



# Be a Scientist!

Make a magnet! Get a strong magnet and a thin metal bolt. Rub the bolt across the magnet in one direction fifty times. Pick up a staple with the bolt. You made a magnet!

Design a test for your magnet. What can it pick up? What else can you test? Now make another magnet with a new bolt. Change one thing about how you make the magnet. Then repeat your test. How did the results change?



## Beyond the Book

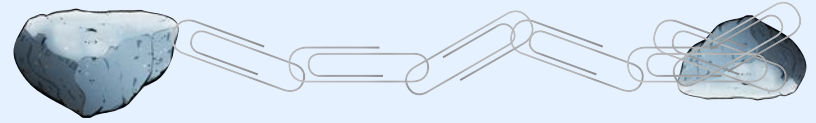
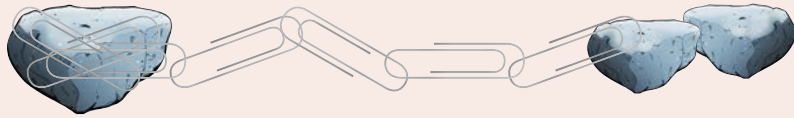
Go to two places with sand. Find out which kind of sand has the most magnetite.

FOCUS Book

# Magnetic Rocks



: Science A-Z 



# Magnetic Rocks



## FOCUS Question

What kinds of natural materials stick to magnets?

Cause and Effect

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Reading Levels	
Learning A-Z	J
Lexile	470L
Correlations	
Fountas and Pinnell*	J

\*Correlated independent reading level

## Metal and Magnets

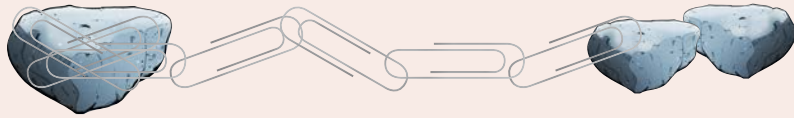
Have you ever played with magnets? Maybe there are magnets on your refrigerator. Some toys also have magnets in them.

A magnet is a special piece of metal. It pulls on, or *attracts*, other pieces of metal.

But where do magnets come from?



The properties of magnets make them fun.



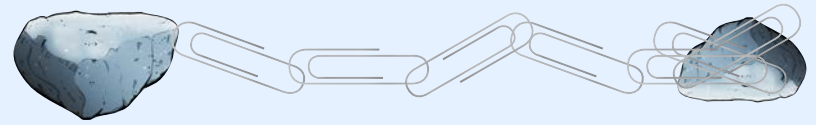
Magnets come from rocks.

Some rocks are made mostly of metal. These metal rocks are attracted to magnets. That means they stick to magnets.

Other metal rocks *are* magnets! That means they attract certain kinds of metal.



This rock and this magnet are attracted to each other.



## Magnetite

*Magnetite* is a special kind of rock. It sticks to magnets.

Magnetite is made of a metal called *iron*. The iron is what sticks to magnets.

Lots of rocks have some iron in them. But magnetite is almost all iron.

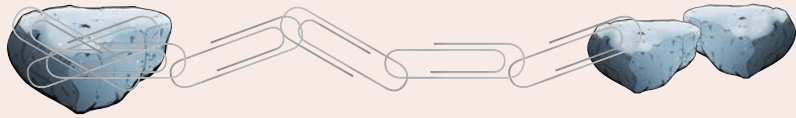
### Try This



Some sand has small bits of magnetite in it. Run a magnet through sand. See if the magnet picks up any small, dark pieces. You found magnetite!







Some people use big magnets to find magnetite in the ground. This helps them find iron.

People use iron to make many things. Cars, buildings, and bridges are made with iron. Machines and tools are made of iron, too.

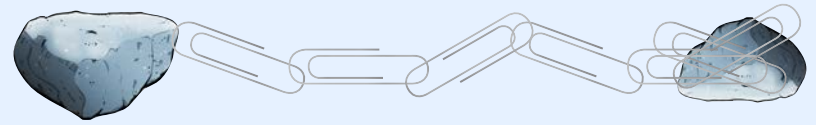
Magnets also help pull iron out of other rocks that people don't want.



Rocks with metal in them are called *ore*.

### Do You Know?

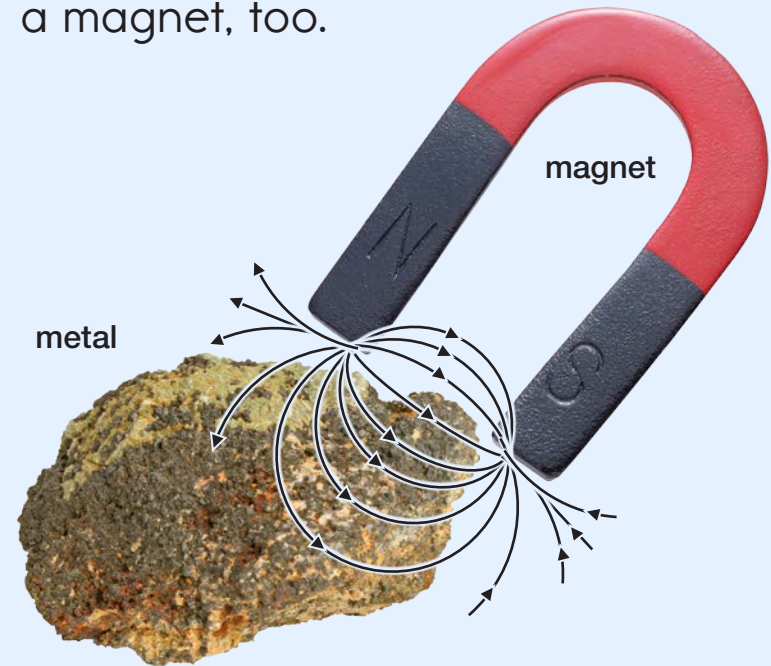
Iron is in your blood. You get it from many foods you eat. Your body uses iron to stay healthy.



