Question #62696, Chemistry / Physical Chemistry

Three 1.0 liter flasks are filled with hydrogen, oxygen and Neon, respectively, at STP. Which of the following statements is true?
a) all the flasks have the same number of gas molecules
B) the velocity of the gas molecules is the same in all the flasks.
C) the densities of all the gases are the same.
D) there are twice as many O_2 and H_2 molecules as Ne atoms.

Answer:
1 mole of any gas occupies 22.4 L of space. So 1 L of any gas at STP :

$$n = \frac{1}{22.4} = 0.045 \; mol$$

a) all the flasks have the same number of gas molecules