

25. The average translational kinetic energy is given by  $K_{\text{avg}} = \frac{3}{2}kT$ , where  $k$  is the Boltzmann constant ( $1.38 \times 10^{-23} \text{ J/K}$ ) and  $T$  is the temperature on the Kelvin scale. Thus

$$K_{\text{avg}} = \frac{3}{2}(1.38 \times 10^{-23} \text{ J/K})(1600 \text{ K}) = 3.31 \times 10^{-20} \text{ J} .$$