

Gas HW #1

name _____

both sides

1	There are 20.5 liters of CO ₂ at STP in a balloon. How many moles of gas is that? (show work)		
2	How many grams of CO ₂ are in this balloon? (show work)		
3	How many molecules of CO ₂ are in this balloon? (show work)		
4	Name 4 variables used to describe any gas		
5	A standard scuba tank is 12.0 L in volume. How can 125 L O _{2(G)} at STP fit inside this small tank?		
6	On the back page of your reference table is the combined gas law. Copy it in the box →		
7	Tell what each of the six variables mean. (letters & numbers)	P ₁	P ₂
		V ₁	V ₂
		T ₁	T ₂

8	Pressure + volume can be many units. Why must temperature only be Kelvin?	
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Read the Kinetic Molecular Theory here (and check the BASICS)

Kinetic molecular theory describes the relationships of pressure, volume, temperature, velocity, and frequency and force of collisions among gas molecules.

Kinetic molecular theory (KMT) for an ideal gas states that all gas particles: are in random, constant, straight-line motion; are separated by great distances relative to their size; the volume of the gas particles is considered negligible; have no attractive forces between them; have collisions that transfer energy between particles, but the total energy of the system remains constant.

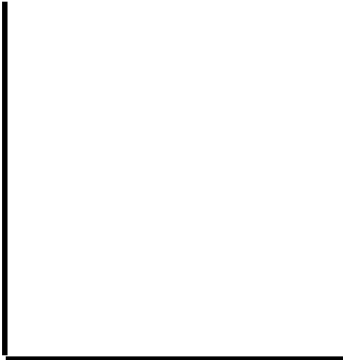
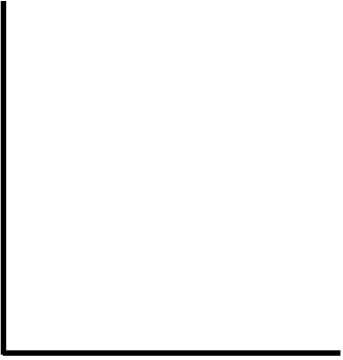

9	What is an ideal gas?	
	Are there any examples of ideal gases?	
	Can gas molecules “hover” or stop moving?	
	What are elastic collisions?	
10	What pressure and temperature of real gases make them act more ideal?	
	Are ideal gas molecules or atoms attracted to each other?	
	Do ideal gas molecules or atoms repel from each other?	

Gas HW #2

name

both sides

Draw 3 small graphs then state the relationship that the variables have with each other (directly proportion or inversely proportion) Label BOTH axis correctly.

Pressure as a function of Volume	Pressure as a function of temperature	Volume as a function of Temperature
		
<p style="text-align: center;">Circle one</p> <p style="text-align: center;">Inversely or Directly Proportional</p>	<p style="text-align: center;">Circle one</p> <p style="text-align: center;">Inversely or Directly Proportional</p>	<p style="text-align: center;">Circle one</p> <p style="text-align: center;">Inversely or Directly Proportional</p>

<p style="text-align: center;">2 Write out the combined gas law</p>	<p style="text-align: center;">3 write the combined gas law with constant temp.</p>
<p style="text-align: center;">4 write the combined gas law with constant pressure</p>	<p style="text-align: center;">5 write the combined gas law with constant volume</p>

7	Your balloon of 16.8 Liters and 2.33 atm is at standard temperature. When it rises into the air it cools down to 258 Kelvin, volume expands to 39.7 Liters, what is the new pressure?
8	The gas in a closed container, at constant volume, has a pressure of 144 kPa at 30.0°C. What will the pressure be if the temperature is lowered to -25.0°C?
9	At constant temperature, calculate the volume of a gas in liters at a pressure of 100.0 kPa if it started at a volume of 1555 mL and a pressure of 120.0 kPa.
10	At constant pressure of 2.00 atm, 22.4 liters at STP warms to 373 K. What is the new volume in liters?

Gas HW #3

name

both sides

1. State Avogadro's Hypothesis perfectly.

2 Write out the chemical formulas for any 2 real gases

3 Write out the chemical formula for any 2 ideal gases

4 Under what conditions of pressure and temperature do real gases act most like ideal gases?

5 Why do real gases act most ideally under those two conditions?

6 If you have different gases (CO_2 , Xe, and C_3H_6) all at 125.4 kPa and 299 K, which of these gases would act the most ideal, and why?

7 A 15.0 Liter metal tank of $N_{2(G)}$ at 122 kPa and $20.0^{\circ}C$ is left in the Sun and it warms up to $50.0^{\circ}C$.
What is the new pressure inside the cylinder at this hotter temperature?

8 A gas with a volume of 4.00 L at 91.0 kPa expands until the pressure drops to 31.0 kPa.
What is the new volume of this gas if the temperature remains constant?

9 If 72.5 L of carbon monoxide at STP is changed to 185.0 kPa at constant temperature, what is new volume?

10 The pressure on 125 L of $CO_{2(G)}$ is 101.3 kPa at 275 K. The gas is chilled to 155 K and the volume drops to 65.0 liters. What is the new pressure of the $CO_{2(G)}$?