Answer on Question #53845 – Chemistry – General chemistry

Question:

If you have a 0.50 liter piston filled with air at 14.7 psi, what is the pressure on the piston when the volume increases to 0.65 liters assuming no temperature change?

Solution: Isothermal change of system is calculated according to the equation:

$p_1V_1 = p_2V_2$, where p_1V_1 –the initial volume and pressure and p_2V_2 – the final volume and pressure.

Thus, $p_2 = p_1V_1/V_2 = (0.5\ l \times 14.7\ psi)/0.65\ l = 11.31\ psi = 77.979\ kPa$

Answer: the final pressure is 11.31 psi.