

Key

AVOGADRO'S LAW: Amount-Volume Relationship

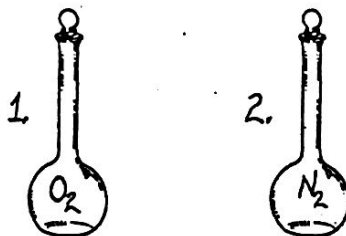
Why do all gases behave in the same manner when placed under similar conditions of temperature and pressure? The answer to this question was answered by Amedeo Avogadro in the early nineteenth century. He proposed a very simple hypothesis relating the volume of a gas to the number of gas particles.

If two gases are at the same volume, temp, and pressure, they will contain the same # of particles.

Questions 1-4 are based on the following information.

Two samples of gas are contained in separate flasks as shown in the drawing. Both flasks have a volume of 1 liter. An oxygen molecule has a greater mass than a nitrogen molecule. Choose a phrase from below to complete each statement.

- A. flask number 1 is greater
- B. flask number 2 is greater
- C. each flask is the same



1. If each sample is at STP, then the number of molecules in C.
2. If each sample is at STP, then the mass of the contents of A.
compare to 5 feathers
vs. 5 bricks
3. If each sample is sealed and heated to the same temperature, then the pressure in C.
4. If the temperature of both flasks is doubled, then the average kinetic energy of the molecules in C.