Gas Laws and Kinetic Molecular Theory Practice Exam

Temperature and Pressure

1. Complete the following values for STP:
   A. ___ atm E. ___ torr G. ___ °C
   B. ___ kPa F. ___ lbs/in^2 H. ___ K
   C. ___ mmHg
2. "Absolute zero" is equal to ___ °C and ___ K.
3. Convert 500 °C to the equivalent Kelvin temperature.
4. On the Celsius scale, what is the equivalent temperature of 317 Kelvins?

Gas Laws

5. A sample of helium has a volume of 3 liters when the pressure is 500 torr. What volume does the gas occupy at 300 torr?
6. At a pressure of 100 kPa, a sample of a gas has a volume of 50 liters. What pressure does it exert when the gas is compressed to 40 liters?
7. A 400 mL sample of nitrogen in a container has a pressure of 2 atm at a temperature of 250 K. What is the temperature is raised to 300 K and the pressure increased to 4 atm?

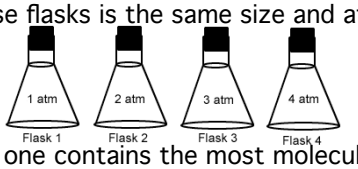
Ideal Gas Law

8. A 7.50 liter sealed jar at 18 °C contains 0.250 moles of oxygen gas. What is the pressure in the container?
9. A gas exerts a pressure of 1.40 atmospheres when held in 8.00 liters at 22 °C. How many moles of the gas are present in the container?

Kinetic Molecular Theory

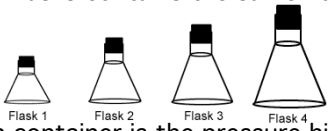
10. Four different flasks contain gas samples at 298 K. In which of the following samples will the gas molecules be moving the fastest? (N_2, O_2, H_2O, CO_2)
11. Gas pressure is caused by the ___ of gas molecules with surfaces.

Each of these flasks is the same size and at the same temp.



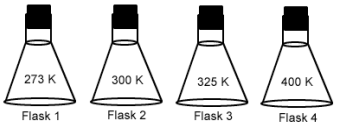
12. Which one contains the most molecules?
13. Which one contains the fewest molecules?

Each of these flasks contains the same number of molecules.



14. In which container is the pressure highest?
15. In which container is the pressure the lowest

Each of these flasks contains the same number of molecules.



16. In which would the pressure be highest?
17. In which one would the pressure be lowest?