

NAME _____

LESSON

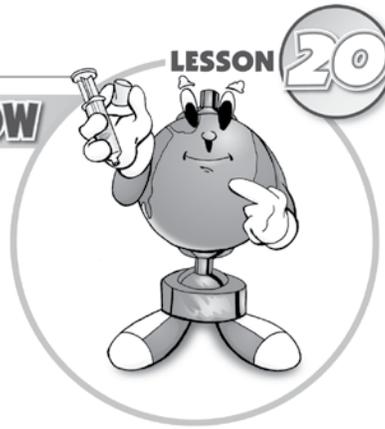
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MAXIMUM MARSHMALLOW

FOCUS Air Pressure

OBJECTIVE To explore changes in air pressure

OVERVIEW We've talked about the "ocean of air" that surrounds us. But how strong can changes in air pressure really be? In this activity, we'll use a marshmallow to help us find out.



WHAT TO DO

STEP 1

Place a marshmallow on your work surface. Observe it closely, looking for any evidence that this marshmallow might suddenly change size! Make notes in your journal about what you see.

STEP 2

Pick up the syringe and pull the handle all the way out of the tube. Carefully place the marshmallow in the tube. Replace the handle and slowly push down until it almost touches the marshmallow. Observe the marshmallow. Make notes about what you see.

STEP 3

Continue observing the marshmallow as you pull the handle almost out, then slowly push it down again until it almost touches the marshmallow. Repeat two or three times. Make notes about what you see.

STEP 4

Plug the tip of the syringe with your finger. (The seal must be tight for this to work!) Slowly pull the handle back. Observe the marshmallow. Now push the handle back in. Observe the marshmallow. Repeat until everyone has had a turn. Share and compare observations with your research team.

EARTH 91

Category

Earth Science

Focus

Air Pressure

Objective

To explore changes in air pressure

National Standards

A1, A2, B1, B2, B3, D1, G1, G2

Materials Needed

syringe
mini-marshmallow

Safety Concerns

3. Hygiene
Don't allow students to eat marshmallows!

Additional Comments

Wash and dry the syringes well after you complete this activity. Monitor students to make sure they take turns. Multiple repetitions of Step 4 by the same person can blister a sensitive fingertip!

Overview

Read the overview aloud to your students. The goal is to create an atmosphere of curiosity and inquiry.

WHAT TO DO

Monitor student research teams as they complete each step.

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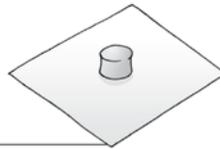
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WHAT TO DO

STEP 1



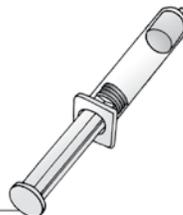
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STEP 2



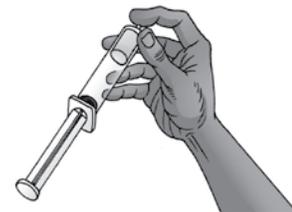
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EARTH 91

Teacher to Teacher

The most visible effect of air pressure on Earth is our weather. High pressure is like a dome or mountain of air and low pressure is like a valley. Clouds (and their attendant

moisture) tend to flow "downhill," leaving high pressure areas clear and low pressure areas filled with clouds.

WHAT HAPPENED?

Air pressure is the force of the air constantly pushing all around us. Except during violent weather, we usually don't have an opportunity to see big changes in air pressure. That's because the atmosphere is huge, and air pressure changes normally happen very slowly.

By using the syringe, we shrank the "atmosphere" to the size of the tube. This allowed us to change air pressure very quickly. Since a marshmallow is mostly air (that's why it's so soft), it's a good indicator of big changes in air pressure. When we pulled the syringe handle out, there was less air pressure in the tube, so the marshmallow expanded (because of the air trapped inside it). When we pushed the handle in, air pressure increased, so the marshmallow (and the air inside it) was compressed into a smaller size.

WHAT WE LEARNED

1 Compare the marshmallow in Step 2 and Step 4. How was it similar? How was it different?

a) similar: same marshmallow

b) different: size changed in Step 4

2 Why was it important to push the handle close to the marshmallow in Step 2? What did this allow us to better control?

a) to remove as much air as possible before beginning

b) air pressure

3 What is the name of the "ocean of air" that surrounds us? Why don't we see air pressure changes in it?

a) the atmosphere

b) because it's so huge and changes usually happen slowly

4 How did the syringe help us see changes in air pressure? How did the marshmallow help?

a) small space allowed air pressure to change quickly

b) its behavior helped us see the changes

5 Would a peanut have worked just as well for this activity? Why or why not?

a) no

b) a peanut is not mostly air, so it wouldn't change shapes

What Happened

Review the section with students. Emphasize bold-face words that identify key concepts and introduce new vocabulary.

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What We Learned

Answers will vary. Suggested responses are shown at left.

