

# WORKSHEET 6

## Activity - Measuring Pressure

Print and copy this worksheet for use in the classroom.

In this activity you will make your own barometer to measure the rise and fall of atmospheric pressure.

### Equipment

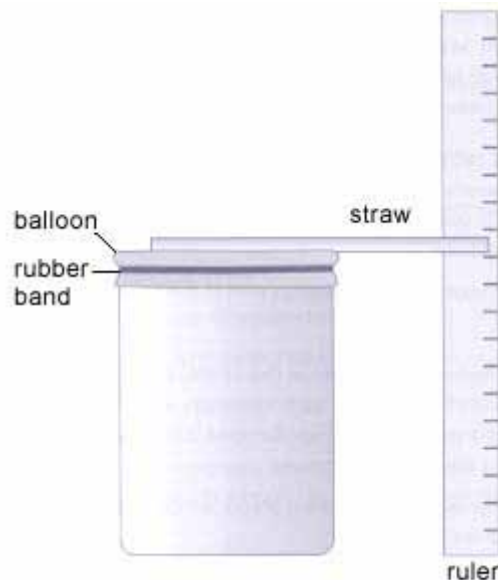
- jar
- large piece of balloon rubber
- strong rubber bands
- short drinking straw
- adhesive tape
- cardboard and paper

### Safety

Ensure that there is no danger of the elastic snapping.

### Procedure

1. Stretch the balloon rubber over the jar and secure it with a strong rubber band.
2. Tape the end of the straw to the centre of the balloon.



### Procedure and questions

Do the following things and then answer question 4 in the spaces provided.

1. Support the ruler upright in front of the end of the straw. The ruler's "zero" measurement should be at the bottom.
2. Note the height on the ruler that the end of the straw aligns with at various times

during the day.

3. Draw a table and record the reading at the same time for at least a week.

4. How do you think that this instrument measures air pressure?

### Explanation

Air has weight. It exerts pressure on us and on everything around us. The pressure of the atmosphere on our body would crush us if it were not counterbalanced by the equal internal pressure of the fluids inside our body.

Air pressure at sea level fluctuates around 1,013 hectopascals (hPa). It can drop to 970 hPa during severe storms. In a high pressure system it can reach 1040 hPa.

As air pressure rises, it forces the balloon down into the jar, making the end of the straw rise. The jar works on the same principle as an aneroid barometer, (see: <http://www.bom.gov.au/info/aneroid/aneroid.shtml>) which contains a sealed box with most of its air removed. Any change in pressure will make the box shrink or expand. Levers magnify these changes, causing a pointer to move on a dial.

### Extension Activities

Collect weather charts each day and check to see whether the changes in pressure that you record match those recorded by the Weather Bureau (see the latest weather chart at: <http://www.bom.gov.au/weather/national/charts/synoptic.shtml>). Compare your pressure readings with those from a barometer.

Read through the High and Low Pressure Systems web page for extra information: [http://www.bom.gov.au/lam/Students\\_Teachers/pressure.shtml](http://www.bom.gov.au/lam/Students_Teachers/pressure.shtml). It contains **animations** (approx. 200 KB in total size) which will download automatically.

### Fact File

The barometer was invented in the 1600s. To test the instrument two French scientists carried it up a mountain. They found that as they climbed the pressure readings dropped. This was proof that the barometer was working properly. On weather maps, lines joining places which have the same air pressure are called isobars.

*This activity is courtesy of  
the Cooperative research Centre for Southern Hemisphere Meteorology*

### Please note

Movement in the straw (needle of your barometer) may be due to either air pressure or temperature. The main point of this activity is to highlight the structure and function of the barometer which only measures air pressure.