

Name: _____

FUN WITH MAGNETS

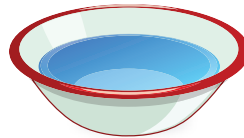
Follow the Needle:

MAKING A COMPASS

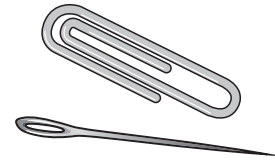


Every magnet you'll see has a north-seeking and south-seeking pole, just like the Earth, which is basically a giant magnet. If two magnets are brought together, the north pole of one will attract the south pole of the other. This is why compasses work on the Earth. The Earth's magnetic field is strong enough to make the north pole of a very light compass needle align with the magnetic south pole of the planet. If you're confused (don't compasses point north???), you may not realize that the Earth's geographic North Pole is the opposite of its magnetic north pole! In other words, the planet's geographic North Pole is its magnetic south pole, and vice versa.

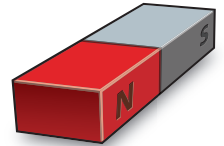
In this activity, you will make a magnet and see it respond to the bigger magnet that is our planet. We show you two ways to do this. Either way, it's important that there be no friction on the needle, so that it can respond to the slight tug of the Earth magnet.



A bowl of water



A sewing needle or paper clip



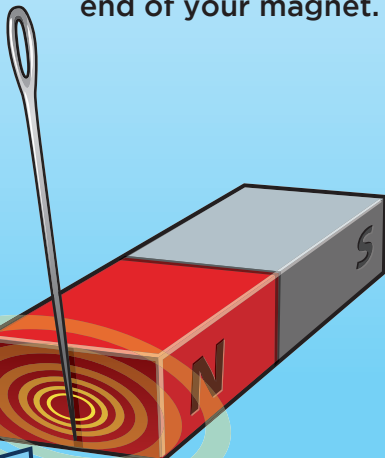
A magnet

WHAT YOU NEED:

WHAT YOU'LL DO:

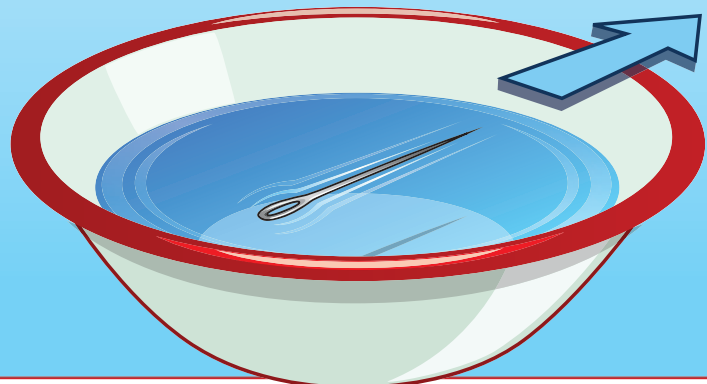
1.

First, magnetize your paper clip or sewing needle by placing one end against the end of your magnet.



2.

Float the magnetized needle very carefully on the surface of the water. The end that you magnetized will point north or south, depending on how you magnetized it.



NEED HELP? If you are having a hard time doing this, try placing the needle inside a drinking straw, on a piece of cork or on anything that will help it float.

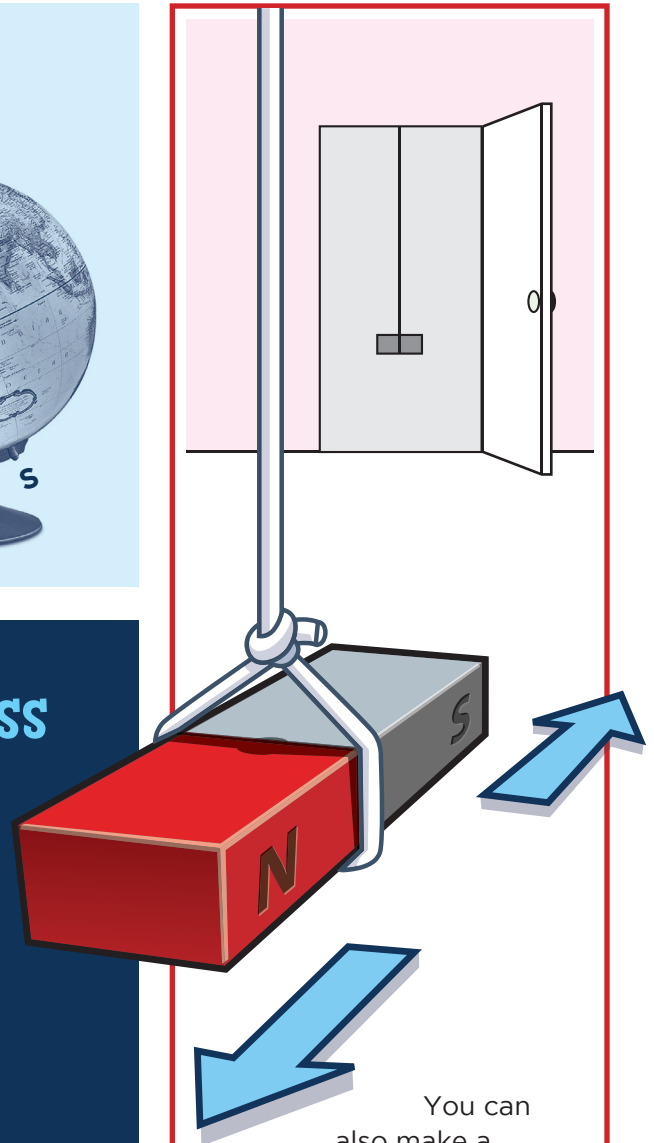
DID YOU KNOW?

- A compass responds to the Earth's magnetic field. Scientists believe that field is generated by the churning of very hot liquid iron at the planet's core.
- The Earth's magnetic field does not run exactly from the North Pole to the South Pole, but is a little skewed. That's called the declination, and its effects, which vary depending on where you are on the planet, can be seen on compasses.



Facts about the compass

- Compasses have been used for 1,000 years! Though people in China were using a compass-like device as early as 1088, and pre-Columbian peoples perhaps even before then, the compass as we know it was created by Europeans in the late 1100s.
- Use of the compass spread, like many other customs, along trade routes.
- People in cloudy climates, where navigation by the stars wasn't possible, began using the compass earlier than the people who were accustomed to clear skies.
- The compass has been used as a tool in the mining industry since the 1200s.
- Most modern-day compasses use a magnetized needle floating inside a fluid-filled container. The fluid is most often kerosene, oil or alcohol.
- Compasses are part of both Jewish and Islamic prayer tradition, and religious compasses are manufactured that show markings toward Jerusalem and Mecca so worshippers may face in that direction. In Islam, the prayer compass is called a Qibla.
- A Global Positioning System, like those that many people have in their cars, is actually an electronic compass.



You can also make a simple compass with a piece of string and a bar magnet. Just hang a string from the top of a doorway and tie a bar magnet to the string so it is evenly balanced. As it turns, it will settle and point north-south. Learn more about compasses by playing with a virtual compass in an online tutorial at www.magnet.fsu.edu. (Search for compass.)