Gas Law Notes

Gas Pressure Basics

https://www.youtube.com/watch?v=BJNC4KGLq7E

What is gas pressure?

Gas Pressure flows from _____.

Gas Pressure Units

https://www.youtube.com/watch?v=qv81QCGNnVo

mmHg atm kPa

torr

_____=_____=_____

The pressure inside a care is 225kPa. Express this value in *both* atm and mmHg.

Boyles Law

https://www.youtube.com/watch?v=ZoGtVVu3ymQ

This relationship is _____ proportional. (as one goes up, the other has to go _____)

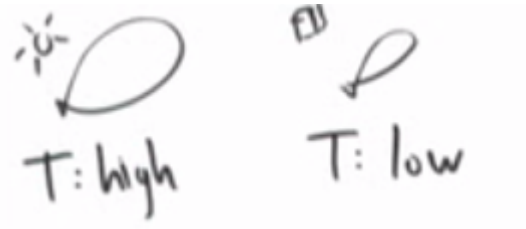
Boyles Law Formula→

At 1.70 atm, a sample of gas takes up 4.25L. It the increased pressure on the gas is increased to 2.40atm, what will the new volume be?

Gas Law Notes

Charles Law

https://www.youtube.com/watch?v=oIfFoiwRCVE



This relationship is _____ proportional. (as one goes up, the other has to go _____)

It is important to note that temperature MUST be in _____! K=273+ ^{o}C

Charles Law Formula→

A balloon takes up 625L at 0^{o}C. If it is heated to 80^{o}C, what will the new volume be?

Gay Lussacs Law

https://www.youtube.com/watch?v=wHD-32rUHkE

The pressure in a sealed can of gas is 235 kPa when it sites at room temperature of 20^{o}C. If the can is warmed to 48^{o}C, what will the new pressure inside the can be?

Feel free to do the second problem if you like. Check your work if you do.

Combined Gas Law

https://www.youtube.com/watch?v=bftkRnTcFj8

The combined gas law is unique because it takes all three gas laws and incorporates them into one gas law.

Combined Gas Law Formula →

If a certain variable (P, V, or T) is held constant, you can remove that variable entirely from the Combined Gas Law

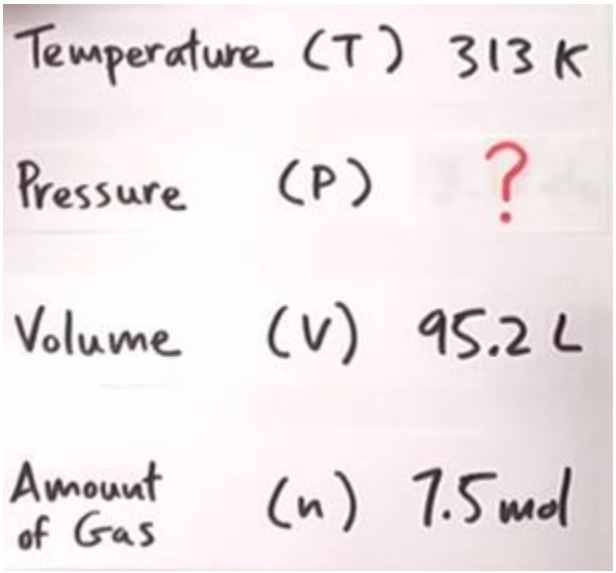
Gas Law Notes

Ideal Gas Law

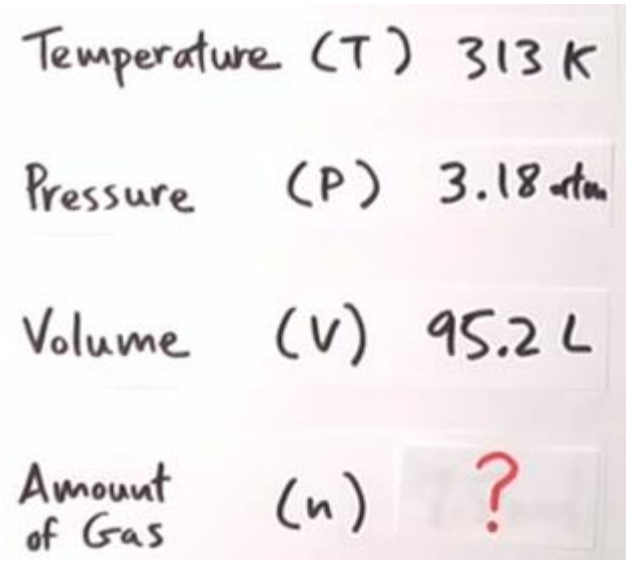
https://www.youtube.com/watch?v=WhP6zJbSxec

Combined Gas Law Formula →

Scenario One(2:58):



Scenario One(3:22):



Importance of R (INCLUDE UNITS-you should have three possible R values)

R when pressure is in atm: R when pressure is in mmHg: R when pressure is in kPa:

Ideal Gas Law Practice Problems

https://www.youtube.com/watch?v=TqLlfHBFY08

2.3 moles of He gas are at a pressure of 1.70 atm and the temperature is 41oC. What is the volume of the gas?

At a certain temperature, 3.24 moles of CO2 gas is at 2.15 atm and takes up a volume of 35.285L. What is the temperature of the gas in oC?

