

How to solve PROJECTILE motion problems:

Remember that a parabolic flight path is the combination of HORIZONTAL (x-direction) and VERTICAL (y-direction) velocities. These two directions act independently of each other and so should be addressed separately.

x-direction				
s	u	v	a	t

$$v = u + at$$
$$s = ut + \frac{1}{2}at^2$$
$$v^2 = u^2 + 2as$$
$$s = \frac{(v+u)t}{2}$$

y-direction				
s	u	v	a	t

A. Fill in this information for the two directions separately, remembering that:

- 1) There is usually NO acceleration in the x-directions so $a = 0$ and $u = v$
- 2) The only thing that determines time to fall is gravity in the y-direction
($a = g = -9.8 \text{ m/s}^2$)
- 3) Time t is the same in the x and y-directions

B. Use the SUVAT equations for x and y-directions separately (do not put numbers from x and y direction into the same equation at the same time)!