

K-2 Physical Science
Southern Nevada Regional Professional Development Program



How can you tell if air takes up space?

INTRODUCTION

Air is a form of matter known as a gas. It has observable properties. It can fill up the balloon and not be smashed flat without popping the balloon or letting the air out first. Thus air takes up space.

WHERE'S THE SCIENCE?

Air is made up of many different gases, but mostly contains about 78% nitrogen, 22% oxygen, and carbon dioxide. While these gases are invisible, we can tell they are all around us. The earth is surrounded by a layer of air, called the atmosphere that stretches a distance of about 500 miles. Weather is caused in the lower section of atmosphere called the troposphere. Air takes up space, has weight, and can be very strong. If you take a cup, turn it upside, and push it into a bowl full of water the water will not go into the cup. Air is taking up space in the cup. The harder you push down, the harder the cup pushes back up into your hand because you are squeezing, or compressing, the air inside. If you take a bendable straw and place it under the lip of cup so it reaches into the air pocket, you can suck the air out and watch the water level change. Sailors use this knowledge to help them build boats and survive out on the ocean.

MATERIALS

- 1 Balloon, round
- 1 Balloon pump (*Balloon pumps are small plastic hand-held air pumps that can be purchased at a party supply store*)

PROCEDURES

1. Explore with the materials. As students blow up the balloon, ask what is making the balloon expand. What is trapping the air inside the balloon? Have them hold the balloon to see if they can feel any weight. (You can set up a simple balance by using an eraser with a ruler or meter stick. Balance the stick on the eraser then stick the balloon to one side with a piece of tape.) What happens when you let the air out of the mouth of the balloon? What is making the noise/noises you hear?
2. What did you find out about air? *It fills up the balloon so it takes up space. It pushes out to expand the balloon. You can't smash the balloon flat because it's full of something (air).*
3. What is air? *A type of matter. A gas that we can't see.*

ADDITIONAL RESOURCES

- *Janice VanCleave's Earth Science for Every Kid book
- *FOSS Air and Weather Kit Investigation 1

Nevada State Standards

P2A3 Students know matter can be categorized by observable properties such as color, size, shape, and weight. E/S