Gas Laws Lab Series: Boyle's Law

Kinetic Molecular Theory:
Using your knowledge from the previous unit state the 4 basic assumptions of kinetic molecular theory

1.

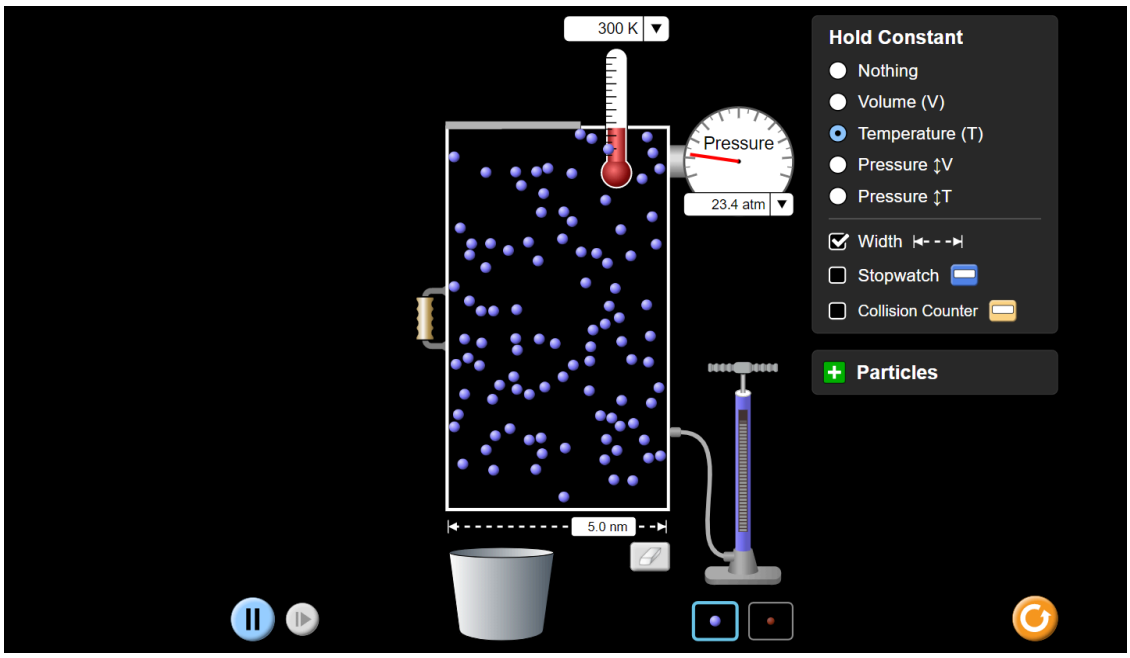
2.

3.

4.

Boyle's Law:
Instructions:

- Go to the simulation.
- Click on "Ideal"
- Insert two pumps of blue gas
- Hold temperature constant
- Click on "width"
- Set the volume to 5.0 nm
- Record Pressure
- Increase volume by increments of 1.0 nm until 15.0 nm.



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Collect data from the lab here:

Be sure to include the units you are using!

Volume (nm)	Pressure
5.0 nm	atm
15.0 nm	

Insert a graph of your data (be sure to label all appropriate axes):

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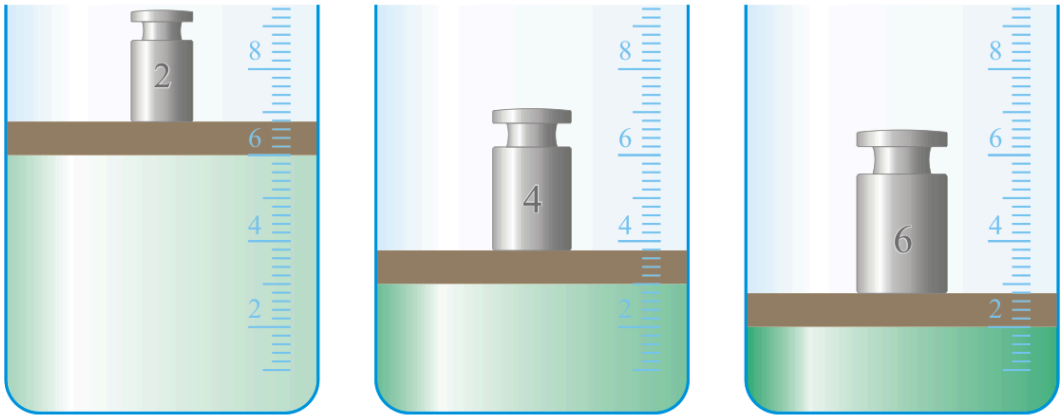
1. What parameters were held constant in this lab?

2. What were the independent and dependent variables?

3. Using your data as a source, what is the overall relationship between pressure and volume? Some things to think about: If the volume doubles what happens to pressure? If the volume halves what happens to the pressure?
   When volume _____ pressure _____.

$T = \text{const.}$



4. Predict the pressure for the following series above, given an initial pressure of 4 atm:

   4 atm ____ atm ____ atm

5. A sample of helium gas in a balloon is compressed from 4.0 L to 2.5 L at a constant temperature. If the pressure of the gas is 210 kPa at 4.0 L volume, what will the pressure be at 2.5 L? Show all your work. (Use the Boyle's Law video to help)

6. Using your lab data and the lung demonstration, develop a model to explain how we are able to breathe air with our lungs. Use terms such as: pressure, volume, inversely proportional.