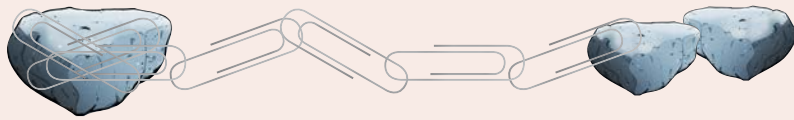
## Making Magnets

Every magnet has a *magnetic field* around it. You can't see it, but it's there. A magnet attracts certain metals if they come into its magnetic field.

You can put metal in a strong magnetic field, like next to a big magnet. If it's the right kind of metal, it will become a magnet, too.



The magnetic field makes tiny bits of the metal line up. Soon, the metal is a magnet with its own magnetic field.



## Natural Magnets

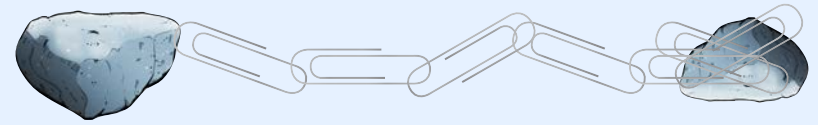
Some rocks are already magnets. These rocks are called *lodestone*. Lodestone can push, pull, and pick up metal.



lodestone

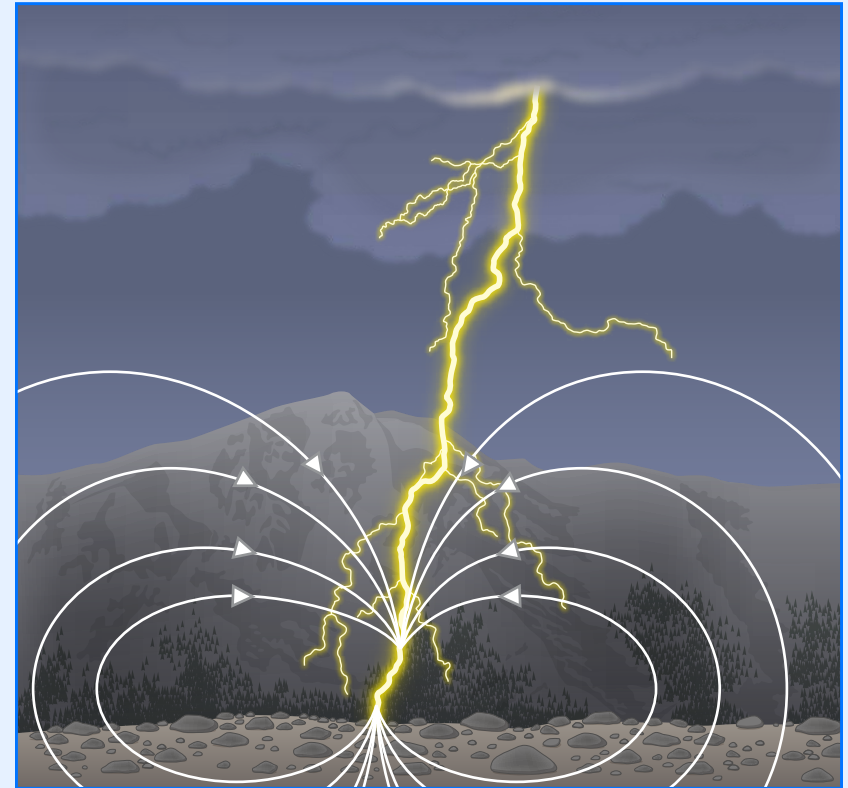
Lodestone was the first kind of magnet people ever used. Long ago, people in China made the first *compasses* from lodestone. A compass tells you which way is north.

This compass made of lodestone is shaped like a spoon. People in ancient China made it.

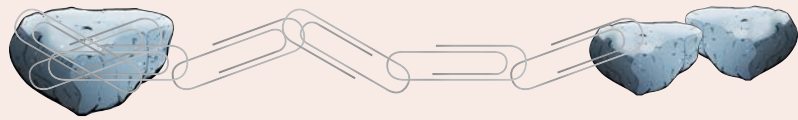


How did lodestone become magnetic? Some people think lightning can change rocks into magnets.

Lightning has a strong magnetic field around it. It may be able to turn magnetite into lodestone during a strike.



The magnetic field around lightning may be able to turn some rocks into magnets.



## Space Rocks

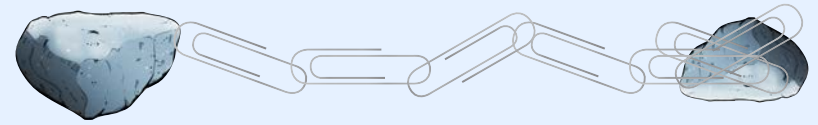
Most magnetic rocks come from inside Earth. But some come from very far away.

*Meteorites* are space rocks. They fall to Earth from space. Many meteorites are made of iron. The iron sticks to magnets.

With a strong magnet, maybe you can find a space rock!



These meteorites are shiny and made mostly of metal.



## Read-Think-Write

Write or draw your answers on separate paper. Use details from the book to support each answer.

- 1 What is *magnetite*?
- 2 How do people use iron?
- 3 How is lodestone different from other kinds of magnetite?
- 4 Why does the book include a page about meteorites?



### FOCUS Question

What kinds of natural materials stick to magnets? Imagine you found a rock near your house. How could you tell if the rock was magnetite? How could you tell if it was lodestone?

