Quiz 5 Name:_____

Chem 1A, Fall 2018

Fossum

Always remember to show your work, check sig figs, include units, and explain your reasoning.

$PV=nRT$	1 atm = 760 mm Hg (exact)
$R = 0.08206\ L \cdot atm/K \cdot mol$	$P_A V = n_A RT$
$P_A = X_A P_{total}$	$P_{total} V = n_{total} RT$

1. (6) An unknown gas has a density of 1.27 g/L at 22°C and 778 mm Hg. Calculate the molar mass of this gas.

2. (5) A mixture of gases contains 0.0500 moles of N_2, 0.0200 moles of O_2, and 0.0300 moles of Ar. If the total pressure of this mixture is 953 mm Hg, what is the partial pressure of each gas?

3. (4) When a gas is heated in a container with a constant volume, what will happen to the pressure of the gas? (Assume the number of moles of gas remains constant.) More importantly, explain the cause(s) for this change in pressure using concepts from kinetic-molecular theory. Please answer clearly and thoroughly. No credit without an explanation.

4. (5) a. A sample of $Ar_{(g)}$ effuses from a container in 27.8 minutes. The same size sample of an unknown gas effuses from the same container in 39.4 minutes under the same conditions. Determine the molar mass of the unknown gas.

b. Explain briefly why your answer makes sense.