Finding Molar Mass of a Gas

https://www.youtube.com/watch?v=TapRk6E5yr0

A gas sample has a mass of 9.98g. It's volume is 21.6L at a temperature of 75.46oC. The pressure of the gas is 641.0 torr. Determine the gas' molar mass.

(hints, there are 760 torr=1atm, and molar mass is in units of grams/mole)

Molar Volume

https://www.youtube.com/watch?v=Ars7rIMxL4A

Molar volume is determined as the volume occupied by _____ mole of a gas.

Can be determined by using the formula:

Standard Temperature and Pressure is noted as...

Standard Temperature: _____ Standard Pressure: _____

Determine the molar volume of a gas @ STP:

P= _____ Solve for V:

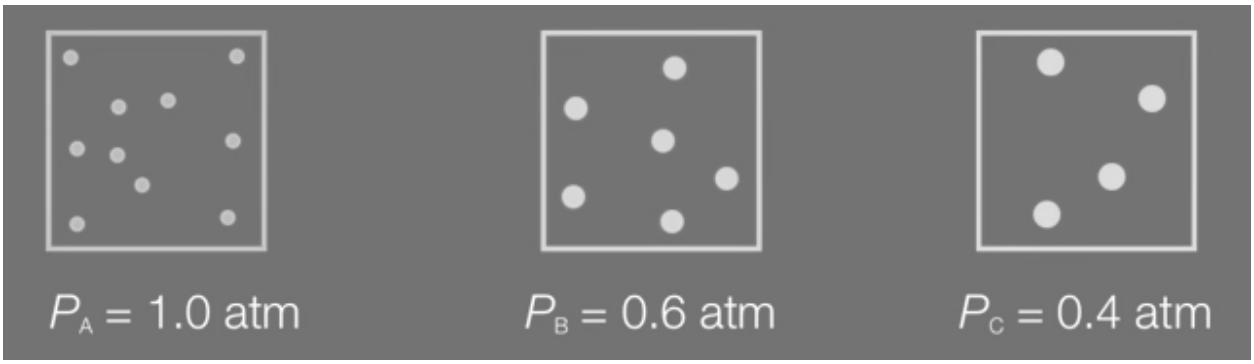
n= _____

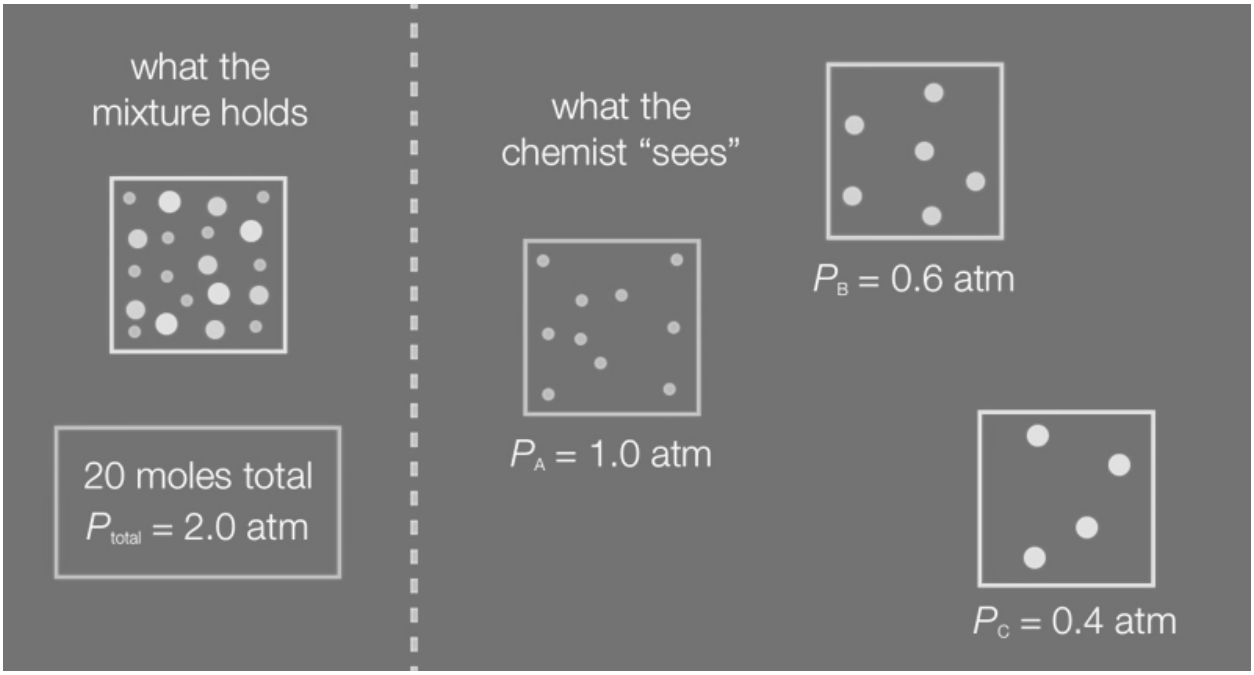
R= _____

T= _____

Daltons Law of Partial Pressure

https://www.youtube.com/watch?v=RqffPYOoxd8





Effusion and Diffusion

https://www.youtube.com/watch?v=VO41-8J254Q

What is diffusion?

What is effusion?

How does molar mass play affect the rates of which molecules diffuse: _____ molecules tend to have lower (slower) rates. This means that _____ molecules have higher (faster) rates.