

Name: _____

The Force Be with You!

by Cindy Sherwood

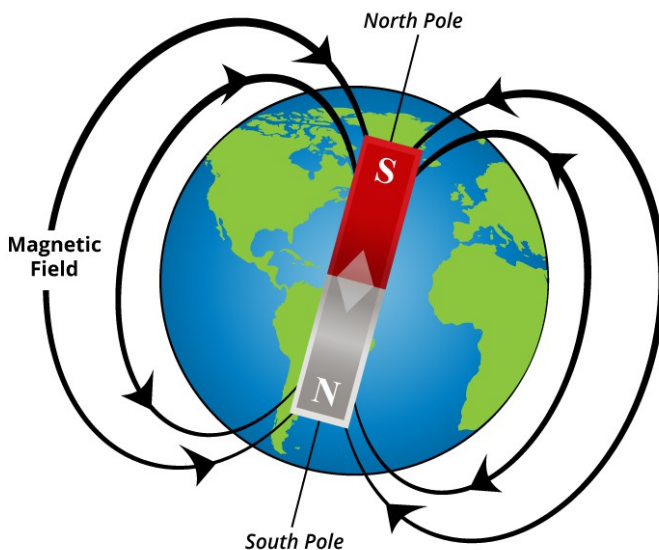
After you draw a special picture, you might display it on your refrigerator so everyone can admire it. Chances are, you will place a magnet over the drawing to hang it up. But how does that work? Why does the magnet stick to the refrigerator and not just drop to the ground?



Preview

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You will not have any luck if you try to make a magnet out of plastic or rubber or wood or glass. Only certain kinds of metals are magnetic. The most common metals attracted to magnets are iron, nickel, and cobalt. Other metals, including gold, silver, and copper, are not attracted to magnets.



So what is the biggest magnet on Earth? If you guessed Earth itself, you would be right. Scientists believe that the deepest part of the Earth, its core, is made up of a mixture of iron and nickel. That gives Earth its own magnetic field which extends far into space. The magnetic field acts as a giant stop sign against solar wind, high-speed particles that blow from the sun.

Thanks to the earth's magnetic field, we are protected from danger from this solar wind.



Preview

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while on a hike, you are actually using a small magnet that always points north.

What if you tried that magnet-refrigerator trick and your picture fell down right away? It probably means that your fridge is made of stainless steel, which contains a high amount of a nonmagnetic material. To hang up your picture, you will have to use old-fashioned scotch tape.



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1. Where does the force that creates a magnetic field come from?
 - a. the activity of protons in atoms
 - b. the activity of neutrons in atoms
 - c. the pairing off of atoms in certain types of metals
 - d. the pairing off of electrons in certain types of metals



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- a. Earth's mantle is made up of silver and nickel, which gives it a magnetic sphere.
- b. Earth's core is comprised of iron and nickel, which causes its magnetic field.
- c. The core of the Earth is made up of iron and copper, giving it a magnetic field.
- d. The mantle of the Earth is comprised of gold and cobalt, causing its magnetic sphere.

4. Magnets can be used in everyday life. What does MRI stand for? What does the magnetism in an MRI help accomplish?

5. A magnet will attract to many types of surfaces. Which of the following surfaces will a magnet not be attracted to?

- | | |
|--------------------|-----------|
| a. iron | b. cobalt |
| c. stainless steel | d. nickel |

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The following terms are vocabulary words from the article. Match the vocabulary word with its correct definition by writing the corresponding letter on the line.



- | | |
|-------------------------|--|
| 1. _____ magnetic field | a. charged particles that stream out from the Sun |
| 2. _____ electrons | b. the basic unit of all elements; a very small particle |



Preview

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- | | |
|------------------|--|
| 6. _____ core | f. the strength or energy of something |
| 7. _____ attract | g. negatively charged particles inside an atom |
| 8. _____ atom | h. the deepest layer of the Earth |
| 9. _____ metals | i. A piece of material whose atoms are arranged so that it attracts other materials with the same atomic pattern |
| 10. _____ repel | j. to pull something closer; draw something in |

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In the article, "The Force Be with You," you learned about magnets and how they work. In addition to learning how the Earth operates as a giant magnet, you discovered how magnets can be used in everyday life, such as magnetic resonance imaging (MRI) that helps doctors see inside patients without surgery.

Using the Internet or your science textbook, research one example of magnets being used in everyday life. Describe what the magnetic item does and why it's important. Be sure you ask for adult permission before using the Internet. Write the name of the website or book you used to help you answer this question on the bottom of the page.



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ANSWER KEY

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1. Where does the force that creates a magnetic field come from? **d.**

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5. A magnet will attract to many types of surfaces. Which of the following surfaces will a magnet not be attracted to? **c.**

- | | |
|---------------------------|-----------|
| a. iron | b. cobalt |
| c. stainless steel | d. nickel |

ANSWER KEY

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The following terms are vocabulary words from the article. Match the vocabulary word with its correct definition by writing the corresponding letter on the line.

- d.** magnetic field

a. charged particles that stream out from the Sun
- g.** electrons

b. the basic unit of all elements; a very small particle



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- c.** repel

j. to pull something closer; draw something in