Graham's Law Problems and The Kinetic Molecular Theory

These problems should be done on a separate sheet of paper.

1) If two ideal gases are both at the same temperature what else is the same for both of them.

2) If two ideal gases are at the same temperature what can you say about the velocities of their particles? Are they the same? Are they different?

3) A 5.00L container contains two gases (helium and argon) that are both at standard temperature and pressure. Which of the following will be the same for both gases? If they are different which one has the greater value and why?

a) Average kinetic energy of the particles
b) Velocity of the particles
c) Moles of the particles
d) Mass of the particles
e) Density of the particles

4) What are the statements (postulates) we use to describe an ideal gas?

5) Which of these postulates are not totally accurate? Why?

6) What are the conditions under which a gas behaves most ideally? Why?

7) What is the difference between diffusion and effusion?

8) What is Graham's Law?

9) What two factors are important when determining how fast a gas diffuses?

10) An unknown gas effuses 1.66 times more rapidly than CO_2. What is the molar mass of the unknown gas.

11) A sample of hydrogen gas effuses through a porous container 9 times faster than an unknown gas. Estimate the molar mass of the unknown gas.

12) How much faster does hydrogen escape through a porous container than sulfur dioxide?

13) What is the rate of effusion for a gas that has a molar mass twice that of a gas that effuses at a rate of 3.62 mol/min?