AP Question Review

1995 B *(repeated in thermochem section)*

Propane, C3H8, is a hydrocarbon that is commonly used as fuel for cooking.

(a) Write a balanced equation for the complete combustion of propane gas, which yields CO2*(g)* and H2O*(l)*.

C3H8 + 5 O2 🡪 3 CO2 + 4 H2O

(b) Calculate the volume of air at 30C and 1.00 atmosphere that is needed to burn completely 10.0 grams of propane. Assume that air is 21.0 percent O2 by volume.

# LO2 = 10.0 g C3H8 x (1 mol C3H8 / 44.1 g C3H8) X (5 mol O2 / 1 mol C3H8) = 1.13 mol O2

PV = nRT (1.00 atm)(V) = (1.13 moles O2)(0.0821L-atm/mol-K) (303K) = 28.1 L O2

.21 = 28.1 L O2 = 134 L air

X L air