

Air Pressure LABS

Can you feel the atmospheric pressure?

These experiments will help you understand the basic principles that describe how air pressure responds to and is responsible for various phenomena.

At each station, read the procedure and use the materials to perform the experiment or demonstration. Make a draw of the situation and try to answer the question.

Experiment 1

Materials:

- Balloons (several)
- 2 liter bottle

Procedure:

Push a deflated balloon into a bottle and stretch the open end of the balloon back over the bottle's mouth.

Will the balloon break the bottle, pop or do nothing? Why?

Experiment 2

Materials:

- Glass
- Bowl
- Water
- Paper

Procedure:

Crumple a tissue and push it down into the bottom of a glass so that it does not fall out when you invert the glass. Turn the glass upside down and place it under the water in a bowl. Do not tilt the glass. You should find that the water does not enter the glass and that the tissue stays dry.

Why does the tissue not get wet?

Experiment 3

Materials:

- Two clean plungers

Procedure:

Line up the bottom of two plungers and press them together until all the air is gone then try to pull them apart.

How might air pressure be causing them to stay stuck?

Experiment 4

Materials:

- Cup
- Water
- Notecard

Procedure:

Fill a clear plastic cup with water. Place a laminated card over the top of the cup. Hold the card to the mouth of the cup and invert over a plastic tub. You can now let go of the card—it remains suspended, and the water does not spill out.

Why doesn't the card fall?

Experiment 5

Materials:

- Sheets of newspaper
- Wooden rulers or flat pieces of wood

Procedure:

Place the ruler on a bench top with about a quarter of its length hanging over the edge.

Make sure the area around you is clear of people, then give the overhanging piece a quick "karate chop" with your hand.

Retrieve the ruler and replace it in the same position on the bench.

Lay one full sheet of newspaper over the part of the ruler that is on the bench.

Repeat your chop to the overhanging part of the ruler.

What did you expect to happen during each part of the activity?

Is it the weight of the newspaper that causes the difference?