

# 8th Grade Flight and Space

Lesson: [April 6]

## Learning Target:

Air Pressure and its effects on objects around them

Cartesian Diver - Boyle's Law

Day 1 of 3

## Warm Up:

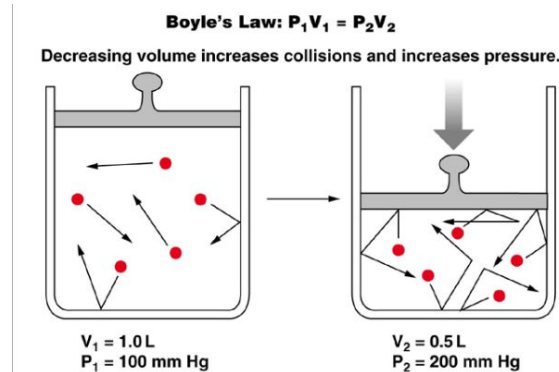
Watch Video: [Boyle's Law](#)

Learn about Boyle's law: [Khan Academy](#)

# Lesson Introduction/Background Information: What is Boyle's Law

- A. It explains why planes fly.
- B. It describes how things grow.
- C. It turns water blue.
- D. It describes how the pressure of a gas tends to increase as the volume of the container decreases.

Correct  
Answer



## Gather Materials



Pen Cap



Chewing Gum

(may use clay or other soft pliable material instead if it is available)

Paper Clip



Water bottle filled with water

Water bottle lid



# Practice:

## Prepare for experiment:

1. Find a space to work, like a kitchen table.
2. Be sure to have all your materials handy.
3. Have towels available to clean up any messes.
4. Be sure to have permission before conducting any experiment!

# Practice:

Step 1: Make sure you have all of the necessary materials.

Step 2: Fill the plastic bottle with water almost to the top.

Step 3: Attach a thick layer of chewing gum to the bottom of the plastic pen cap.

Step 4: Use the paper clip to put a single hole in the chewing gum. Make sure it is all the way through.

Step 5: Put the cap in the bottle so that it floats. The clay side should go inside the water bottle first.

Step 6: Put the lid on the bottle and tighten so that it does not leak any air.

Step 7: Squeeze the sides of the bottle.

Step 8: Observe what happens. Repeat step 7 as needed.

**Keep your supplies! You will need them for your  
day 3 lesson!**

# Self-Assessment:

Write down your understanding of what Boyle's Law is.

Write down how you think air pressure explains how planes fly.

## **Additional Practice:**

Click on the links below to get additional information and to check your understanding!

[Why Boyle's Law is important to NASA](#)

[Cartesian Diver experiment video](#)