

**13** Two identical vessels contain two different gases X and Y with molecular mass  $m_x$  and  $m_y$  respectively. The thermodynamic temperature of gas X is twice that of gas Y and the root-mean-square speed of the molecules in X is three times that of the molecules in Y. What is the ratio of  $\frac{m_x}{m_y}$ ?

**A** 2 : 3

**B** 2 : 9

**C** 9 : 2

**D** 3 : 2