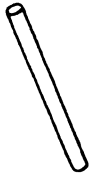


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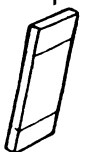
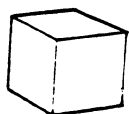




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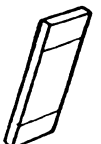
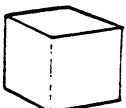
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Introduction

What Is Science?

What is science to young children? Is it something that they know is a part of their world? Is it a textbook in the classroom? Is it a tadpole changing into a frog? Is it a sprouting seed, a rainy day, a boiling pot, a turning wheel, a pretty rock, or a moonlit sky? Is science fun and filled with wonder and meaning? What is science to children?

Science offers you and your eager children opportunities to explore the world around you and to make connections between the things you experience. The world becomes your classroom, and you, the teacher, a guide.

Science can, and should, fill children with wonder. It should cause them to be filled with questions and the desire to discover the answers to their questions. And, once they have discovered answers, they should be actively seeking new questions to answer.

The books in this series give you and the children in your classroom the opportunity to learn from the whole of your experience—the sights, sounds, smells, tastes, and touches, as well as what you read, write about, and do. This whole-science approach allows you to experience and understand your world as you explore science concepts and skills together.



What Are Magnets?

Magnets occur naturally in the ground. Some rocks in the ground are made of an iron ore called *magnetite*. They were called “magic stones” many centuries ago because it was discovered that a piece of this stone would point north and south while suspended from a string. A natural magnet is called a *lodestone*, which means “leading stone.” When brought near iron items, it grabs them. Lodestones have north and south poles just as manufactured magnets do.

Using a hands-on, minds-on science approach to learning, your children will experience the wonderful world of magnets through the activities in this book. The activities have been divided into five main question sections: What is magnetism? How strong are magnets? What is a magnetic field? Will a magnet attract or repel? What are some uses of magnets? Each main question section offers children the opportunity to explore via discovery and simulation experiences the answers to these, as well as other, posed questions. Each question section also includes a child “do-along” book to carry a child’s learning beyond classroom hours. Our desire is for you and your children to fall in love with learning while investigating the amazing world of magnets.

Just the Facts

Thousands of years ago, the ancient Greeks and Romans were aware of magnetism. They saw that a mysterious black stone, found in Asia Minor, had a force that made certain metals cling. They also noticed that when a piece of this stone was held by thread, one end always pointed to the north. Such a stone could be used as a compass for indicating direction. The Greeks and Romans had difficulty in explaining these strange happenings. They believed that the power of the black rock was caused by a supernatural force. From this, many legends arose in the ancient world. One legend told about the shepherds from the Greek Province of Magnesia. The shepherds carried wooden staffs and covered the ends with iron so they would not wear out so quickly on the rocky ground. As one shepherd tended to his flocks on Mount Ida, he noticed that some of the tiny stones in the soil clung to the iron tip of his staff. He had a hard time pulling the stones off. He called these stones “magnets” after his homeland. Other Greeks called this rock “magnet stone,” or magnes, and thought it had magical properties.

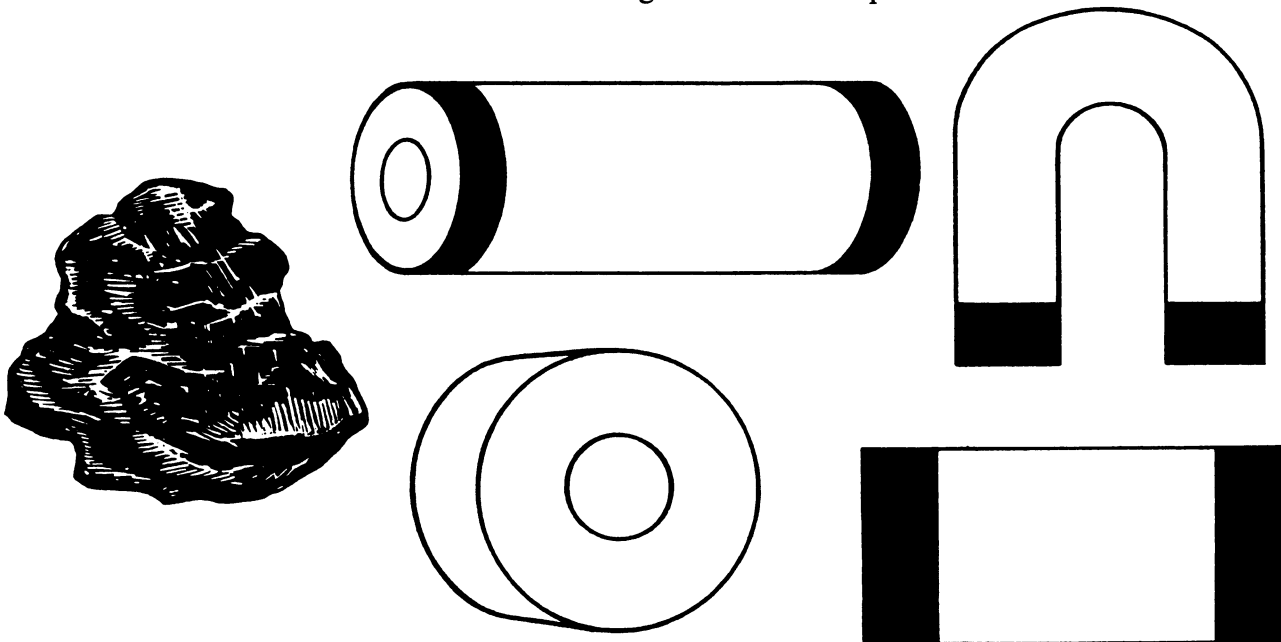
The ancient Chinese also discovered these black stones and learned that when they hung an elongated stone of this type from a string, it always pointed north and south. They called these stones “The Stone That Picks Up Iron” and *Tchi-nan*, the chariot of the south. Legend says it guided many caravans across the Tatory grasslands of Asia.

