

Question #83512

A 8.80-L container holds a mixture of two gases at 53 °C. The partial pressures of gas A and gas B, respectively, are 0.430 atm and 0.580 atm. If 0.200 mol of a third gas is added with no change in volume or temperature, what will the total pressure become?

Solution.

Firstly, we should write Dalton's Law of Partial Pressure.

$$P = P_a + P_b + P_c$$

Secondly, we do not know P_c . We can find it according this formula.

$$P_c = n \cdot R \cdot T / V$$

$$P_c = 0.200 \text{ mol} \cdot 0.0831 \text{ L} \cdot \text{atm} / \text{K} \cdot \text{mol} \cdot 326 \text{ K} / 8.80 \text{ L} = 0.616 \text{ atm.}$$

And at last, we can find the total pressure

$$P = 0.430 \text{ atm.} + 0.580 \text{ atm.} + 0.616 \text{ atm.} = 1.626 \text{ atm.}$$

Answer:

$$P = 1.626 \text{ atm.}$$

Answer provided by www.AssignmentExpert.com