Bernoulli's Balloons

Zinger #19

Suspend two balloons from strings. When you blow between them, they move together rather than moving apart.

Materials

2 balloons
2 lengths of string, 18" each

Set Up

1. Inflate and tie off both of the balloons. Attach one string to each balloon.

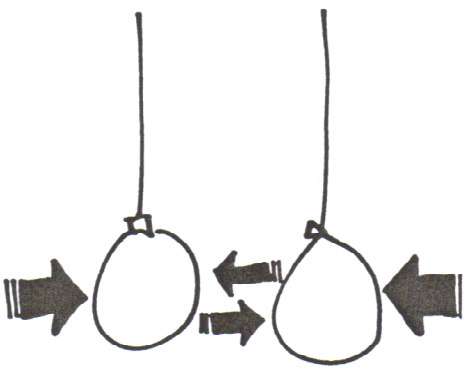
The Zing!

1. Hold the balloons up for the students to see. You should have one string in each hand and the balloons should be suspended in front of your face. Ask the students to predict what will happen when you blow between the balloons. Will the balloons (a) move away from each other, (b) stay where they are, or (c) move toward each other?

2. Blow between the balloons, and to everyone's surprise they will come together and bump into each other. Hmmmmmm.

Howcome, huh?

This is a demonstration of **Bernoulli's Principle**. The faster a fluid (air is a fluid) moves over a surface, the less pressure it exerts on that surface. If you could see an air molecule hanging out in a still room, it would be bopping around in any direction it wants. This is called **random movement** in physics circles. This random motion of air molecules, which results in them bumping into things, is what causes air pressure. If you take this air molecule and herd it along in a particular direction with a bunch of other air molecules (wind is a good example of this) you are no longer giving that molecule the option of deciding where it wants to go. It now has an agenda. By herding the molecules in a particular direction, you have reduced the amount of push they exert to the side (check out the illustration for further enlightenment).



weaker forces in middle allow the balloons to be pushed together.

When the balloons are just hanging there, all of the forces are balanced. When you blow between the balloons, the air rushing into that space pushes very little to the side. The still air on the other side of the balloon pushes harder and this forces the balloons toward each other. This is one of the principles that allows airplanes to fly.