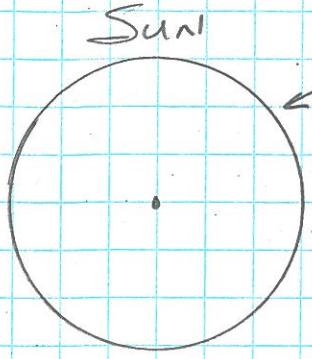

atomic hydrogen

$T = 6000^\circ K$

Mass, $m = 1.0u = 1.67 \times 10^{-27} kg.$

a.) Average translational KE per atom:

$$\epsilon_{avg} = \frac{3}{2} k_B T = \underline{1.242 \times 10^{-19} J}$$

b.) $$v_{rms} = \sqrt{\frac{3 k_B T}{m}} = \underline{1.22 \times 10^{4} m/s}$$

or,

$$\epsilon_{avg} = \frac{1}{2} m v_{rms}^2$$

$$v_{rms} = \sqrt{\frac{2 \epsilon_{avg}}{m}} = \underline{1.22 \times 10^{4} m/s}$$