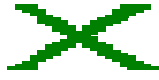


The equations of linear motion

| | "How far" | "How fast" | How quickly "how fast" changes |
|------------------|----------------------------|-----------------|---|
| Scalars | Distance | Speed |  |
| Vectors | Displacement | Velocity | Acceleration |
| Equation* | $d = vt = \frac{1}{2}at^2$ | $v = at$ | |

* Assumes that the initial velocity and displacement is zero

Complete equations for **any** initial velocity and displacement:

$$d = d_o + v_o t + \frac{1}{2}at^2 \quad \text{and} \quad v = v_o + at$$

where, d_o = the initial displacement

v_o = the initial velocity

and, t = the time interval

For "free fall" $a = g$

Where,

g = the acceleration due to gravity

$$= 9.8 \text{ m/sec}^2 \approx 10 \text{ m/sec}^2$$