Name _____ Class _____ Date _____

Assessment

Gases

Section Quiz: Diffusion and Effusion

In the space provided, write the letter of the term or phrase that best completes each sentence or best answers each question.

_____ **1.** The process by which the particles of a gas randomly pass through a tiny opening is called
- **a.** vaporization.
- **b.** diffusion.
- **c.** depressurization.
- **d.** effusion.

_____ **2.** Gas molecules will diffuse faster if the
- **a.** temperature decreases.
- **b.** temperature increases.
- **c.** pressure decreases.
- **d.** volume increases.

_____ **3.** The gas law that states that the rate of effusion of a gas is inversely proportional to the square root of the molar masses of the gases is
- **a.** Charles's law.
- **b.** Avogadro's law.
- **c.** Kelvin's law.
- **d.** Graham's law.

_____ **4.** You are measuring the speeds of two particles at the same conditions. The more massive particle will move
- **a.** at a slower speed.
- **b.** at a quicker speed.
- **c.** at the same speed as the less massive particle.
- **d.** slightly, then stop.

_____ **5.** The kinetic energy of the particles in a gas can be expressed as
- **a.** $\sqrt{mv}$.
- **b.** mv^2.
- **c.** $\frac{1}{2}mv^2$.
- **d.** mv.

Section Quiz, *continued*

_____ **6.** The average kinetic energy of the particles in any gas depends only on the
- **a.** volume of the gas.
- **b.** pressure of the gas.
- **c.** temperature of the gas.
- **d.** number of moles of the gas.

_____ **7.** The rate of effusion of a gas does *not* depend on
- **a.** temperature.
- **b.** molar mass.
- **c.** size of opening.
- **d.** size of container.

_____ **8.** Graham's law of effusion is derived from
- **a.** the equation relating the kinetic energy of two different gases under the same conditions.
- **b.** the equation that combines Boyle's law, Charles's law, Gay-Lussac's law, and Avogadro's law.
- **c.** Gay-Lussac's law of combining gas volumes.
- **d.** the combined gas law.

_____ **9.** Which of these gases diffuses the fastest under the same conditions?
- **a.** HCl
- **b.** H_2
- **c.** Cl_2
- **d.** He

_____ **10.** According to Graham's Law, the rate of effusion of gas A divided by the rate of effusion of gas B under the same conditions is equal to
- **a.** $\frac{\sqrt{\text{molar mass of A}}}{\sqrt{\text{molar mass of B}}}$.
- **b.** $\frac{1}{2}\left(\frac{\sqrt{\text{molar mass of A}}}{\sqrt{\text{molar mass of B}}}\right)$.
- **c.** $\frac{\sqrt{\text{molar mass of B}}}{\sqrt{\text{molar mass of A}}}$.
- **d.** $\frac{(\sqrt{\text{molar mass of B}})^2}{(\sqrt{\text{molar mass of A}})^2}$.