

Learning A–Z	level L	Multi-level	N/A
Grade	2	Word Count	386
Lexile	740L	Nonfiction • Informational	

Refer to the Focus Question on page 2 of this title to guide discussion and support additional learning connected to the text.

The Power of Magnets introduces the reader to the science behind magnets. Through examples and a hands-on activity that encourages students to make their own magnet, readers will learn about the practical applications of magnets. Photographs and diagrams support the text.

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The Power of Magnets

Written by Elizabeth Austin



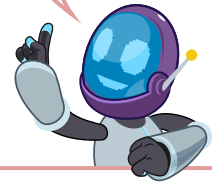
The Power of Magnets



Written by Elizabeth Austin

Focus Question

Why are magnets important?



Words to Know

attracts

code

current

electricity

force

generators

invisible

magnetism

repel



In a junkyard, a crane with a giant magnet lifts a pile of scrap metal. No natural magnet could ever lift such heavy loads, but electricity controls this magnet's strength. The user can switch on the electricity to make the magnet pick up metal and turn off the electricity to make the magnet drop the metal.

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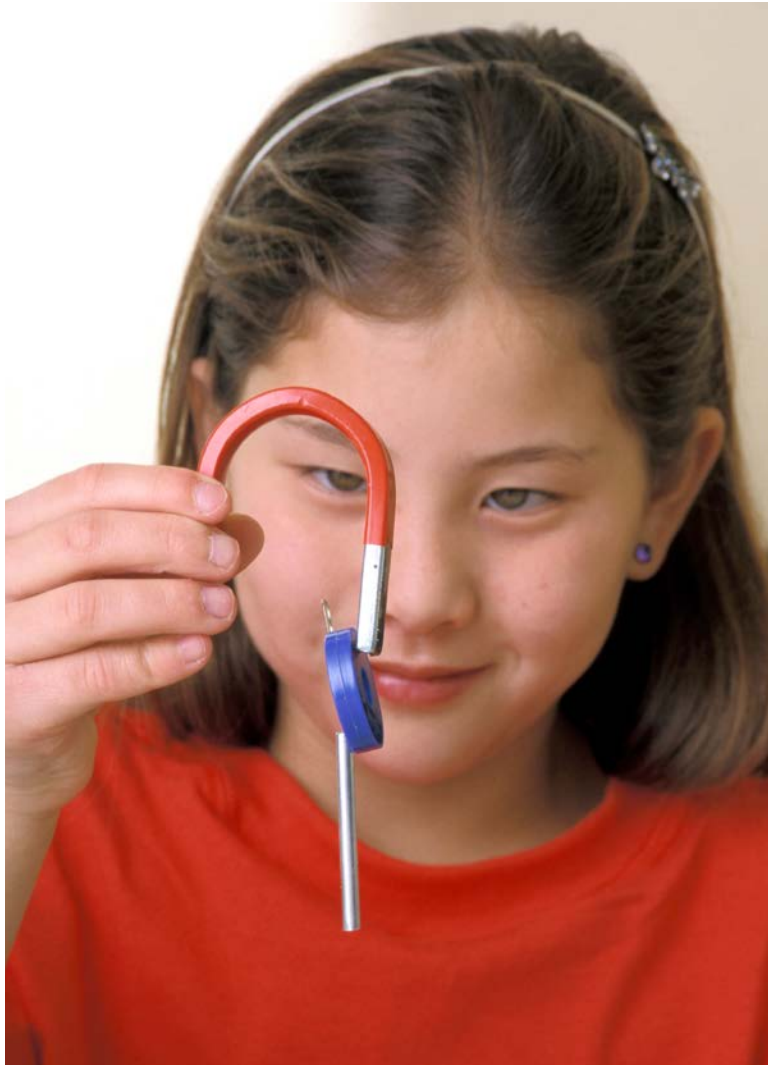
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Invisible Magnetism



Many objects around your home use magnets.

