1. Which statement describes particles of an ideal gas, based on the kinetic molecular theory?

   A) Gas particles are separated by distances smaller than the size of the gas particles.
   B) Gas particles do not transfer energy to each other when they collide.
   C) Gas particles have no attractive forces between them.
   D) Gas particles move in predictable, circular motion.

2. Under which conditions of temperature and pressure does a real gas behave most like an ideal gas?

   A) low temperature and low pressure
   B) low temperature and high pressure
   C) high temperature and low pressure
   D) high temperature and high pressure

3. According to the kinetic molecular theory, which statement describes the particles of an ideal gas?

   A) The gas particles are arranged in a regular pattern.
   B) The force of attraction between the gas particles is strong.
   C) The gas particles are hard spheres in continuous circular motion.
   D) The collisions of the gas particles may result in the transfer of energy.

4. A sample of a gas is contained in a closed rigid cylinder. According to kinetic molecular theory, what occurs when the gas inside the cylinder is heated?

   A) The number of gas molecules increases.
   B) The number of collisions between gas molecules per unit time decreases.
   C) The average velocity of the gas molecules increases.
   D) The volume of the gas decreases.

5. When a sample of a gas is heated at constant pressure, the average kinetic energy of its molecules

   A) decreases, and the volume of the gas increases
   B) decreases, and the volume of the gas decreases
   C) increases, and the volume of the gas increases
   D) increases, and the volume of the gas decreases

6. A 220.0-mL sample of helium gas is in a cylinder with a movable piston at 105 kPa and 275 K. The piston is pushed in until the sample has a volume of 95.0 mL. The new temperature of the gas is 310. K. What is the new pressure of the sample?

   A) 51.1 kPa B) 216 kPa
   C) 243 kPa D) 274 kPa

7. Which temperature change would cause a sample of an ideal gas to double in volume while the pressure is held constant?

   A) from 400. K to 200. K
   B) from 200. K to 400. K
   C) from 400.°C to 200.°C
   D) from 200.°C to 400.°C

8. A sample of gas is held at constant pressure. Increasing the kelvin temperature of this gas sample causes the average kinetic energy of its molecules to

   A) decrease and the volume of the gas sample to decrease
   B) decrease and the volume of the gas sample to increase
   C) increase and the volume of the gas sample to decrease
   D) increase and the volume of the gas sample to increase

9. A sample of oxygen gas has a volume of 150. milliliters at 300 K. If the pressure of the sample is held constant and the temperature is raised to 600 K, the new volume of the sample will be

   A) 75.0 ml B) 150. ml
   C) 300. ml D) 600. ml

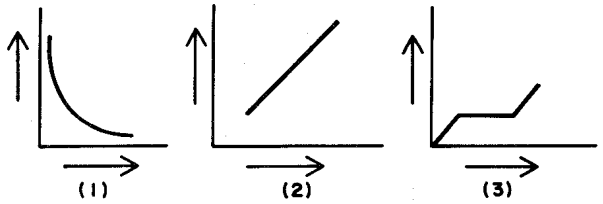
10. The volume of a sample of a gas is 1.0 liter at STP. If the pressure remains constant and the temperature is raised to 546 K, the new volume of the gas will be

    A) 0.25 L B) 2.0 L
    C) 0.50 L D) 4.0 L

11. A sample of gas has a volume of 12 liters at 0ºC and 380 torr. What will be its volume when the pressure is changed to 760 torr at constant temperature?

    A) 24 L B) 18 L C) 12 L D) 6.0 L

12. Base your answer to the following question on the graphs shown below.



Which graph best represents how the volume of a given mass of a gas varies with the pressure exerted on it at constant temperature?

A) 1 B) 2 C) 3

13. The volume of a sample of a gas at 0°C is 100 liters. If the volume of the gas is increased to 200 liters at constant pressure, what is the new temperature of the gas in degrees Kelvin?

A) 0 K B) 273 K
C) 100 K D) 546 K

14. Base your answer to the following question on the information below:

Sample	*Mass*	*Pressure*	*Temperature*
Gas *A*	2 moles	760 mm.	273° K.
Gas *B*	1 mole	380 mm.	273° K.
Gas *C*	1 mole	760 mm.	273° K.
Gas *D*	2 moles	760 mm.	546° K.

Which gas occupies the *smallest* volume?

A) *A* B) *B* C) *C* D) *D*