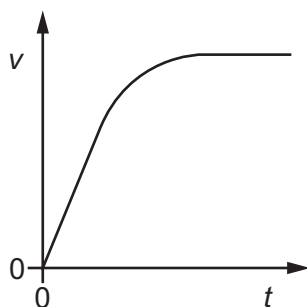
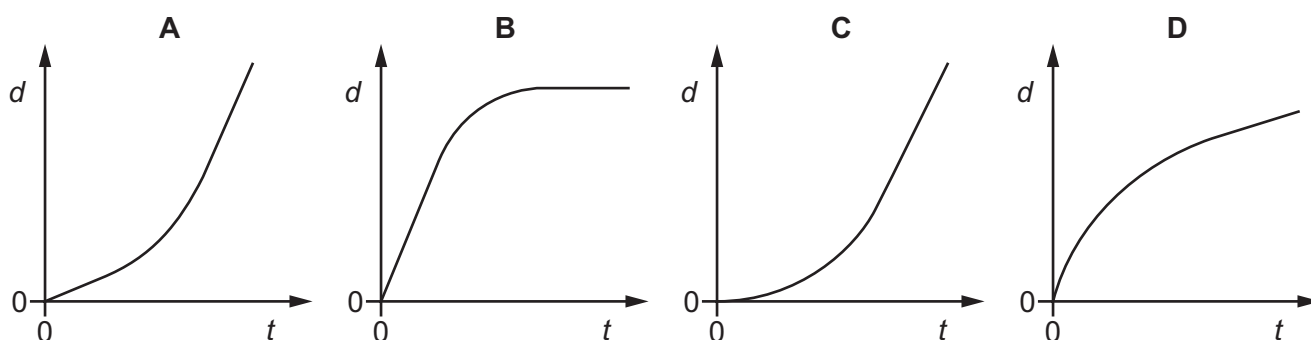


- 7 A sky-diver falls vertically from a helicopter and reaches constant (terminal) velocity. The graph shows the variation with time  $t$  of the speed  $v$  of the sky-diver.



Which graph shows the variation with time  $t$  of the distance  $d$  fallen by the sky-diver?



- 8** A tennis ball of mass 55g is travelling horizontally with a speed of  $30\text{ ms}^{-1}$ . The ball makes contact with a wall before rebounding in the horizontal direction with a speed of  $20\text{ ms}^{-1}$ . The ball is in contact with the wall for a time of  $5.0 \times 10^{-3}\text{ s}$ .

What is the average force exerted on the wall by the ball?

- A** 110 N      **B** 220 N      **C** 330 N      **D** 550 N

- 9** An elastic collision occurs between two bodies X and Y. The mass of body X is  $m$  and the mass of body Y is  $4m$ . Body X travels at speed  $v$  before the collision and speed  $\frac{3v}{5}$  in the opposite direction after the collision. Body Y is stationary before the collision.



What is the kinetic energy of body Y after the collision?

- A**  $\frac{8}{10}mv^2$       **B**  $\frac{34}{50}mv^2$       **C**  $\frac{16}{50}mv^2$       **D**  $\frac{1}{5}mv^2$