The Practise Ground

Class 11 Physics

Equations of Motion

Constant acceleration in a straight line

1

$$v = u + at$$

Use when displacement (s) is missing

Velocity after time t

2

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

Use when final velocity (v) is missing

Displacement after time t

3

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

Use when time (t) is missing

Velocity from displacement, no time needed

4

$$s = \tfrac{1}{2}(u + v)t$$

Use when acceleration (a) is missing

Displacement from average velocity

s	u	v	a	t
displacement	**initial velocity**	**final velocity**	**acceleration**	**time**
metre (m)	m/s	m/s	m/s^2	second (s)

How to choose

1. Write down the three values you know.
2. Spot the variable that is neither given nor asked for.
3. Use the equation that does not contain it.

Quick example

A car starts from rest and accelerates at 2 m/s^2 for 5 s.

$v = u + at = 0 + 2 \times 5 = 10$ m/s

$s = ut + \tfrac{1}{2}at^2 = 0 + \tfrac{1}{2} \times 2 \times 25 = 25$ m

Think you've got it? Test yourself.

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