

Find temp for $(v_{rms})_{H_2} = (v_{rms})_{N_2}$ at

$$T_{N_2} = 100^\circ C \\ = 373K$$

So

$$(v_{rms})_{H_2} = (v_{rms})_{N_2} \\ \sqrt{\frac{3k_B T_{H_2}}{m_{H_2}}} = \sqrt{\frac{3k_B T_{N_2}}{m_{N_2}}}$$

or

$$\frac{T_{H_2}}{m_{H_2}} = \frac{T_{N_2}}{m_{N_2}}$$

$$T_{H_2} = \frac{m_{H_2}}{m_{N_2}} T_{N_2}$$

where $m_{H_2} = 2u$ & $m_{N_2} = 28u$

So

$$\underline{T_{H_2} = 26.64 K}$$