10.75

a) Increasing the volume of the container will decrease the rate at which gas molecules collide with the walls.

b) Increasing the temperature will increase the rate at which gas molecules collide with the walls.

c) Increasing the molar mass will decrease the rate at which gas molecules collide with the walls.

10.76

a) True

b) True

c) False, at any given temperature the molecules in a gas travel at distribution of velocities. Therefore, they have different kinetic energies.

d) True

e) False, gas molecules at the same temperature exhibit a distribution of speeds...they are not all the same.

10.79

a) Average kinetic energy will increase.

b) Since the average kinetic energy is increasing and the gas doesn't become more massive as it heats, the rms speed must be increasing.

c) As velocity increases the strength of the impact with the container walls will increase.

d) As velocity increases the frequency of the impacts with the container wall will increase.

    Due to the changes mentioned in c & d, the pressure will increase.

10.80

a) The number of molecules will be equal (Avogardro's principle)

b) The N_2 will be more dense because it has a higher *MM*.

c) The average kinetic energies will be equal.

d) The lighter CH_4 molecules will effuse more rapidly because they are moving faster at any given temperature.

10.81

a) At any temperature, lighter gas particles will travel faster. Therefore, in order of particle speed: $HBr < NF_3 < SO_2 < CO < Ne$

10.89

a) Gases deviate from ideal behavior when the become more dense. This happens at low temperatures and high pressures.

b) High density gases deviate from ideal behavior because the volume of the molecules themselves becomes significant and the IMF's within the substance become significant.