**AP CHEMISTRY – GAS LAWS WORKSHEET**

1. What would be the resulting volume of a 4.15 L balloon at 17.5 °C that was placed in a container of hot water at 80.5 °C?

2. At 0 °C, 2.5 moles of gas occupy a volume of 350 mL. What is the pressure of the gas? Report the answer in kPa.

3. A balloon has a volume of 30.55 L at a pressure of 125.75 kPa. What will be the new volume when the pressure is 45.25 kPa?

4. At 25 °C, a gas occupies a volume of 150 mL at a pressure of 0.85 atm. What is the number of moles of the gas?

5. What is the rate of effusion of dinitrogen pentoxide gas compared to dichlorine monoxide gas?

6. A mixture of oxygen, nitrogen, hydrogen, and carbon dioxide gases has a total pressure of 725 mm Hg. What is the partial pressure of nitrogen gas if the partial pressure of oxygen gas is 125 mm Hg, the partial pressure of hydrogen gas is one half the partial pressure of oxygen gas, and the partial pressure of carbon dioxide gas is three times the partial pressure of hydrogen gas?

7. At 2.5 atm, 0.5 moles of gas occupy a volume of 70 mL. What is the temperature in °C of the gas?

8. At -10 °C, 45 mL of a gas has a pressure of 345 torr. What is the gas volume at -50 °C and 600 torr?

9. At 100 °C, the pressure of a gas is 1.2 atm. At what temperature in °C will the pressure be 0.75 atm?

10. At 10 °C, 13.45 grams of hydrogen gas occupy has a pressure of 75 kPa. What is the volume of the gas?
11. At -35 ºC, 0.75 moles of gas has a pressure of 55 kPa. What is the volume of the gas?

12. A balloon has a volume of 15.75 L at a pressure of 95.75 kPa. What will be the new volume when the pressure is 5.25 kPa?

13. 50.75 grams of O₂ in a 1.85 L cylinder exert a pressure of 3.68 atm. What is the temperature in the cylinder in ºC?

14. A mixture of oxygen, nitrogen, hydrogen, and carbon dioxide gases has a total pressure of 975 mm Hg. What is the partial pressure of carbon dioxide gas if the partial pressure of oxygen gas is 195 mm Hg, the partial pressure of hydrogen gas is one third the partial pressure of oxygen gas, and the partial pressure of nitrogen gas is five times the partial pressure of hydrogen gas?

15. What would be the resulting volume of a 7.25 L balloon at 35.5 ºC that was placed in a container of hot water at 92.5 ºC?

16. A metal tank contains three gases: oxygen, helium, and nitrogen. If the partial pressures of the three gases in the tank are 35 atm of O₂, 5 atm of N₂, and 25 atm of He, what is the total pressure inside of the tank?

17. A child has a toy balloon with a volume of 1.80 liters. The temperature of the balloon when it was filled was 20º C and the pressure was 1.00 atm. If the child were to let go of the balloon and it rose 3 kilometers into the sky where the pressure is 0.667 atm and the temperature is -10º C, what would the new volume of the balloon be?

18. At 125 ºC, the pressure of a gas is 0.85 atm. At what temperature in ºC will the pressure be 0.25 atm?

19. What is the rate of effusion of fluorine gas compared to krypton gas?

20. How many moles of gas are in a 30 liter scuba canister if the temperature of the canister is 27 ºC and the pressure is 200 atmospheres?

TEXTBOOK PROBLEMS CHAPTER 5

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