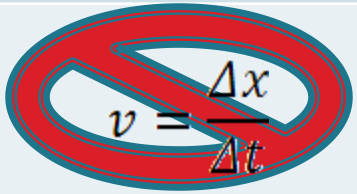
Read
Read
...
Read between the lines

Develop a picture/diagram
Analyze the problem

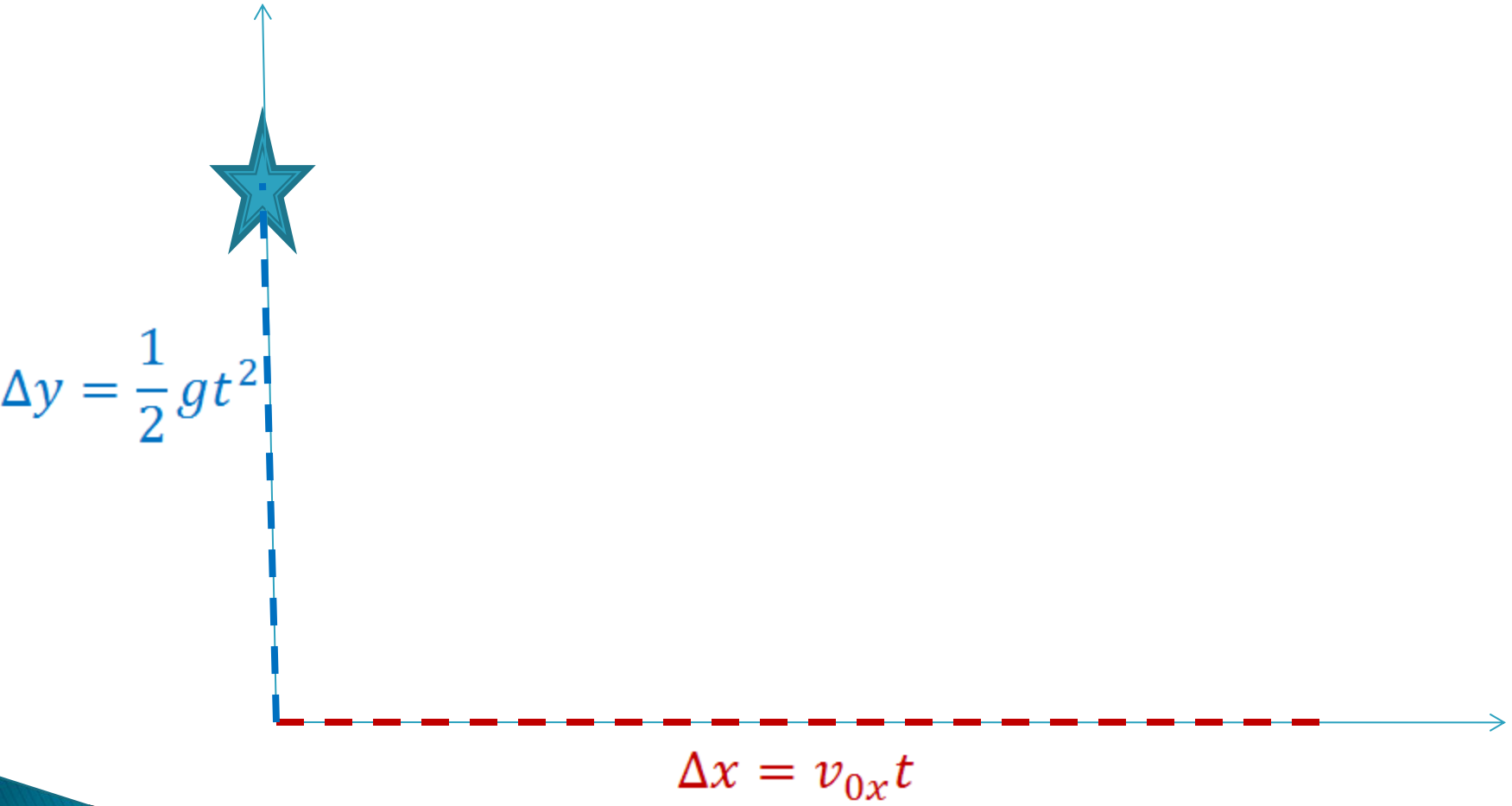
1-D Motion Concepts

Basic Concepts	Units	Definition
Position	m	x
Displacement	m	$\Delta x = x_f - x_i$
Velocity	m/s	Average $v_{ave} = \Delta x/\Delta t$ Instantaneous $v = \lim_{t \to 0} \frac{\Delta x}{\Delta t} = \frac{dx}{dt}$
Acceleration	m/s^2	Average $a_{ave} = \Delta v/\Delta t$ Instantaneous $a = \lim_{t \to 0} \frac{\Delta v}{\Delta t} = \frac{dv}{dt}$

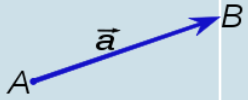
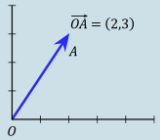
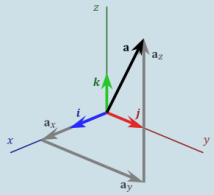
1-Dimensional Motion: 2 models

Constant Velocity	Constant acceleration
Δx v Δt	Δx $v_0 \quad v$ t a
$v = \frac{\Delta x}{\Delta t}$	
	$v = v_0 + at$ $\Delta x = v_0 t + \frac{1}{2} a t^2$ $v^2 = {v_0}^2 + 2a\Delta x$

Projectile Motion in 2D: 2=1+1



Motion Description

	1-D	2-D	3D
			
Time	t	**t**	t
Displacement	Δx	**Δx** **Δy**	Δx Δy Δz
Velocity	v	**v_x** **v_y**	v_x v_y V_z
Acceleration	a	**a_x** **a_y**	a_x a_y a_z

Projectile Motion

X (No y)	Y (No x)
t V_{ox} Δx	t v_{oy} v_y Δy $a = -9.8\ m/s^2$
1D, constant velocity	1D, constant acceleration