

Two moles of a monatomic ideal gas with an RMS speed of 254 m/s are contained in a tank that has a volume of  $0.15 \text{ m}^3$ . If the molar mass of the gas is  $0.39 \text{ kg/mole}$ , what is the pressure of the gas?

$$v_{\text{rms}} = \sqrt{\frac{3RT}{M}}$$

$$PV = nRT$$

$$RT = \frac{PV}{n}$$

$$v_{\text{rms}} = \sqrt{\frac{3PV}{Mn}}$$

$$P = \frac{v_{\text{rms}}^2 M n}{3V}$$

$$P = \frac{254^2 (0.39)(2)}{3(0.15)}$$

$$= 1.1 \times 10^5 \text{ Pa}$$

04 Sep	11 Sep	18 Sep	25 Sep	2 Oct	9 Oct	23 Oct	30 Oct	6 Nov	13 Nov	20 Nov	27 Nov	4 Dec	11 Dec	18 Dec
Solutions of the quizzes can be found on the webpage: <a href="http://faculty.kfupm.edu.sa/phys/aljalal/phys102.htm">http://faculty.kfupm.edu.sa/phys/aljalal/phys102.htm</a>														
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