9 Two bodies A and B of masses m and $2m$ respectively are initially at rest on a smooth horizontal surface.

A constant force acts on body A for twice the duration that it acts on body B.

What is the ratio $\dfrac{\text{gain in kinetic energy of body A}}{\text{gain in kinetic energy of body B}}$?

A 1   **B** 2   **C** 4   **D** 8