

Magnets: What's The Attraction?

Description: In this activity, students will identify what objects a magnet will attract and identify materials through which a magnet can attract.

Please note: If there are any computers in the room where the magnets will be used, it is extremely important that the magnets be kept away from the computers. Doing otherwise could cause damage to your computers. Thus it is important that this activity be carefully supervised.

Age Group: All.

Time Required: Approximately 15 minutes.

Recommended Group Size: 2



Key Questions: What objects will be attracted to a magnet? What materials can be placed between a magnet and an object without affecting its ability to attract the object?

Content Expectations Addressed: Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.

Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.

Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision-making and the application of science through history and within society.

Magnets can repel or attract other magnets. Magnets can also attract certain non-magnetic objects at a distance.

Teacher Background: A magnet is a seemingly ordinary piece of metal or ceramic that is surrounded by an invisible field of force which affects any magnetic material within it. All magnets have two poles. When magnets are brought together, a north pole always attracts a south pole, while pairs of like poles repel each other. Bar magnets are the simplest permanent magnets. A

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magnet is able to pick up a piece of steel or iron because its magnetic field flows into the metal. This turns the metal into a temporary magnet, and the two magnets then attract each other. Inside a metal such as steel or iron are small magnetic regions called domains. The magnetic field lines up their poles, which otherwise cancel each other out, so that the metal becomes a magnet.

Science Process Skills: Predicting, collecting data, recording data, comparing and contrasting.

Materials: Magnets, nail, pin, eraser, penny, crayon, paper clip, chalk, screw, bolt, ping pong ball, key, twist tie, rubber band, washer, popsicle stick, paper

Procedure: Students are given a collection of various objects, such as a nail, pin, an eraser, a penny, a crayon, a paper clip, etc. Each student is asked to separate the objects into two categories based on whether the object will or will not be attracted to a magnet.

Next the student takes a magnet and tests his/her predictions to identify which objects the magnet does attract. Then, students are given a piece of paper and asked to predict whether the magnet will attract the paper clip through the paper. They test their predictions.

The procedure can be repeated substituting a piece of wood, a piece of plastic, a piece of glass, etc. for the paper.

Resources:

Ardley, Neil, Exploring Magnetism

Catherall, Ed. Fun With Magnets

Challand, Helen J. Experiment With Magnets

How Do Magnets Work Science Mini-Unit: Magnets, Frank Shaffer Publications, Inc. Merrill, 1985

Macaulay, David, The Way Things Work

Magnetism And Electricity A Fourth Grade Unit Kit Supporting the Battle Creek Area Common Core Science Curriculum