Name _____

Period _____   Date _____

The Basics (6 points)

1. A tank is filled with three inert gases: helium, argon, and xenon. The total pressure of the container measures 18.9 atm after adding 3.6 atm of helium, an unknown amount of argon, and 9.7 atm of xenon. What is the partial pressure of argon in the container?

1 point

_____atm Ar

2. A mixture of hydrocarbons contains three moles of methane, four moles of ethane, and five moles of propane. The container has a volume of 124 liters and the temperature is 22 °C. Find the partial pressures of the three gases, in atm.

2 points

_____atm CH_4 _____atm C_2H_6 _____atm C_3H_8

3. What is the partial pressure of carbon dioxide in a container that holds 5.00 moles of carbon dioxide, 3.00 moles of nitrogen, 2.00 moles of hydrogen and has a total pressure of 1.05 atm? (NO CALCULATOR!)
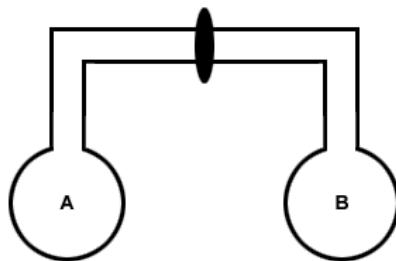
2 points

_____atm CO_2

4. A rigid tank holds a mixture of two gases: N_2 with a partial pressure of 0.657 atm and NO_2 with a partial pressure of 0.382 atm. What is the mole fraction of each gas in the mixture? If the container was 5.00 L and held at 45.2°C, how many grams of each gas were placed in the container?

3 points

_____g N_2 _____g NO_2
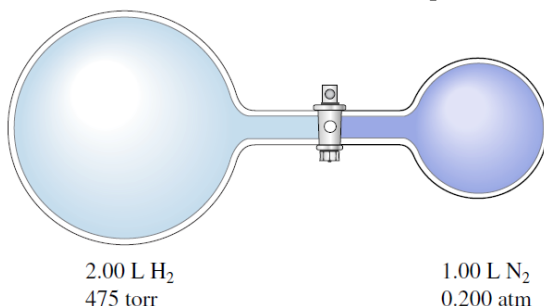
The Flasks (3 points)

5. The stopcock between a 3.00 L bulb containing oxygen at 295 torr and a 1.00 L bulb containing nitrogen at 530 torr is opened. What is the total pressure of the mixture (assume constant T = 25.0°C)?

1 point

_____ torr

6. Consider the flasks in the following diagram. What are the final partial pressures of H_2 and N_2 after the stopcock between the two flasks is opened?

1 point

2.00 L H_2
475 torr

1.00 L N_2
0.200 atm

_____atm H_2 _____atm N_2

7. Two flasks contains 6.00 L of gas A at a pressure of 0.458 atm and a 3.00 L sample of gas B which has an unknown pressure. The final pressure in the flasks after opening the stopcock between them is 0.418 atm. Calculate the initial pressure of gas B in its 3.00 L flask.
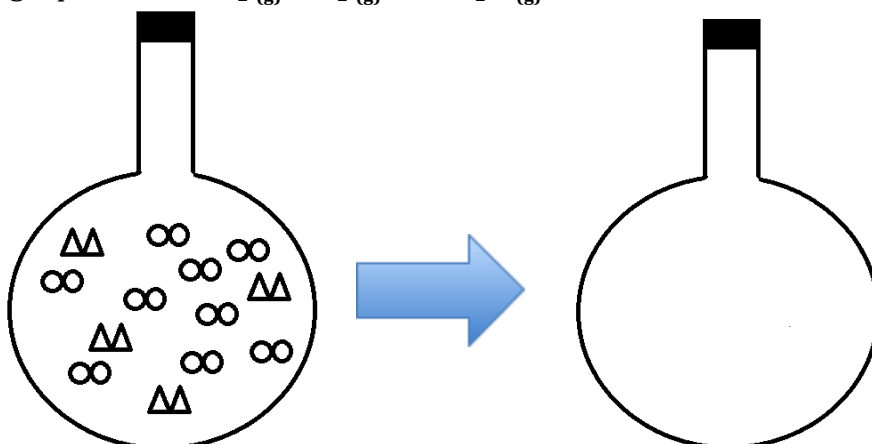
2 points

_____atm B

The Reactions (4 points)

8. The flask below contains molecules of nitrogen gas and oxygen gas, which react to form N_2O via the following equation: $2 N_{2 (g)} + O_{2 (g)} \rightarrow 2 N_2O_{(g)}$.

- o   Draw the flask after reaction, assuming stoichiometric reaction of ideal gases.
- o   What is the total pressure in the flask after reaction, assuming each particle of gas represents 0.200 atm?

_____atm

9. A rigid 5.00 L container contains 0.176 mol of NO $_{(g)}$ at 298 K. A 0.176 mol sample of $O_{2 (g)}$ is added to the cylinder, where a reaction occurs to produce $NO_{2 (g)}$. Calculate the total pressure in kPa inside the container after the reaction has gone to completion.

_____kPa

10. 3.98 grams of propane gas (C_3H_8) are combusted with 1.77 mol of oxygen gas in a 2.78 L container at 157°C. What is the partial pressure of all 4 gases after reaction?

_____atm C_3H_8 _____atm O_2 _____atm CO_2 _____atm H_2O