Solution to Problem 7 of the 2008 Physics GRE

December 30, 2011

The average kinetic energy of an ideal gas molecule $\overline{K} = 3kT/2$.

$$\overline{K} = \overline{\frac{1}{2}mv^2} = \frac{1}{2}m\overline{v^2}$$

Thus,

$$\sqrt{\overline{v^2}} = \boxed{\sqrt{\frac{3kT}{m}}}$$

Therefore, answer (C) is correct.