## Question #75723, Chemistry / General Chemistry / Completed
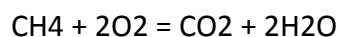
When 18.0 g of methane and enough $O_2$ (g) is heated and converted all methane into $CO_2$ (g) $H_2O$. what are the mole fraction of each gas if the total pressure of gases is 1.50 atm?

### Solution:

$CH_4 + 2O_2 = CO_2 + 2H_2O$

n ($CH_4$) = 18.0 g / 16 g/mol = 1.125 mol

According the reaction equation: n ($CO_2$) = 1.125 mol, n ($H_2O$) = 2 x 1.125 = 2.25 mol, $CH_4$ and $O_2$ react completely according to the formulations.

%$CO_2$ = 1.125 mol / 3.375 mol = 0.3358 or 33.58%

%$H_2O$ = 100% - 33.58 = 66.42%

### Answer: 66.42%.