Distance Time Graphs

Average Velocity = $\frac{\text{displacement}}{\text{time}}$

Average Speed = $\frac{\text{total distance}}{\text{time}}$

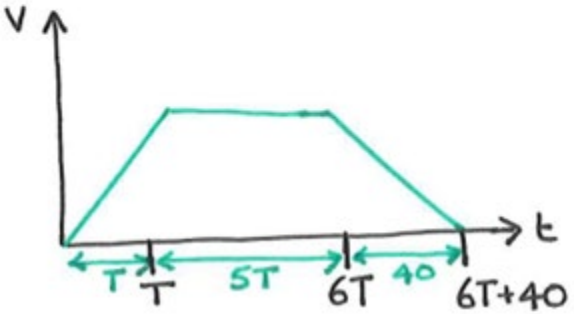
Displacement = distance from origi

Velocity Time Graphs

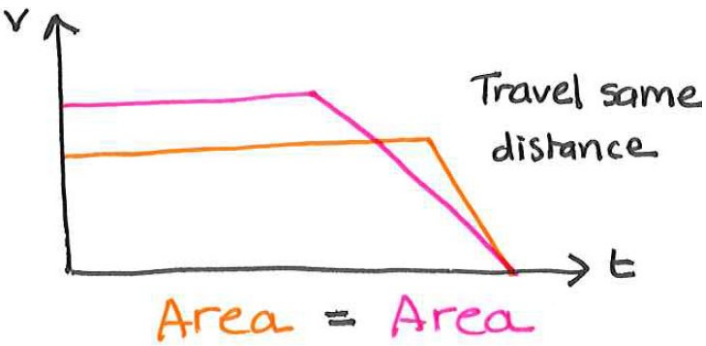
Gradient = Acceleration +
or
Deceleration −

Distance Travelled = Area under Graph

watch out for how you label the axis. (Gaps or points)



Velocity Time Graphs (Two Vehicles)



If they have travelled the same distance, then area = area.

Make sure not to draw the one graph inside the other graph, as they could not be equal in area.

SUVAT Formula

Only use when acceleration is constant.

$$v = u + at$$

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

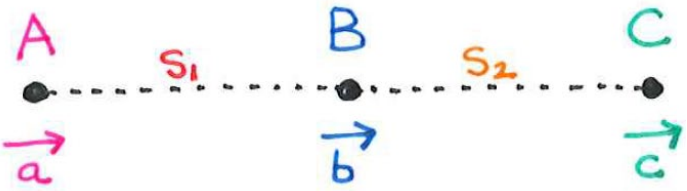
$$s = \left(\frac{u+v}{2}\right)t$$

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

$$s = vt - \frac{1}{2}at^2$$

Given in the formula booklet.

SUVAT - Horizontal (multi journey)



constant acceleration x

AB

$s = s_1$
$u = a$
$v = b$
$a = x$
$t = t_1$

BC

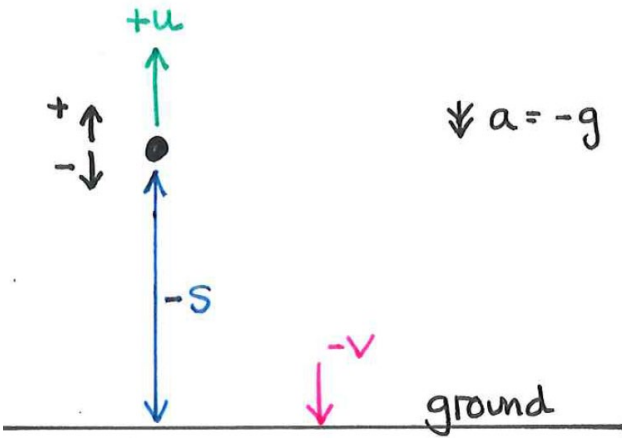
$s = s_2$
$u = b$
$v = c$
$a = x$
$t = t_2$

AC

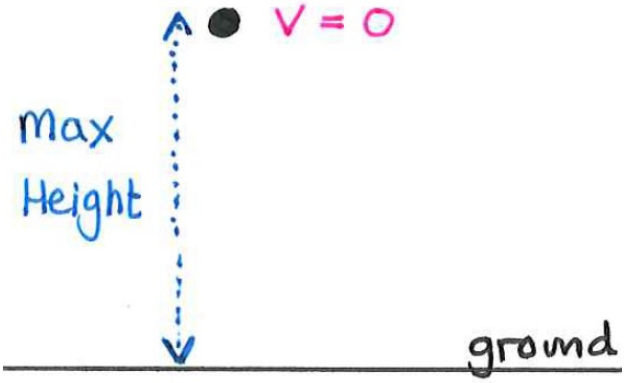
$s = s_1 + s_2$
$u = a$
$v = c$
$a = x$
$t = t_1 + t_2$

SUVAT – Vertical

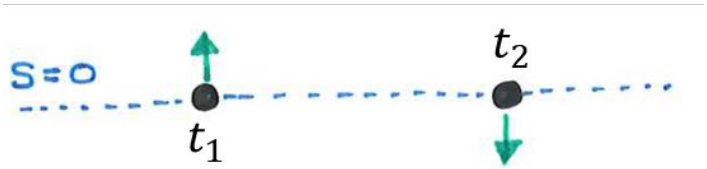
Direction Matters!



SUVAT – Vertical (Maximum Height)



SUVAT – Vertical (Time above a given height)



$$0 = ut + \frac{1}{2}at^2$$

Quadratic (Two solutions)

Time Above S = $t_1 - t_2$