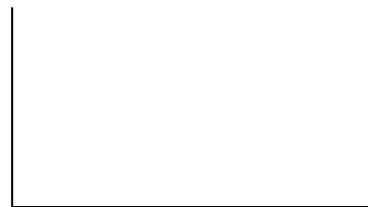


1 Name the 4 variables that are used to describe a gas

_____ , _____ , _____ , _____

2 The Kinetic Molecular Theory can be summed up briefly using these statements: Gases are made up of hard spherical particles. Particle volume is insignificant to gas volume. The particles have no attraction or repulsion for each other. Gas particles move fast and only in straight lines. Particle collisions are elastic – collisions cause no loss of energy. The average kinetic energy of a gas is directly proportional to the temperature of the gas in Kelvin. The collisions of the particles result in gas pressure. Choose 3 and explain them Are they true?, almost true?, sometimes true?, or tell how they are untrue but help explain gases.

3 Draw a line graph showing the relationship between temperature in Kelvin as a function of kinetic energy



4 How many moles of helium are in a balloon of 20.5 L of helium at STP?

5. How many grams of helium are in that balloon ?

6. How many atoms of helium are in that balloon?

7. How is it possible to compress 20.5 liters of helium gas into a 1.0 liter sized canister?

5 On the back page of your reference table is the combined gas law. Write it here

6. Tell what do P, V, and T stand for?



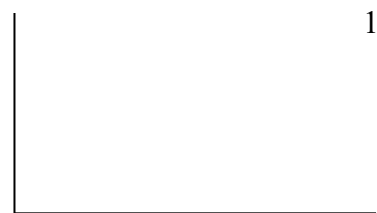
7. You may only use Kelvin for the temperature in this formula. Why?

Gases HW - 2

The graphs MUST have axis labels in the correct place.

name: _____

- 1 Draw a simple graph showing pressure as a function of volume
- 2 Draw a simple line graph showing volume as a function of pressure
- 3 Draw a simple line graph showing pressure as a function of temperature

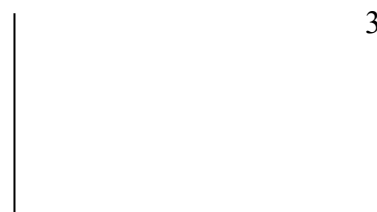


In the boxes below...

4. Write out the combined gas law
5. Re-write the combined gas law with constant temperature
6. Re-write the combined gas law with constant pressure
7. Re-write the combined gas law with constant volume



4	5
6	7



8. How many nitrogen molecules are in 5.12 Liters of the gas at STP?
9. The gas in a closed container (constant volume) has a pressure of 3.00×10^2 kPa at 30.0°C . What will the pressure be if the temperature is lowered to -172°C ? (remember - use Kelvin, and SF!!!) (I'd convert out of scientific notation too)
10. At constant temperature, calculate the volume of a gas in liters at a pressure of 1.00×10^2 kPa if its volume at 1.20×10^2 kPa is 1.50×10^3 mL. (I'd convert out of scientific notation here as well)

- 1 State Avogadro's Hypothesis perfectly.
- 2 Write chemical formulas for any two real gases, and for one ideal gas. _____
- 3 Under what conditions of temperature and pressure do real gases most closely mimic ideal gases?
- 4 If you have three different gases (CO_2 , He, and C_3H_6) all at 125.4 kPa and 299 K, which is most ideal, and why?
- 5 If 32.5 L of carbon monoxide at STP is changed to 75.0 kPa at constant temperature, what is new volume?
- 6 The pressure on 125 L of carbon dioxide is 101.3 kPa at 275 Kelvin. If it's chilled to 155 K with volume becomes 65.0 liters, what is the new pressure?
- 7 A sealed cylinder (constant volume) contains N_2 gas at 1.00×10^3 kPa pressure and a temperature of 20.0°C . If the cylinder is left in the sun and heats to 50.0°C . What is the new pressure inside the cylinder?
- 8 A gas with a volume of 4.0 L at 90.0 kPa expands until the pressure drops to 20.0 kPa. What is the new volume if the temperature remains constant?