

Homemade Barometer

Introduction

Changing weather means changing air pressure. Create a barometer to help track and even predict the weather!

Think About This

How can we predict changes in the weather?

Materials

-  A glass jar
- Plastic Wrap
- A rubber band or elastic hair tie
- A straw, stick, or wooden skewer
- Lined notebook paper or index card
- Writing Utensil
- Tape
- Scissors

Do Ahead of Time

Cut the plastic wrap into a square that it is four (4) inches larger than the mouth of the jar

Directions

A barometer is an instrument that measures air pressure. Construct a barometer from everyday materials and use it to track the weather.

- 1** Stretch the plastic wrap over the mouth of the jar. Adjust and lightly pull the plastic to create a smooth drum-like surface and a seal that is airtight.
- 2** Place the rubber band over the mouth of the jar to help hold the plastic wrap in place.
- 3** Lay the straw on the plastic wrap so that the straw goes from nearly from one edge of the jar to the other, but most of the straw should hang off the edge of the jar.
- 4** Use one or two pieces of tape to secure the straw to the plastic wrap. Make sure that the tape and straw are secure, but don't push hard enough to put a hole in the plastic wrap!
- 5** Choose a location for the barometer. Keep it out of direct sunlight or near anything that changes temperature.
- 6** Place a piece of paper or an index card behind the barometer so that the straw is in front of the paper.
- 7** Make a mark on the paper to show the location of the straw.
- 8** Check the barometer at least once a day, marking the location of the straw and the date.

Homemade Barometer Continued

Take It Further

Compare what the barometer shows with what the weather report is. Watch the news or check a weather website to find out the **barometric pressure**, which is measured in “inches of mercury” and often will be a number between 29 and 31. Does your barometer show an increase or decrease that matches the weather report?

What’s Happening?

Air is always moving all around us. Air rises, it falls, it flows, and it has weight. A **barometer** measures the weight of the air. Cooler air is drier, denser, and heavier than warmer air - cool air tends to sink while the lighter warm air rises, warm air can hold more water vapor than cool air.

The changes in weather that we experience are created by changes to the **atmospheric pressure** (also called barometric pressure or air pressure).

As air pressure increases, the water in clouds evaporates more. As air pressure decreases, water in the air condenses to form clouds. More water in the clouds means a greater chance for weather like rain or snow to occur. Sunny days with few clouds are high pressure days. Cloudy days are low pressure days.

The changes in air pressure start to happen before clouds appear or disappear. If the pointer on the barometer begins to go up on a cloudy day, the air pressure is increasing and the weather will be nicer soon. If the pointer begins to go down on a sunny day, clouds will soon appear, which might mean wet weather.

Air pressure can vary depending on where you live, depending on elevation (how high the ground is above sea level) and air temperature. Milwaukee’s weather is affected by Lake Michigan, which can change the air temperature enough that two areas of the city might have very different weather.

The homemade barometer traps air inside of it. As the atmospheric pressure goes up, air pushes down on the plastic wrap more than the air inside is pushing up. This makes the pointer move up. As the atmospheric pressure drops, the air inside the jar pushes up more than the air outside. This makes the plastic bulge up, and the pointer moves down.

Watching the movement of the barometer lets you know what the air pressure is doing. It’s a little like being able to see the future!

Show us your barometer! Email us at
AtHome@discoveryworld.org
 and share how you’re tracking the weather!