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Weather Globe Barometer #WG-1

Warning:

- **Not a toy; use only in a laboratory or educational setting.**
- **California Proposition 65 Warning: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**



Introduction

Barometers, first invented by Italian scientist Torricelli 1643, are used to measure changes in atmospheric pressure. They were often referred to as “weather glasses” because of their abilities to seemingly predict the weather. By observing the water line on the device move up or down, you can tell if the **barometric pressure** (air pressure) is high or low. If the air pressure is **high**, there is **dry weather**, and if the air pressure is **low**, there is **rainy weather**.

The weather globe barometer has a glass tube that is connected to the globe body at the base of the unit and rises upward above the water level in the globe. This glass tube is open to the atmosphere on one side, which allows for some air to be trapped inside the weather globe by the water. If the atmospheric pressure is lower than when the air was sealed inside the barometer, the water level in the spout will rise above the water level in the body of the barometer. If the air pressure is higher than the pressure inside the barometer, the water level in the spout will drop below the water level in the body.

Additional Supplies

You will need to the following simple supplies (not included) to use our Weather Globe Barometer:

- For **Filling Method One**: 2 Large Bowls (**Note**: They need to be large enough to fully submerge your device.)
- For **Filling Method Two**: 1 Plastic Syringe
- For **Filling Method Two**: 1 Length of 1/4-inch tubing
- 1-Gallon of Distilled Water
- Food Coloring (Optional) (**Note**: Adding food coloring to the water in the device will allow for you to better see the water line when using the device.)



How to Use

There are two methods for filling your barometer. Use whichever method that you find works best for you:

Filling Method One (Using 2 Large Bowls):

1. Fill one large bowl with enough cold water to completely submerge the device. **(Note:** If you are using food-coloring, add it to the cold water now.) Fill another bowl with very warm distilled water.
2. Submerge the barometer in the warm distilled water. You will see air bubbles escape. This process creates a partial vacuum inside the globe. Keep the barometer submerged until the air bubble stop escaping from the device.
3. Before removing the barometer from the warm water, place your finger over the mouth of the filling arm to block airflow.
4. With your finger still covering the mouth of the arm, submerge the barometer in the cold water.
5. Remove your finger from the mouth of the arm and allow for the cold water to enter the barometer. Continue letting it fill until bubbles stop escaping from the arm.
6. Repeat steps 2-5 until the barometer is filled about half way. **(Note:** Your finger in step 3 allows you to maintain a vacuum inside the barometer, which is used to draw the cold water into the device. Forgetting to seal the spout while the barometer is submerged in the warm water will make it difficult or impossible for the cold water to enter the device.)
7. Allow the water in your device to reach room temperature. The water level in the barometer will now tell you whether the barometric pressure has gone up or down relative to the pressure when it was filled.

Filling Method Two (Using a Syringe and Some Tubing):

1. Fill a reservoir with distilled water and a few drops of food coloring (if using).
2. Find a surface where you can stably rest the barometer on its side with the filling arm facing upwards. **(Note:** A coffee cup works well here, but anything similar will work. You want to keep your globe stable and on its side as you fill it.)
3. Thread a 1/4-inch piece of tubing down the mouth of the filling arm until it reaches the bottom of the barometer.
4. Insert a syringe into you water reservoir and draw water into it until it is full.
5. Fit the tubing around the mouth of the syringe, and press down on its plunger until all of the water in the syringe is emptied into the barometer.
6. Repeat steps 4 and 5 until the barometer is half full of water.
7. Turn the barometer upright and set it down on its base.
8. Remove the tubing from the filling arm
9. Allow the water in your device to reach room temperature. The water level in the barometer will now tell you whether the barometric pressure has gone up or down relative to the pressure when it was filled.

Tips for Use

- Do not place the barometer in direct sunlight. This can make readings less reliable.
- Place your barometer onto a tray to catch any water that may escape the filling arm.

