

Invisible Forces Activity Bag

Magnetic Force: Student Activity Guide

Forces occur all around you. However, sometimes you cannot see the forces. For example, gravity. While you can't see it, you experience it all the time. This activity will explore another invisible force, magnetism.

Materials From The Bag

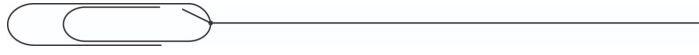

- Bar Magnet
- Fuzzy Craft Stem
- Aluminum Foil
- Index Card
- Small Washer
- Penny
- 2 Paper Clips
- String
- Double stick tape


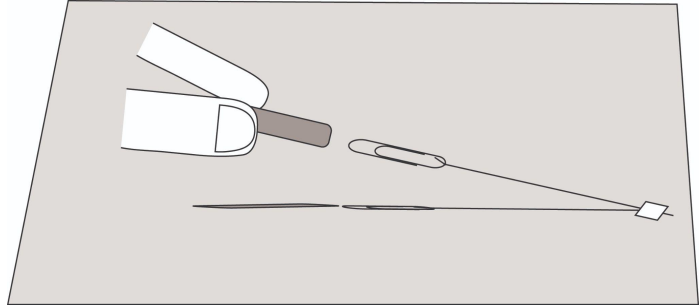
You Will Need

- Science Notebook or Student Activity Sheet from the teacher.

Part 1: Floating Paper Clip Set-up

Follow the directions below to create your floating paper clip.

1. Tie one end of the string to a paper clip	
2. Cut the double stick tape into four equal parts. Secure the other end of the string to the table with a piece of double-stick tape.	

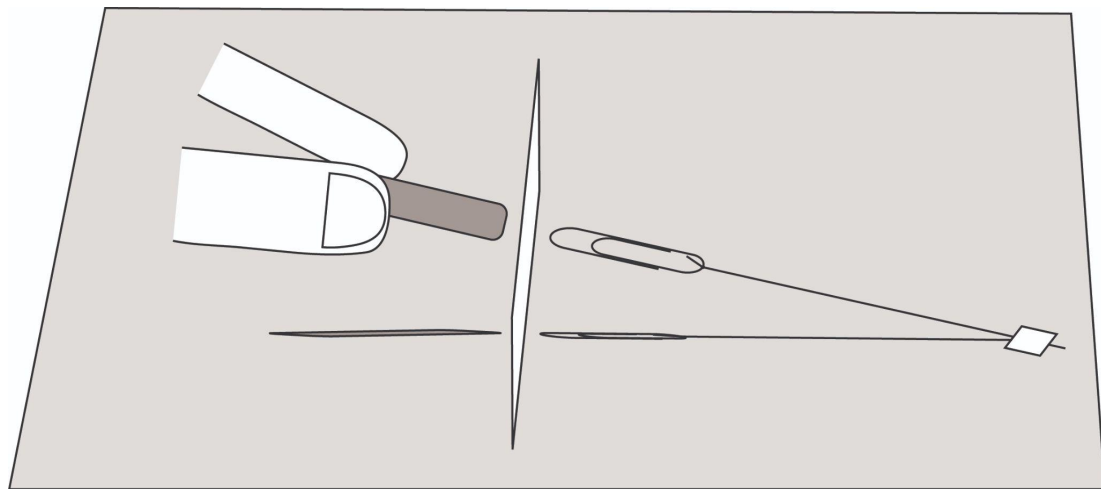
<p>3. Bring the bar magnet near the paper clip, but not touching.</p>	
<p>4. Slowly lift the bar magnet. The paper clip should be lifted off the tabletop and float without touching the magnet.</p>	

What's happening...

The space between the magnet and the paper clip is part of the magnetic field. The space around magnets where they exert force is called a **magnetic field**.

Part 2: Blocking the Magnetic Force

1. While holding the magnet and the paper clip is floating, use your other hand to place the index card between the paper clip and the magnet. **DO NOT TOUCH** the paper clip or the magnet.



2. Describe what you notice.

What's happening...

If the paper clip falls when the index card is between it and the magnet, the object blocked the force. If the paper clip did not fall, the index card did not block the force. Let's explore which materials can or can not block the force.

- Put the magnet to the side and observe your test materials: fuzzy craft stem, aluminum foil, paper clip, small washer, and penny.
- Predict which test objects will and will not block the magnets' force.

Test Object	Prediction	Result
Index Card		Did not break the force.
Fuzzy Craft Stem		
Aluminum Foil		
Paper Clip		
Small Washer		
Penny		

- Set up your floating paper clip, test each object, and record your results above.
- Compare your results to your predictions.

What's happening...

The magnetic field goes through non-magnetic things such as glass or paper. The magnetic field cannot go through things made of or that contain iron. Which materials contain iron? Provide evidence for your claim.

Part 3: Bar Magnets Exploration

In this activity you will need to work with a partner. You will both use your bar magnet.

- With your partner, experiment with the two bar magnets. What do you notice?
- One force the magnets produce is a **pull**. The magnets are “**attracted**” to each other.
Arrange your two magnets to demonstrate a pull force.
- Draw your magnets below. Include the letters on the ends of the magnets. What do you notice about the letters?
- Another force the magnets can produce is a **push**. The word “**repel**” describes the pushing between the magnets. Arrange your two magnets to demonstrate a push force.
- Draw your magnets below. Include the letters on the ends of the magnets. What do you notice about the letters?

What's happening...

The letters on the ends of the magnets represent the “**poles**” of the magnet. The “poles” are the strongest part of the magnet. We label the “poles” N for North and S for South. When two magnets with the **same pole** are near each other, the result will be a **push force**. They will **repel** each other. When two magnets with **different poles** are near each other, the result will be a **pull force**. They will **attract** each other.

Save all materials for the other activities.