

# Simple Barometer

## Overarching question – How can I make an instrument that measures atmospheric pressure?

A barometer is used to measure the air pressure and indicates whether good weather or bad weather is on the way. Below are instructions to make your own barometer.

### Materials

- medium glass jar w/ label taken off
- balloon
- scissors
- straw
- 2 index cards
- rubber band
- permanent marker
- tape
- ruler



### Instructions

1. Turn 1 index card vertical. Draw a line across the middle.
2. Measure off 1 cm. increments from the top and the bottom. Label the top of the card “Fair Weather” and the bottom of the card “Rain and Clouds”. Set aside.
3. Cut small arrow from the other index card. Set aside.
4. Make a horizontal cut on the end of the straw.
5. Push triangle into cut, making pointer. Set aside.
6. Cut mouthpiece off of balloon. Stretch balloon.
7. Cover the top of the jar with the balloon. USE a rubber band to hold the balloon in place. The cover should be taunt making the jar airtight.
8. PLACE the straw horizontally on the jar so that two-thirds of the straw is on the jar. The end with the arrow should be hanging off of the jar.
9. TAPE the straw to the middle of the balloon.
10. TAPE the index card to the can behind the straw. The point of the triangle should match the center line.
11. Record findings every 5 minutes, noting if the straw pointer is rising or falling.

## **Extension Questions**

1. How do meteorologists use barometers to forecast weather?
2. How would the readings change if you placed this near a window?
3. Many elderly people can sense a storm brewing when the joints begin to ache. How does this activity correlate with this phenomenon?

## **Levels of Inquiry**

Confirmation – Provide the students with the overarching question and the procedure. Place several instrument artifacts around the room so that students can check their progress.

Structured - Provide the students with the overarching question and the procedure. Allow students to discover the finished product on their own.

Guided – Provide the students with the overarching question and materials. Students are to create and write their own procedures and determine which materials to utilize. Allow students to discover the finished product on their own.

Open - Students are given a scenario where the instrument is needed, but not identified. From this scenario, students are to generate an overarching question. From that point, students are to create and write their own procedures and determine which materials to utilize. Allow students to discover the finished product on their own.

Possible scenario – Stacey knows that air pressure determines the type of weather, but she needs to know the current air pressure. Create an overarching question to figure out the type of weather Stacey can expect.

## **Extensions**

Idea One – Create a class weather station with handmade anemometers, rain gauges, barometers, and wind vanes. Monitor the weather and collect data at the same time of day. With the data, create charts and graphs, either by hand or by graphing software, such as Excel. (T)

Idea Two – Create a class blog that details the weather conditions for the school, including the weather data collected from the class weather station. (T)

## **Common Core (Grades 6-8)**

**L6-8RST3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**L6-8RST7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

**L6-8WHST2:** Write informative/explanatory texts, including the narration of historical events,

scientific procedures/ experiments, or technical processes.

- a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Establish and maintain a formal style and objective tone.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

### **Georgia Performance Standards**

**S6E4.** Students will understand how the distribution of land and oceans affects climate and weather.

- a. Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns.