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Gas Laws Problems Worksheet(alternate assignment to note activity)
Show all work including equations and units to receive full credit !!

Charles' Law: What remains constant?_____

1. A gas occupies 3.7 L at 100.0 C. What volume will it occupy at 50.0 C?

Boyle's Law: What remains constant?_____

2. A gas occupies 5.0 L at 101.3 kPa. What volume will it occupy at 1.7 atm?
3. A gas occupies 10.0 L at 1.2 atm. What pressure in kPa will cause it to expand to 15.0 L?

Combined gas law: What remains constant?_____

4. At what temperature (in C) will a sample of gas occupy 25.0 L with a pressure of 215 kPa if the sample occupies 50.0 L at 13.5 C and 105 kPa?

5. A gas sample occupies 50.0L at 13.5 C and 105 kPa. What volume should it occupy at 750 K and 75.3 kPa?

6. At what pressure (in atm) will a gas sample occupy 30.0 L with a temperature of 273 K if it occupies 50.0 L at 13.5 C and 105 kPa.?

Ideal gas law:

7. How many liters would 2.7 moles of an ideal gas occupy if it were at 20.0 C and 1.3 atm ?

8. Suppose two 200.0 L tanks are to be filled separately with the gases helium and hydrogen. What mass of each gas is needed to produce a pressure of 135 atm in its respective tank at 24 C?

9. What volume is occupied by 5.03 g of O_2 at 28 C and a pressure of 0.725 atm?

Dalton's law of partial pressures:

10.   (a) Write out Dalton's law of partial pressures here in equation form:

     (b) State Avogadro's hypothesis here:

11. A gas mixture of Helium and Nitrogen is at 273 K and 200 kPa. If the pressure in the tank due to the presence of the Nitrogen gas is 123 kPa, what is the pressure from the Helium?
What percent of the gas particles in the tank are Nitrogen molecules?

12. If 2.43 % of the particles in a sample of air are Argon, what is the partial pressure of Ar in a 1.00 L sample of air at STP (101.3 kPa and 0.0 C)?

13. Mixtures of helium and oxygen are used in scuba diving tanks to help prevent 'the bends.' For a particular dive, 46 L of O_2 at 25 C and 1.00 atm was pumped along with 12 L of He at 25 C and 1.00 atm into a tank with a volume of 5.0 L . Calculate the partial pressure of each gas *and* the total pressure in the tank at 25 C.

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