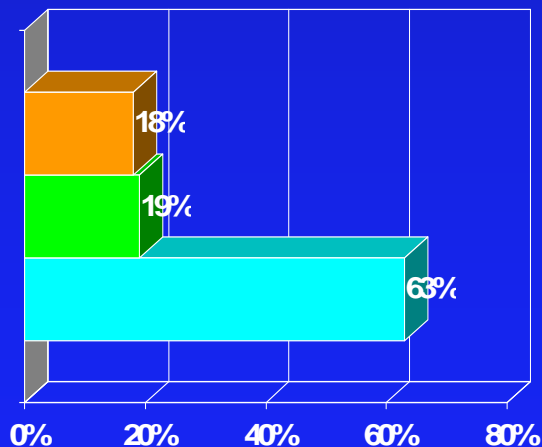# Preflight 1

Suppose you want the rms (*root-mean-square*) speed of molecules in a sample of gas to double. By what factor should you increase the temperature of the gas?

1. 2
2. $\sqrt{2}$
3. 4 ⟵ correct

$$\langle KE \rangle = \frac{1}{2} m \langle v^2 \rangle = \frac{3}{2} k_B T$$

18%
19%
63%

0%   20%   40%   60%   80%

- If v doubles, v^2 quadruples
- Therefore, T quadruples