BULACAN STATE UNIVERSITY

College of Professional Teacher Education

Science – Force, Motion, and Energy

ACTIVITY NO. ____ | **THERMAL PHYSICS | Gas in a Box**

Name: _____ Course / Year & Section: _____ Date: _____

Objective: By the end of the activity, you should be able to describe how changes in a gas's conditions affect particle motion, collisions, and macroscopic properties such as pressure and volume using the simulation "easyphysics.science."

GUIDE QUESTION

"How can the kinetic behavior of gas particles explain the relationship among pressure, volume, temperature, and the amount of gas?"

Materials: Any device with an internet connection • Easyphysics simulation • Activity worksheet

I Observe the Model

a. Increase the number of particles to **320 mol.**
b. Set the temperature to **750 K.**
c. Reduce the volume to **100%, 50%,** and **30%.**
d. Observe what happens to the gas particles and the box.

Volume (Piston)	Observations (particles & box)
100%	
50%	
30%	

II What is the Mathematical Pattern?

- Click the **equation sheet**. Find **"Thermal Physics"** and click **gas laws.**
- Set the **temperature constant at 300 K**. Move the volume slider to obtain different volume readings.
- Set the **volume constant at 1.50 L**. Move the temperature slider to obtain different pressure readings.
- Record the **pressure** shown by the simulation.

Temperature is CONSTANT (T = 300 K)		Volume is CONSTANT (V = 1.50 L)	
Volume (L)	Pressure (kPa)	Temperature (K)	Pressure (kPa)
2.50 L		600 K	
1.25 L		250 K	
0.50 L		50 K	

Answer the following questions.

LIVEWORKSHEETS

Q1. What happens to pressure when the volume decreases while temperature is constant?

Q2. What happens to pressure when the temperature increases while volume is constant?

Q3. In both situations, what happens to the collisions of gas particles with the container walls?

Q4. How do these observations help explain the relationship among pressure, volume, and temperature?

CONCLUSION

Conclusion Question: ***Based on your observations and recorded data, how does the motion and collision of gas particles explain why pressure changes when the volume and the temperature of a gas change? Support your answer with evidence from the simulation.***

LIVEWORKSHEETS