead students to the understanding that in each investigation, magnets made objects move without directly touching them.