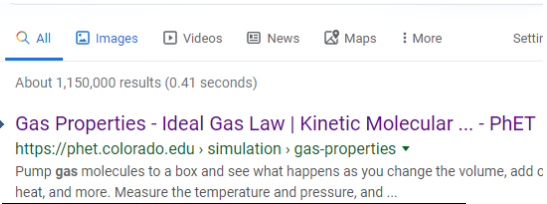
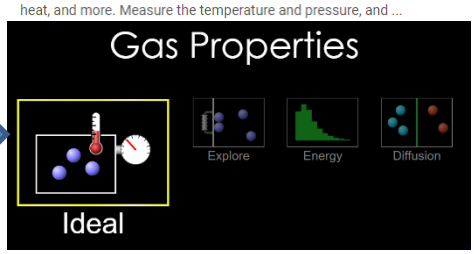
Name_____
Period_____
Date_____

1. Google **PhET Gas Laws html5**

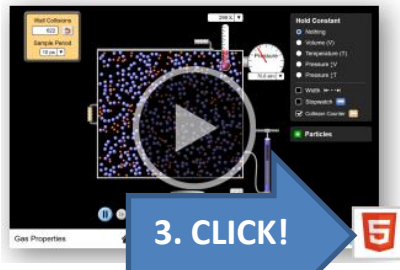


2. CLICK!



4. CLICK!

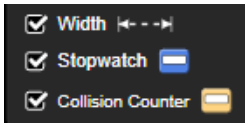
Gas Properties



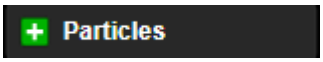
3. CLICK!

Part 1 Directions: Choose "Ideal"

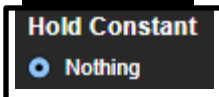
Select these boxes →→→→→→



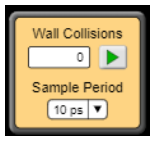
Open this window →

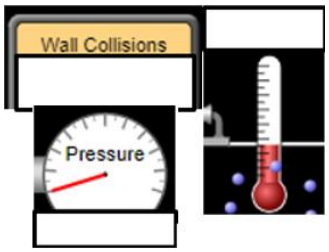


←←Use the stopwatch feature to measure time

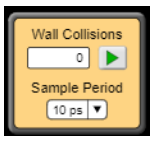


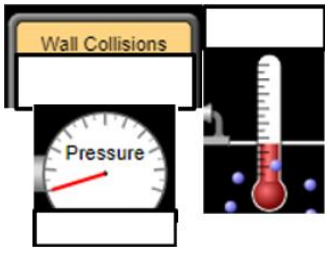
1a With "Nothing" held constant, pump the handle once, press play on the wall collisions monitor and wait 10s. Record the wall collisions, temp and pressure.



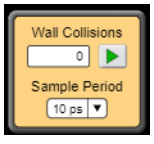


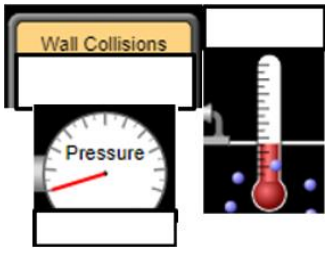
1b. Pump the handle 3 more times (4 times total). Press play on the wall collisions monitor. Record.





1c. Pump the handle 4 more times (8 times total) Press play on the wall collisions monitor. Record.





Compare your answers for 1a, 1b and 1c.

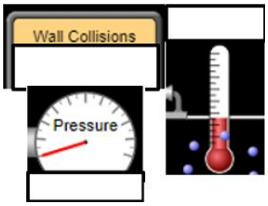
2. What do you notice about the temperature?

3. What do you notice about the pressure?

4. What do you notice about the wall collisions?

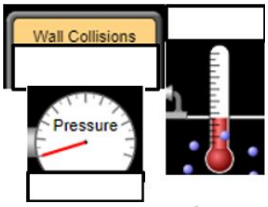
5. Most important part: Can you make a prediction about what would happen if you pumped the handle 16 times? Record.

5a. Your prediction:



→→→→→→→→

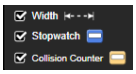
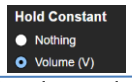
5b. Now do it. Pump the handle another 8 times (16 times total) Press play on the wall collisions monitor. Record



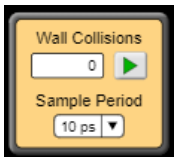
6. Were you close?

Name_____
Period_____
Date_____

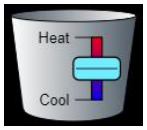
University of Colorado Boulder

Part 2 Directions: Hit reset.  Select  and 

2a Pump the handle 2 times.



Press play on the wall collisions monitor. Record data in the 300 slot in the table for **2b**

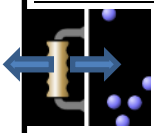


2b Adjust to the desired temperatures and record the collisions and pressures

Temperature	Collisions	Pressure
50		
100		
300		
600		
1200		
5400		

2c. What mathematical relationship between collisions and pressure do you see here? →→

Part 3 Directions: Hit reset.  Select  Pump handle twice, select 

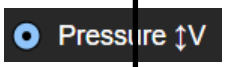


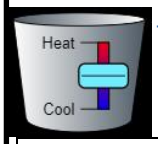
3a Pull handle to expand and contract the container to the volumes given in the table.

Volume	Temperature	Collisions	Pressure
15 cm			
12.5 cm			
7.5 cm			
5 cm			

3b What happens to the pressure as you move the handle?

3c Compare T and V. What relationship do you notice?

Part 4 Directions: Hit reset.  Select  Pump handle twice, select 



4a Heat and cool gas contract the container to the volumes given in the table.

Volume	Temperature	Collisions	Pressure
15 cm			
12.5 cm			
7.5 cm			
5 cm			

4b What happens to the pressure as you move the handle?

4c Compare T and V. What relationship do you notice?

Name_____
Period_____
Date_____

Going further – Ideal Gas Law

How does changing the species of gas particle from heavy to light change the results of this exercise?

Play with the sim a little. Make the lid pop off. How did you do it?

Make the lid pop off A DIFFERENT WAY. How did you do it?

Summarize the relationship between volume, temperature and pressure (use words like “inversely proportional” or “directly proportional”). Use sentences.

We did not fully explore the relationship between moles and temperature, moles and volume or moles and pressure. Can you design an experiment to show the relationship between moles and any one of the other quantities? Give steps to follow to explore this here.