In reality, these stones are not stones at all, but pieces of iron ore.

During the Middle Ages, people were still fascinated by magnets, but they had very little idea how they worked. Even those with scientific knowledge had strange ideas about the powers of magnets.

Finally, at the end of the 16th century, an English scientist named William Gilbert began to examine the way magnets work. He suggested that the earth itself was a huge magnet, with poles like an ordinary magnet.

The mineral was generally known in English as “lodestone.” The name lodestone signifies “leading stone” and refers to one of the first uses of magnetism—the compass.

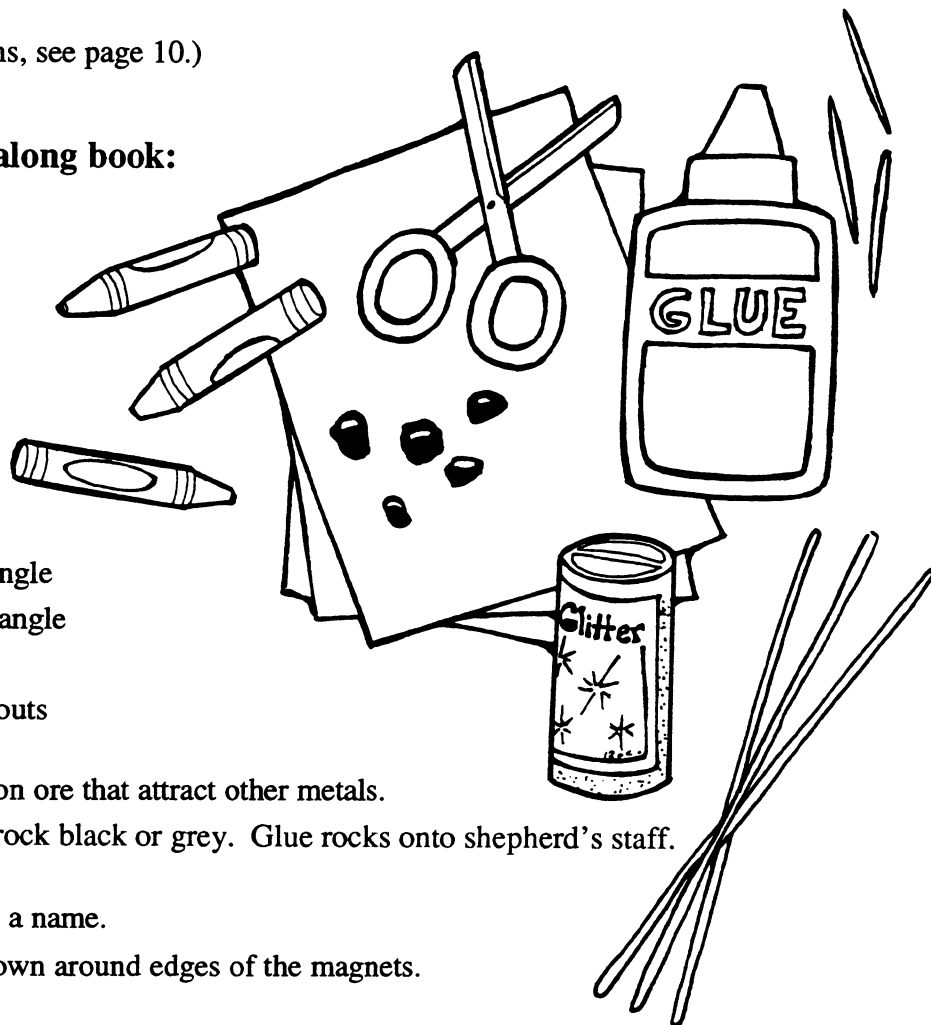


Let's Look at Magnets

(For general book-making directions, see page 10.)

Supplies needed for this do-along book:

- glue
- scissors
- crayons
- construction paper
- small black pebbles
- pipe cleaner
- red glitter
- blue glitter
- red felt, cut into isosceles triangle
- blue felt, cut into isosceles triangle
- toothpicks
- cardboard magnet-shaped cutouts



Page 1: Magnets are pieces of iron ore that attract other metals.

Color dirt area black. Color rock black or grey. Glue rocks onto shepherd's staff.

Page 2: Each type of magnet has a name.

Bend and glue pipe cleaner down around edges of the magnets.

Page 3: A magnet has two poles.

Using fingertip, place thin layer of white glue over the surface area of each end of the magnets. Gently shake red glitter over the north pole and blue glitter over south pole.

Page 4: The earth is a magnet. It has two poles, too.

Color the water area of the earth blue. Color the land area of the earth green. Paste a toothpick pointing up from the north pole. Paste a toothpick pointing down from the south pole. Paste a red felt triangle on the north pole toothpick. Paste a blue felt triangle on the south pole triangle.

Page 5: A compass uses a magnet. It always points north.

Paste a toothpick on the compass to act as the needle. Make the pointed end face north.

Page 6: Magnets have different shapes.

Match the shape to the magnet and glue on.