P #F

Ch 10 Worksheet

$n = 2.0\ mol$

$V = .005\ m^3$

$P = 8.0 \times 10^5\ Pa$

a) Find T:

$P \cdot V = n \cdot R \cdot T$

$(8.0 \times 10^5\ Pa)(.005\ m^3) = (2\ mol)(8.31\ J/mol \cdot K) \cdot T$

$T = 240.7\ K$

Find KE:

$KE = \frac{3}{2} \cdot k_B \cdot T$

$= \frac{3}{2} \cdot (1.38 \times 10^{-23}\ J/K) \cdot (240.7\ K)$

$KE = 5.0 \times 10^{-21}\ J$

b) $KE = \frac{5.0 \times 10^{-21}\ J}{molecule} \cdot \frac{6.02 \times 10^{23}\ molecules}{1\ mole} \cdot 2.0\ moles$

$KE = 6000\ J$