Gas questions- mixtures

(You can find these questions worked out on a pencast – but don't look until you've tried them yourself!)

10.0 g of butane, C_4H_{10}, and 5.00 g of propane, C_3H_8, occupy a volume of 3.00 L at 50.0°C. What are the partial pressures of each gas in the mixture?

A mixture of hydrogen and methane gases has a density of 0.526 g/L at 3.00×10^2 K and 1.00 atm. What are the mole fractions of H_2 and CH_4 in the mixture?

One mole of ethane and four moles of oxygen in a 50.0 L vessel are ignited. Assume the reaction goes to completion, what are the partial pressures of the gases present if the temperature is 4.00×10^2 K?
Start by writing a balanced equation.