A magnet is a special metal that **attracts** other metals. Look around your home and try to find one. Did you know that there may be hundreds of magnets in your home? You can't see most of them. But they're inside your telephone, blender, and hair dryer. Computers are full of magnets. And most of the **electricity** that runs these things comes from **magnetism**.

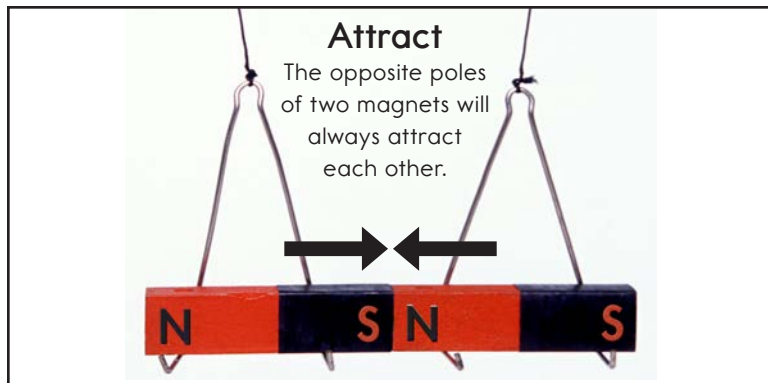


Magnetism is a **force** that's **invisible**. This force only pulls on some metals, such as iron. A magnet will not pull on copper—or on wood, either.

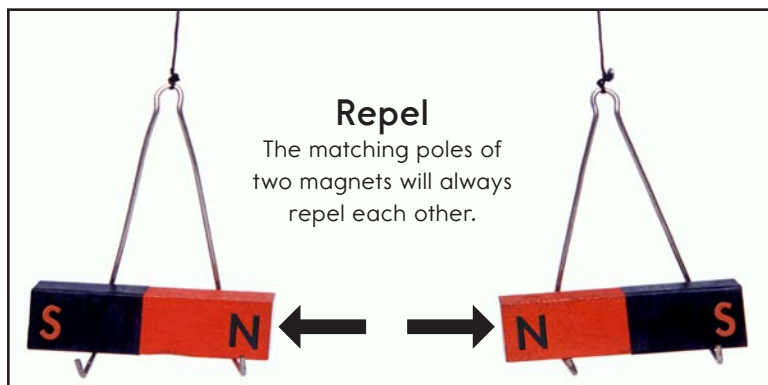
Magnetism flows through a magnet. It goes in one end and out the other. These two ends are the north and south poles. The force flows out the north pole and back in the south pole.



Metal filings cling to the north (N) and south (S) poles of a bar magnet.



You can use two magnets to feel magnetism. The north pole of one magnet will attract the south pole of the other one. Now, try to push the two north poles together. It isn't easy! Two north poles will always **repel** each other. So will two south poles.



Magnets Everywhere

Magnets have many modern uses. One credit card can have millions of magnets. These magnets are tiny—no bigger than grains of powder. Each tiny magnet points in its own direction. The different directions of the magnets make a **code**. Computers read the code. Putting a credit card near a powerful magnet can mess up or erase the code.

