Chapter 6 worksheet- CHM 2045

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1. A cylinder contains 28.5 L of oxygen gas at a pressure of 1.8 atm and a temperature of 298 K. How much gas (in moles) is in the cylinder?

2. A piece of dry ice (solid carbon dioxide) with a mass of 28.8 g sublimes (converts from solid to gas) into a large balloon. As- suming that all of the carbon dioxide ends up in the balloon, what is the volume of the balloon at 22 °C and a pressure of 742 mmHg?

3. A 48.3-mL sample of gas in a cylinder is warmed from 22 °C to 87 °C. What is its volume at the final temperature?

4. Aerosol cans carry clear warnings against incineration because of the high pressures that can develop upon heating. Suppose that a can contains a residual amount of gas at a pressure of 755 mmHg and a temperature of 25 °C. What would the pressure be if the can were heated to 1155 °C?

5. A gas mixture contains 1.25 g N_2 and 0.85 g O_2 in a 1.55 L con tainer at 18 °C. Calculate the mole fraction and partial pressure of each component in the gas mixture.

6. The hydrogen gas formed in a chemical reaction is collected over water at 30.0 °C at a total pressure of 732 mmHg. What is the partial pressure of the hydrogen gas collected in this way?

7. A gas mixture contains each of the following gases at the indi- cated partial pressures: N_2, 215 torr; O_2, 102 torr; and He, 117 torr. What is the total pressure of the mixture? What mass of each gas is present in a 1.35-L sample of this mixture at 25.0 °C?

8. Consider the chemical reaction:

$C(s) + H_2O(g) = CO(g) + H_2(g)$

How many liters of hydrogen gas are formed from the complete reaction of 15.7 g C? Assume that the hydrogen gas is collected at a pressure of 1.0 atm and a temperature of 355 K.

9. What is the temperature of an 11.2-L sample of carbon monoxide, CO, at 744 torr if it occupies 13.3 L at 55 °C and 744 torr?