

# Magnetic Attraction

## Cross-Curricular Focus: Physical Science



An object that attracts metals, especially iron, is called a **magnet**. The area near the magnet where it has enough power to attract things is called its magnetic field. The farther away from the magnet an item is, the weaker the magnetic field is. When it is weak, it is less likely an object will become attracted to the magnet.

Magnets can be either **permanent** or **temporary**. A permanent magnet stays magnetized for a long time. A temporary magnet loses its magnetism after only a short time. You can even turn something made out of iron into a temporary magnet by rubbing it against a permanent magnet. The more you rub, the stronger your temporary magnet gets. However, the effects will wear off over time.

The two ends of the magnets are called **magnetic poles**. The poles are found at the ends of bar magnets and the tips of the horseshoe magnets. They are the strongest parts of the magnet. Each magnet has a north pole and a south pole. Opposite poles attract, or pull toward each other. Poles that are the same repel, or push away from each other. A north pole and a south pole will pull toward each other. Two north poles will push away from each other. The same happens with two south poles. When you hold magnets, you can actually feel the push and pull effects of magnetism.

A special kind of temporary magnet uses electricity to create a magnetic field. It is called an **electromagnet**. An electromagnet can be an extremely strong magnet. However, it only acts like a magnet when it has electricity. A stronger electrical current will produce a stronger magnet. Unlike other magnets, an electromagnet can be controlled by a switch. When the switch turns the electrical current off the electromagnet loses its magnetism. Whatever the electromagnet was holding drops to the ground. We use this technology to operate large cranes that lift heavy metal objects, such as cars.

Electromagnets are also used to make motors run in small appliances. Combining regular magnets and electromagnets makes it possible for electrical energy to be turned into energy of motion.

Name: \_\_\_\_\_

**Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.**

1) Explain the difference between a temporary magnet and a permanent magnet.

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2) Would two north poles attract each other or push away from each other?

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3) What is different about an electromagnet?

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4) What do we use electromagnets for?

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5) What does attract mean when speaking about magnets? \_\_\_\_\_

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Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

**Actual wording of answers may vary.**

1) Explain the difference between a temporary magnet and a permanent magnet.

**A permanent magnet stays magnetized for a long time. A temporary magnet loses its magnetism in a short time.**

2) Would two north poles attract each other or push away from each other?

**attract**

3) What is different about an electromagnet?

**It uses electrical current and can be turned off and on.**

4) What do we use electromagnets for?

**lifting heavy objects like cars**

5) What does attract mean when speaking about magnets?

**pull toward each other**