

POWER OF MAGNETS



STUDENT WORKBOOK

ACCELERATE



MATCHES AND MAGNETS

Matches aren't attracted to magnets, right? Let's just say your curiosity will be sparked by this exciting experiment!

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BURNING UP

WHAT YOU NEED:

FROM THE KIT:

- 2 outdoor stormproof matches
- 2 pie plates
- Neodymium block magnet (pronounced NEE-oh-DIM-ee-um; the neodymium magnets are the shiny ones)



WARNING! Never put magnets in your mouth or any other part of your body. Keep magnets away from electronic devices.

WARNING! Be careful with fire and flame. Don't use in windy areas or near objects that can catch fire.

WARNING! Do not use the stormproof matches indoors. Use outside in an area away from anything that can catch fire. The matches will burn for 15 seconds even if you try to blow them out or cover in water.

Do this experiment outside! Doing it indoors is dangerous because the matches are stronger than regular matches.

WHAT TO DO:



STEP 1

Place the matches in the pie plate. Do you think they will be attracted to the magnet? Write your prediction in the Burning Up Predictions and Observations Table.

STEP 2 Try to attract the matches with the magnet. Write your results in the table.

THE SOURCE OF MAGNETISM

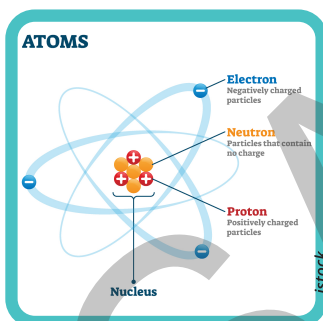
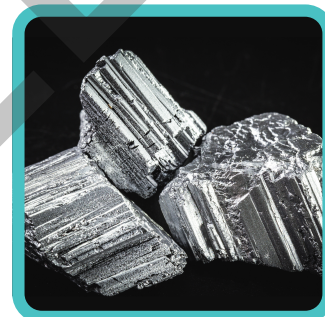
Do you know where magnets come from? Some are from nature; the rock lodestone contains the mineral magnetite, which is permanently magnetic.

The strongest magnets are made of the element neodymium, which is found in shiny, metallic ores. These ores can be found in rock formations in many parts of the world.

What makes materials magnetic? Let's take a closer look at what's happening to produce a magnetic field. of the atom.



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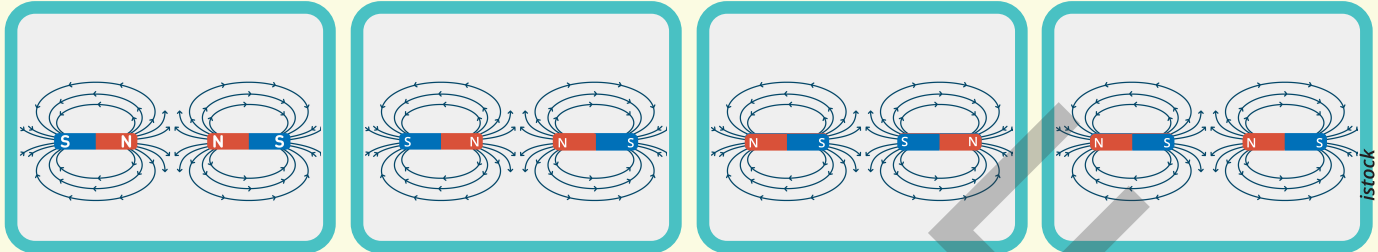


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Everything is made of tiny particles called atoms. These are even smaller than what you can see under a microscope – millions of them would fit across the length of a human hair. Each atom is made of three types of pieces: protons, neutrons, and electrons. We are not going to focus on protons and neutrons here, except to say that they form the nucleus, or center, of the atom.

It's the electrons that are responsible for magnetism. You can think of **electrons** as tiny particles that carry a negative electric charge. This flow of electric charge is called **electricity**. When electricity moves, it produces magnetism. The electrons in an atom are moving very quickly around the nucleus, so they are producing tiny magnetic fields.

- ? 2. Which of the following choices shows the correct north and south poles based on the magnetic field lines? Explain.



- ? 3. Draw the magnetic field lines before and after cutting a bar magnet in half. Then, describe at least one similarity and one difference in the magnetic field before and after the cutting.



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Kit	SU-PWRMAG
Instructions	IN-PWRMAGS
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