

SCOPE, SEQUENCE, and COORDINATION

A National Curriculum Project for High School Science Education

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SCOPE, SEQUENCE, and COORDINATION

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Student Materials

Learning Sequence Item:

927

Atmospheric Pressure

March 1996

Adapted by: Brett Pyle

Contents

Lab Activities

1. I Don't Feel Any Pressure
2. Bottles of Air

Readings

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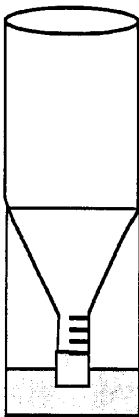
Science as Inquiry

I Don't Feel Any Pressure

What are the effects of atmospheric pressure?

Overview:

Do you ever feel like there is a huge weight holding you down? Consider the atmosphere as a possible culprit. But how can we prove that the atmosphere does have some effect? Watch this activity closely!



Construction of simple barometer.

Procedure:

Demonstration. You will see a demonstration on the effects of atmospheric pressure. Record your observations on a separate sheet of paper.

Lab Activity. You will construct a simple barometer. Place a small amount of water in a beaker and add food coloring. Invert the bottle and place it into the beaker so that the opening is underwater. Some of the water should rise into the neck of the bottle. Let it sit for 15 minutes, then place a mark at the water level in the bottle's neck. Place three more marks on the neck of the bottle at 1-cm intervals. Create a data table and record any changes in the water level over several days.

Questions:

1. Give an explanation for what you observed in the demonstration.
2. What caused the changes in the water level in your barometer?
3. Explain how the density of a column of air relates to its air pressure.
4. Explain how low pressure systems can produce precipitation.

Science as Inquiry

Bottles of Air

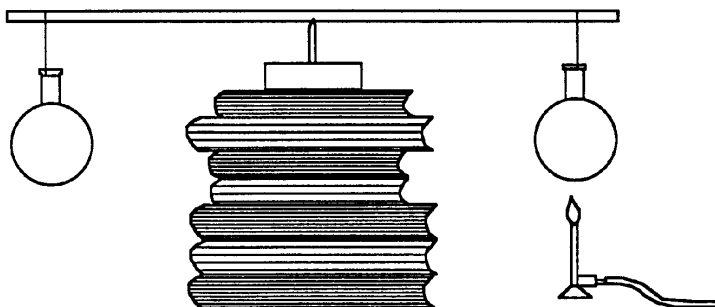
How does the density of warm air differ from the density of cool air?

Overview:

Air is air so why do weather reports always include whether air is warm or cold? Warm some air and see if you can determine any differences.

Procedure:

Set up the balance rod and adjust it so that it is balanced. A small piece of clay can be added on the balance until the dowel rod is hanging in perfect balance. Suspend a flask from each end of the balance. These should be hung from a string tied around the neck of the flask and secured with tape on the flask. Use the flame source to heat one of the flasks, observe the results and record your observations.



Laboratory setup.

Questions:

1. Explain why the flasks behaved the way they did.
2. What would happen if both flasks were filled with CO_2 ?