Applying the Gas Laws

Calculate the answers to the problems below using the gas laws.

_____ 1. What is the new volume of a gas if 50 mL at 81.0 kPa has its pressure increased to 101.3 kPa? (Temperature is constant.)

_____ 2. 720 mL of H_2 gas at 0°C and 126.6 kPa is changed to S.T.P. What will be its new volume ?

_____ 3. 440 mL of N_2 gas at 127°C is cooled to 27°C, while its pressure is kept constant. What is the new volume ?

_____ 4. One thousand four hundred liters of N_2 gas at a pressure of 1.25 atmospheres has its pressure changed to 17.5 atmospheres. What will be its new volume at the new pressure? (Temperature is constant.)

_____ 5. Hydrogen gas occupies a volume of 400 mL at 27°C. Find the volume it will occupy if the temperature is increased to 57°C? (Pressure is kept constant.)

_____ 6. What is the pressure that must be exerted on 300 mL of a gas which has been collected at STP So that it may be confined to a volume of 190 mL? (Temperature is kept constant.)

_____ 7. If 260 mL of O_2 gas is collected at 21°C and 101.3 kPa, what volume would this gas occupy at STP?

_____ 8. 65 liters or a gas at 52°C is to be expanded to 72 liters. To what temperature must this gas be changed? (in degrees Celsius)

_____ 9. A student collected 20 mL of a gas at 96 kPa. If the temperature remains constant, what volume will the gas occupy when the pressure is changed to 112 kPa?

_____ 10. What is the volume do 482 liters of gas occupy if the temperature of the gas is changed from standard temperature to 27°C while the pressure is held at standard pressure?

BONUS

_____ 11. A gas that was collected at 27°C and 52.0 kPa occupied 200 mL. What will its new volume be if its temperature is changed to 50°C and its pressure to 40.0 kPa? (Note: notice the changes that are taking place in this problem.)

© Evan P. Silberstein, 2003