

Magnetism is the invisible force that makes magnets pull (attract) or push (repel) each other. Magnetism cannot be seen, but it can be felt. Magnetism also makes a compass point toward the north. A compass is contained in a nonmagnetic case. It has a needle (a thin magnet that looks like a needle). The north-seeking end of the needle swings toward the North Pole, and the south-seeking end swings toward the South Pole. This is how a compass gives direction.

A **force field** is the area around a magnet where the magnet can attract or repel. This is how the magnet exercises its force. The force field grows weaker as you move farther from the magnet. A **pole** is one of two areas where a magnet is particularly forceful. The poles are always at the ends of a magnet, just as the North Pole and the South Pole are at the ends of the earth. They are called poles because Earth itself is a magnet, with two poles, and influences all magnets.

Magnets can be bar-shaped, square, round, or shaped like a horseshoe. If a magnet is hung from a string so that the magnet is dangling freely, the magnet will always point in the same way. One end will point to the North

Exercise

1. What is magnetism? _____

2. What is a force field and what does it do? _____

3. What is a pole? _____

4. How does a compass work? _____

Pole, and the other end will point to the South Pole. **Unlike poles** (one points north; the other points south) will attract each other, while **like poles** (both point in the same direction) will repel each other. Another way to remember this is "opposites attract."

The relationship of magnetism to electricity is called electromagnetism. Like a magnet, an electric current has a magnetic effect. **Electromagnetism** is developed by electricity. Electromagnetism was discovered in the 1800s. A British man named Michael Faraday discovered how to create an electromagnet by moving an iron bar in and out of a coil of wire attached to an electrical current. Moving a loop of wire across a magnetic field also can create electromagnetism. This discovery led to electrical power plants and such fields as telecommunications.

An **electromagnet** is a magnet made with electricity. An electromagnet is made by winding or coiling wire around an iron bar and then attaching the wire to a battery. When the battery is turned on, the iron bar turns into a strong electromagnet. The magnet can be turned off by cutting off the electrical current.