

IGCSE Physics - Motion (Shortcut Notes)

■ Motion - Shortcut Notes ■

1. *Speed (v): Distance travelled per unit time.*

$$\text{Formula: } v = d / t$$

2. *Velocity: Speed in a given direction.*

- Can be positive or negative depending on direction.

3. *Acceleration (a): Rate of change of velocity.*

$$\text{Formula: } a = (v - u) / t$$

u = initial velocity, v = final velocity, t = time

4. *Distance-Time Graphs:*

- Slope = Speed

- Straight line → uniform motion

- Curve → non-uniform motion

5. *Velocity-Time Graphs:*

- Slope = Acceleration

- Area under graph = Distance travelled

6. *Equations of Motion (SUVAT):*

$$v = u + at$$

$$s = ut + \frac{1}{2} at^2$$

$$v^2 = u^2 + 2as$$

7. *Free Fall:*

- Acceleration due to gravity, $g \approx 9.8 \text{ m/s}^2$

- Objects in free fall accelerate at g (ignoring air resistance).

8. *Terminal Velocity:*

- When air resistance balances weight.

- Object falls at constant velocity.

■ Always check units: m/s , m/s^2 , m , s .