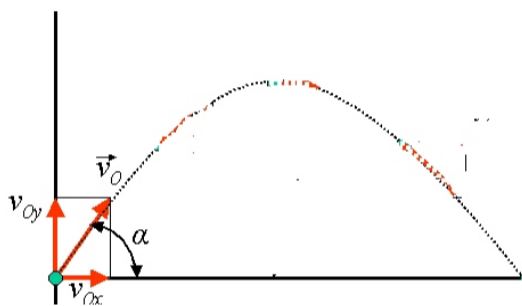


PROJECTILE MOTION

UNIT 1- SECTION 1 PHYSICS 3204

- there are 4 cases to consider
 1. Projectile that is launched horizontally and lands BELOW the point of projection.
 2. Projectile that is launched AT AN ANGLE and lands ABOVE the point of projection
 3. Projectile is launched AT AN ANGLE and lands AT the the same level as the point of projection.
 4. Projectile is launched AT AN ANGLE and lands BELOW the point of projection
- Remember that negative indicates downward and positive is upward.
- Remember to separate the velocity into its components (V_x, V_y) by using trigonometry



- Use a table to write the givens:

	x	y
V_1		
V_2		
g	0	-9.80 m/s ²
Δt		
Δd		

- remember the following kinematic equations

$$\begin{array}{llll}
 v_f = v_i + at & a = \frac{\Delta v}{\Delta t} & d = v_i t + \frac{1}{2}at^2 & d = v_2 t - \frac{1}{2}at^2 \\
 2ad = v_f^2 - v_i^2 & v = \frac{\Delta d}{\Delta t} & g = -9.80 \text{ m/s}^2 & d = \frac{1}{2}(v_1 + v_2) t
 \end{array}$$

- Range is the distance traveled in x direction $D_x = V_x t$
- V_x is constant through the motion
- Time is the only variable that connects the x and the y.
- The quadratic formula may help you to calculate time:

$$-b \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