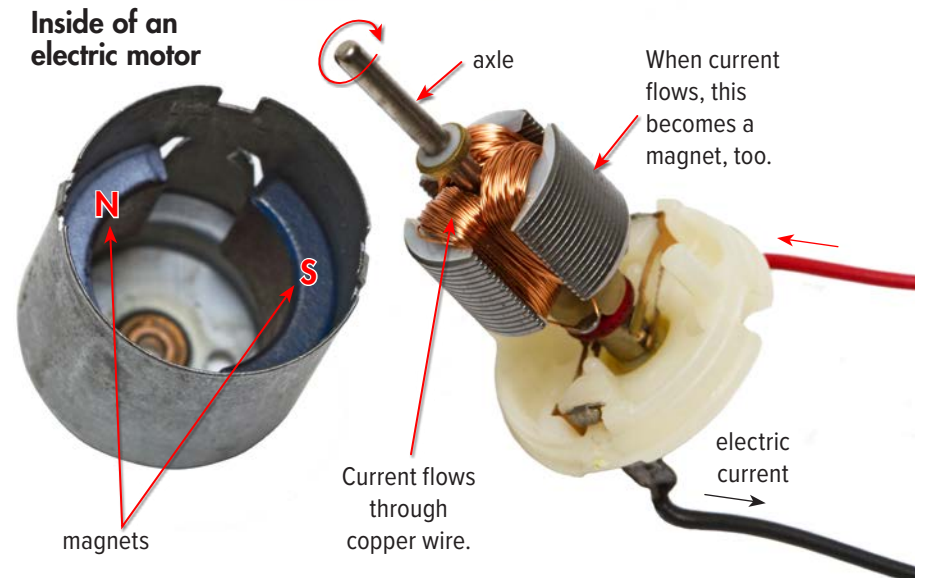
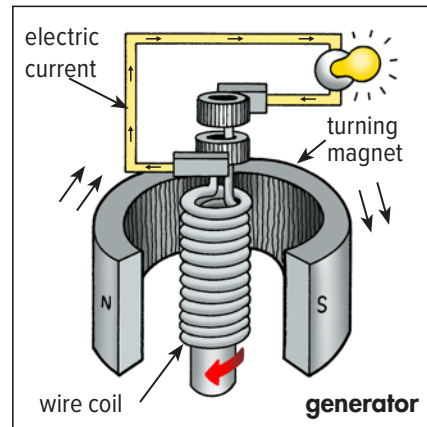


At a store, when someone swipes a credit card, a computer reads that card's code. The code is made of millions of tiny magnets.



These dam generators use the force of river water to spin magnets and make electricity.

Magnets help make, and use, electricity. Almost all the electricity you use comes from machines called **generators**. Generators make electricity by spinning magnets around coils of wire. The magnetism makes an electric **current** in the wire.



Electric motors work like generators in reverse. They use electric current and magnets to spin an axle. The axle can be used to turn fans, cutting blades, or wheels. Fans, blenders, and remote-control cars use the power from these moving parts.

Magnets allow some high-speed trains to float above the track. The trains actually fly as they travel. This makes for a fast, smooth ride.



Instead of having wheels like regular trains, this train in China floats on a magnetic cushion between the train and track. It travels at a top speed of about 267 miles (430 km) per hour.

Doctors use a very powerful magnet to look inside a person's body. It helps doctors see cancer and other kinds of illness without having to cut open the person.



MRI brain scans like this one create dozens of detailed pictures for doctors to study. The magnetic field produced by an MRI is about 10,000 times greater than Earth's.



Magnets help kids do lots of things they like to do.

Magnets are fun. They're also really useful. Every time you watch television or even turn on a light, you are using magnets.

Make your own magnet!

You will need a large iron nail, a strong magnet, and several paper clips.

- 1 Hold the nail by one end and slide it across the magnet in one direction. Keep sliding it over and over.



- 2 After 20 to 30 times, touch the nail to the paper clips. Does the nail pick up the clips? How many can it pick up at once? Keep stroking the nail along the magnet to make the nail's magnetic force stronger. See if you can pick up all the paper clips at once.



Glossary

attracts (*v.*) page 4
pulls toward

code (*n.*) page 8
a system of letters, symbols, or signals that have special meaning and are used to send messages

current (*n.*) page 9
electricity that flows in a certain direction

electricity (*n.*) page 4
an electric current that is used as a source of power

force (*n.*) page 5
the strength or energy that moves an object

generators (*n.*) page 9
machines that turn motion into electricity

invisible (*adj.*) page 5
unable to be seen

magnetism (*n.*) page 4
a force that pushes and pulls certain metals

repel (*v.*) page 7
to push away