

The Magnetometer

Type of Lesson: Hands-on activity

Time Needed: 25 minutes

National Standards Addressed

- Physical Science, Grades K-4: Magnets attract and repel each other and certain kinds of other materials.
- Science and Technology, Grades K-4: Tools help scientists make better observations, measurements, and equipment for investigations. The help scientists see, measure, and do things that they could not otherwise see, measure and do.
- Unifying Concepts and Processes, Grades K-12: Models are tentative schemes or structures that correspond to real objects, events, or classes of events and that have explanatory power.

Kentucky Standards:

- SC-E-1.3.4 - Magnets attract and repel each other, and magnets attract certain kinds of other materials (e.g., iron).

Objective: Students will build an instrument capable of detecting a magnetic field and magnetic polarity.

Materials

4-inch piece of plastic straw
2 straight pins
masking tape
sewing thread
magnet

Procedure

1. Use a small piece of masking tape to hang two straight pins from a piece of thread. The pins should point in opposite directions and hang horizontally.
2. Push the thread through the straw. Tape the thread to the top so that the pins have just enough clearance to swing freely at the bottom.
3. Stroke the pins from left to right several times with a permanent magnet.
4. Establish and mark the north-seeking end.

Notes to the Teacher

Magnetic fields are invisible; we can only see the effects of the magnetic force. Magnetometers are devices used to detect and measure the strength of magnetic fields. Compasses are basically magnetometers with directions marked on them. A magnetometer will dip or point toward a source of magnetism. Have students use their magnetometer to find things in your room or at home that are magnetic.

Have students tackle these exercises which will have them utilize their magnetometers: [Terrabagga Activity](#) and [Magnetometer Extensions](#).

Need More Information? Try Using *Windows to the Universe*

Please use these links for further ideas or more information:

[The Earth's magnetic field](#)

[The force of magnetism](#)

[Magnetic field](#)

[Magnetic material](#)

[Magnetism overview](#)

[Magnetometer Extensions](#)

[Planetary magnetism](#)

[Terrabagga Activity](#)