

Barometric Pressure Barometer Lab

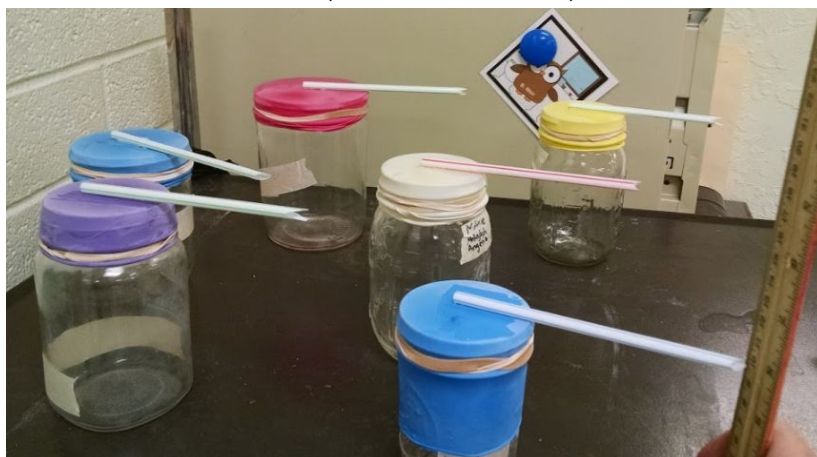
Cut off the neck of the balloon stretch the balloon over your can or jar tightly. Have a partner wrap a couple of rubber bands around the balloon and the jar/can. Make sure that the balloon is very tight forming a drum. Take your straw and trim one end to a point. (If you have a bendy straw, cut the bendy part off.) Glue the other end of the straw to the middle of the balloon, making sure that the straw is lying horizontally with the point pointing outwards.

Use the data table to record in mm, the distance from table/desk to the point of the straw. Make sure 0mm is the end of the table/desk.

Date	mm height	Rise or Fall	The difference from the previous day. + - mm	Describe the Weather Outside Sun, Wind, Clouds

1. How does a barometer work?
2. What would be some problems with your barometer's accuracy?
3. If you took your barometer to the top of a Mt. Everest, what would you expect to see your barometer do?
4. What do you think your barometer would do if you took it through the different layers of the atmosphere?
5. How do meteorologists use barometers to predict the weather? What are they looking for?

Teachers Notes, Procedures, and Reflections



1. Purpose

- a. In this lab, students will attempt to create actual working barometers. It is important to note that these are not the most accurate barometers, but students will get the idea of how changes in air pressure will cause their barometer to function. If built correctly, these barometers do work and the straw will rise and fall as air pressure increases and decreases.
- b. NOTE:
 - i. It is more accurate if the barometers are kept outside of the classroom, but for my situation, this does not work, but I do mention the flaws to my students that these classroom barometers will be affected by heaters and coolers coming on as well as doors opening and closing. This being said, the barometers will still show change.
- c. Students will keep a log of daily barometer changes using millimeter rulers. On their chart, they will keep track of the height of the barometer, whether it is a falling or rising barometer, and then observe the weather outside.
- d. When students have made daily observations for a week, the students will answer questions based on the experiment.

2. Procedures:

- a. Cut the necks off of the balloons.
- b. Have students stretch the balloons over the jars.
 - i. It should sound sort of like a drum it is tight enough.
- c. Wrap rubber bands over the balloon and the jar.
- d. Cut one end of the straw to a point.
- e. Students should check to make sure there aren't any rips in the balloon. If there are, this is a great opportunity to discuss how a barometer works and why it wouldn't work with a hole in the balloon.
- f. Using white Elmer's Glue, students need to glue the straw to the middle of the balloon.
- g. Using rulers students measure the height change of the "needle" (straw tip)

3. The how?

- a. When the balloon is placed onto the bottle, a specific quantity of air gets trapped inside the bottle. As a low-pressure system enters, there is less air pressure on the outside of the bottle which causes the air inside the bottle to try and escape, but a balloon is in the way so the air causes an upward bulge in the balloon. This, in turn, causes the needle to be pushed downward. When a high pressure comes in, there is more air on the outside of the bottle causing the balloon to "suck" into the bottle a little bit. This, in turn, raises the needle upward.