



Bernoulli's Principle
Teacher NOTES

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Materials Needed

- Ping Pong Ball
- Hairdryer
- Paper Towel Roll and/or Toilet Paper Roll

Say - Lift is the key force that helps keep an aircraft in the air. For this idea, we are going to look at Bernoulli's Principle doing an activity or experiment involving a hairdryer and a ping pong ball."

Action - Turn on the hairdryer on high (under the cool setting so you do not burn yourself) so that the hairdryer is blowing air upward. Place the ball over the airstream.

Ask - What do you notice about the ping pong ball?

Note – The ping pong ball is floating above the hairdryer.

Say - The hairdryer is providing air pressure which lifts the ping pong ball.

Gravity is providing pressure to push the ball down.

When air pressure going up is equal to gravity going down, the ball "floats"

Note – Bring in the concept of sphere, volume, and surface area. Have students find the volume of the ping pong ball and the surface area.

Ask – Is the air coming in contact with the entire surface area of the ping pong ball?

Action - Try angling the hairdryer at various angle degrees.

Ask – Approximately how many degrees are we moving the ball?

Action - In addition to one ping pong ball, add a second ping pong ball.



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Note - A second ping pong ball allows for discussion to occur regarding air coming in contact with the lower ping pong ball but also traveling around the lower ping pong ball to help make the upper ping pong ball float as well.

Note – Have students find the volume of two ping pong balls.

Action – Bring in a paper towel roll or a toilet paper roll

Ask – What 3d shape does the paper towel roll represent?

Action – Conduct the experiment with a paper towel roll.

Note – Air is going to funnel into the paper towel roll but it is funneling into a smaller area than before. When it funnels into the smaller area, which is the area of a circle, it is going to make the air move faster making the ball explode out of the tube.

Ask – What is the area of the circular opening?

Ask - What is the volume of the paper towel roll?

Or

Ask- How much space is inside the paper towel roll?