

## Bernoulli's Law with Pop Cans

**Objective:** To demonstrate Bernoulli's Law and explain its relation to air pressure differences and what happens because of these differences.

**Standards:** Properties of Earth Materials (physical and chemical properties of gas) and Motions and Forces (laws of motion).

**Materials:** two empty aluminum pop cans and a flat surface.

**Procedure:**

- (1) Place the empty cans a few inches apart on a flat surface.
- (2) Ask the class what they think will happen when you blow between the cans from above them.
- (3) Blow between the two cans from directly above them and observe what happens.
- (4) Set the cans up again as in step one and ask the class what they think will happen when you blow between the cans horizontally from the level of your flat surface.
- (5) Blow horizontally between the cans from the direct level of the flat surface they are on and observe what happens.

**Science Behind It:** This demo shows what happens when air pressure is changed between the cans. When blowing between the cans in step three, the cans rolled away from each other. This happened because by blowing down between them, you increased the air pressure between them. Air has a natural tendency to move from high to low pressure. Because of this, the cans rolled away from where you blew so that the high pressure between them could equalize with the lower pressure on the other side of the cans. However, when you blew between the cans from a horizontal position in step five, the cans rolled together. This is probably the opposite of the result that the majority of your class predicted. This occurred because this time, you lessened the pressure between the cans. As you blew horizontally, you essentially "cleared out" the air between the cans therefore creating an area of low pressure. The higher pressure on the outside of the cans pushed the cans together towards the area of lower pressure. As the speed of air increases, the pressure of the air decreases and the faster the air moves the less pressure it has. The lessening of pressure due to high speed movement of air is one of the reasons why tornadoes can be very destructive as objects are thrown into the whirling air by the stronger air pressure around them.