

Solutions

2.1 A The gradient of a displacement-time graph is velocity. The area under a velocity-time graph gives displacement. A constant-acceleration formula is valid only when its assumption is justified.

2.2 $a = (v - u) / t = (15 - 3) / 6 = 2 \text{ m/s}^2$.

2.3 False. Negative velocity indicates direction under the chosen sign convention; it does not necessarily mean slowing down.

2.4 velocity. velocity means Rate of change of displacement.

3.1 $a = -2 \text{ m/s}^2$; displacement $= (6 - 2) \times 4 / 2 = 8 \text{ m}$. Velocity crosses zero at 3 s; triangle areas give distance $9 + 1 = 10 \text{ m}$. Distance adds path lengths despite reversal.