Standardized Test Prep

Answer the following items on a separate piece of paper.

MULTIPLE CHOICE

1. Pressure can be measured in

A. grams. **C.** pascals.
B. meters. **D.** liters.

2. A sample of oxygen gas has a volume of 150 mL when its pressure is 0.923 atm. If the pressure is increased to 0.987 atm and the temperature remains constant, what will the new volume be?

A. 140 mL **C.** 200 mL
B. 160 mL **D.** 240 mL

3. What is the pressure exerted by a 0.500 mol sample of nitrogen in a 10.0 L container at 20°C?

A. 1.2 kPa **C.** 0.10 kPa
B. 10 kPa **D.** 120 kPa

4. A sample of gas in a closed container at a temperature of 100.0°C and 3.0 atm is heated to 300.0°C. What is the pressure of the gas at the higher temperature?

A. 35 atm **C.** 59 atm
B. 4.6 atm **D.** 9.0 atm

5. An unknown gas effuses twice as fast as CH_4. What is the molar mass of the gas?

A. 64 g/mol **C.** 8 g/mol
B. 32 g/mol **D.** 4 g/mol

6. If 3 L N_2 and 3 L H_2 are mixed and react according to the equation below, how many liters of unreacted gas remain? Assume temperature and pressure remain constant.

$$N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$$

A. 4 L **C.** 2 L
B. 3 L **D.** 1 L

7. Avogadro's law states that

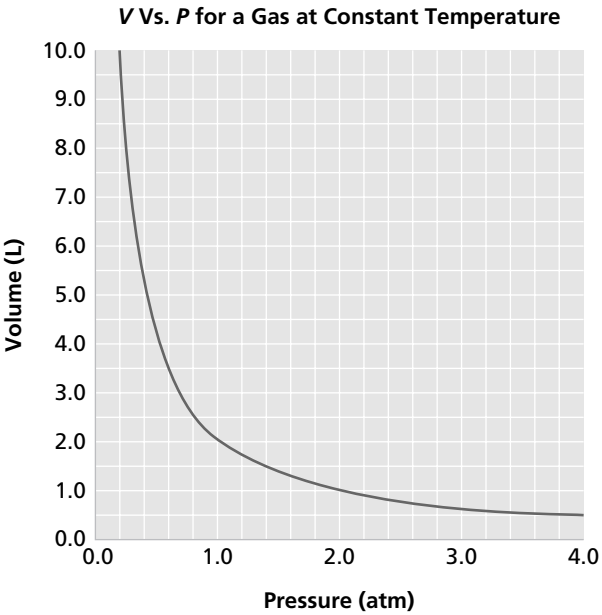
A. equal numbers of moles of gases at the same conditions occupy equal volumes, regardless of the identity of the gases.
B. at constant pressure, gas volume is directly proportional to absolute temperature.
C. the volume of a gas is inversely proportional to its amount in moles.
D. at constant temperature, gas volume is inversely proportional to pressure.

SHORT ANSWER

8. Give a molecular explanation for the observation that the pressure of a gas increases when the gas volume is decreased.

9. The graph below shows a plot of volume versus pressure for a particular gas sample at constant temperature. Answer the following questions by referring to the graph. No calculation is necessary.

a. What is the volume of this gas sample at standard pressure?
b. What is the volume of this gas sample at 4.0 atm pressure?
c. At what pressure would this gas sample occupy a volume of 5.0 L?



EXTENDED RESPONSE

10. Refer to the plot in question 9. Suppose the same gas sample were heated to a higher temperature and a new graph of *V* versus *P* were plotted. Would the new plot be identical to this one? If not, how would it differ?

Test TIP If you are permitted to, draw a line through each incorrect answer choice as you eliminate it.