Name \_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_

Gas Laws Exploration

Go to the link below, or search “phet gas properties”

<https://phet.colorado.edu/en/simulation/legacy/gas-properties>

***Learning Goal: Students will be able to describe how pressure and volume are affected by a change in temperature and number of particles.***

1. Open the simulation site and explore the gas properties simulation for a few minutes

2) Use the simulation to complete the tables below

* 1. Set the constant to NONE
  2. Push reset
  3. Add a pump or two of air
  4. Allow the pressure to rise to at least 0.5 atmosphere
  5. Set the **Pressure to constant**
  6. Change the temperature/# of particles and record how the volume (size of the box) changes

|  |  |  |
| --- | --- | --- |
| **When the temperature is increased:** | Volume will… | Why does this happen? |
| **When the temperature is decreased:** | Volume will… | Why does this happen? |
| **When particles are added (by pumping more air):** | Volume will… | Why does this happen? |
| **When particles are removed (remove lid of box and wait):** | Volume will… | Why does this happen? |

|  |  |  |
| --- | --- | --- |
| **When temperature is increased:** | Pressure will… | Why does this happen? |
| **When temperature is decreased:** | Pressure will… | Why does this happen? |
| **When particles are added:** | Pressure will… | Why does this happen? |
| **When particles are removed:** | Pressure will: | Why does this happen? |

a) Set constant to NONE

b) Push reset

c) Put in one or two pumps of air

d) Allow the pressure to rise to at least 0.5 atmospheres

e) Set the **volume to constant**

f) Change the temperature/# of particles and record how the pressure changes

|  |  |  |
| --- | --- | --- |
| **When volume is decreased:** | Pressure will: | Temperature will: |
| **When volume is increased:** | Pressure will: | Temperature will: |

a) Set the constant to NONE

b) Change the volume by sliding the box in and out

c) Record your observations

NOTE:

\***Inverse relationship** means when one increases the other variable decreases,

or if one decreases the other increases

\***Direct relationship** means if one goes up the other goes up, or if one goes down, the other goes down

**\*\*Analysis \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1) When temperature volume \_\_\_\_\_\_\_\_\_\_ (draw an arrow to indicate if it increases or decreases)

Therefore, temperature and volume are *inversely / directly* related (circle one)

**This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ‘s Law**

2) When the # of particles the volume \_\_\_\_\_ (draw an arrow up or down)

Therefore, the number of particles and the volume are *inversely / directly* related (circle one)

**This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ‘s Law**

3) When volume pressure \_\_\_\_\_\_\_\_\_\_\_\_\_ (draw an arrow to indicate if it increases or decreases)

Therefore, volume and pressure *inversely / directly* related (circle one)

**This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’s Law**