Make Your Own Compass

What you need

• 1 sewing needle
• 1 magnet
• 1 cork
• 1 roll of tape
• 1 plastic container filled with water
• 1 piece of paper
• 1 marker or other writing utensil

Preparation

The instructions outlined below describe how to build a compass using common household materials.

Step 1. Gather materials.

Step 2. Magnetize the needle. Stroke the needle with the magnet in the same direction at least fifty times to magnetize it properly. In this image, the needle is being magnetized by rubbing the magnet on the needle from the sharp point to the hole and repeating that motion at least 50 times. This will cause the magnetic domains to line up, which is important for the compass to work!

Keep the magnet away from the needle and other materials once the needle is magnetized.

Step 3. Place the needle on the cork and tape the needle to the cork.
Step 4. Place the cork with the needle attached into the container of water, resting on the piece of paper. The needle will bob around.

Step 5. Wait for the needle to settle into position and point north. The end of the needle containing the hole will point north.

Step 6. Mark north and then determine the other directions.

What to do

Use your compass to determine the cardinal directions: north, east, south, and west.

What is happening?

Do you ever need to figure out where you are located? If so, you’ve probably used a map to help determine a location. A map is a tool that is used to estimate the distance and direction between geographical locations. For example, maps can show the distance between two places, bodies of water, and even mountains. Maps are helpful in determining location and the things present at or near a certain location.

Another tool that can be used to help determine a precise direction is a compass! A compass determines cardinal directions: north (N), south (S), east (E), and west (W). A compass always points north.

A compass works because of the composition, or make-up, of the Earth’s core – the centermost part of the planet. The core of the earth contains large amounts of molten/liquid iron. Convection (the rising of warm air) caused by the circulation of the earth, as well as the heat in the core, forces the molten iron to move in a rotational pattern. This causes the iron to take on weak magnetic forces. A compass needle, which is also magnetic, detects these forces and points north.