

### **Balloon Barometer**

### Introduction:

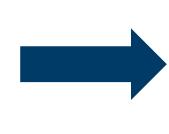
A Barometer is an instrument that measures atmospheric pressure, used especially in forecasting the weather and determining altitude. A barometer measures air pressure: A "rising" barometer indicates increasing air pressure; a "falling" barometer indicates decreasing air pressure. Many barometers use Mercury tubes to help measure the air pressure; others use water or by aneroid means.

Today we are going to make one that will work using a few items you have around the house.

### **Equipment:**

- A glass jar
- A balloon
- A rubber band
- Scissors (with supervision)
- Straw (preferably paper)
- Tape
- Card / paper
- Pens, felt-tips or pencils







# **Balloon Barometer**

### Instructions:

1. Cut the bottom / mouth piece off your balloon. Depending on the size of your jar, you may need to cut more off.



3. Use the elastic band to keep the balloon tight over the jar – you have just created a sealed vacuum!



2. Pull the balloon tight over the jam jar so it is flat and level with no dimple in the middle.





4. Using the tape, fasten one end of the straw to the centre of the balloon; make sure the end of the straw ends in the center.



# **Balloon Barometer**

#### Instructions:

5. On the other end, carefully cut diagonally to form a pointer.



★ Extension: using <a href="https://www.theweatheroutlook.com">https://www.theweatheroutlook.com</a>
website to find the current air pressure in your region and mark on your card where the straw is pointing as that amount. Wait until the next day, check the pressure, mark this amount on the card creating a scale. You may need to wait for a change in weather, so look out for the straw moving!

- 6. Place the card, or paper, so that it is lined up against the straw and draw a line at this position. Above this line, draw a sun with the words "High", and below this line a rain cloud with the words "Low".
- 7. You can either tape the card, or paper, onto the jar or lean the card, or paper, against something with the jar next to it.

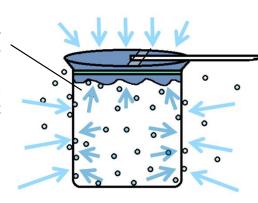


Stand back and wait for the straw to move to predict the weather!

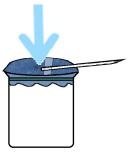
# **Balloon Barometer – The Science**

- Air is made up of tiny particles called molecules.
- Weather conditions are influenced with air pressure changes and thus changes in the arrow direction allowing you to see the weather prediction. The balloon causes the straw to point up or down depending on which way the pressure is greatest

The air inside the jar has been trapped by the balloon so no molecules can escape but they press against the balloon and the sides of the jar.



There is also air outside the jar, this air also contains molecules that push against the balloon from the other side. If the pressure inside the jar is greater it pushes the balloon to dome outwards.



If the pressure inside the jar is less the outside air molecules push the balloon inwards.

