Projectiles

IB Physics Content Guide

Big Ideas

- X and Y motion are independent of each other for a two-dimensional projectile

1 – Horizontal Projectiles

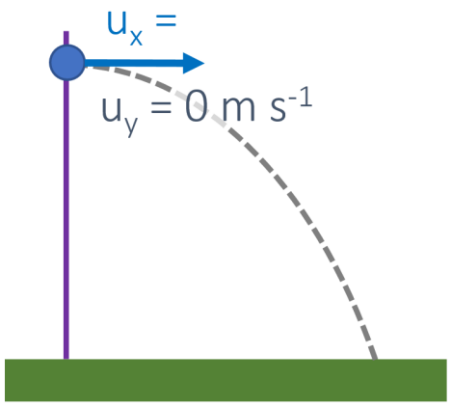
I can compare the air-time for a horizontal projectile and an object dropped from the same height			
I can use information about a horizontal projectile's motion to calculate the initial velocity			
I can calculate the distance traveled by a horizontal projectile when given a velocity and height			
I can calculate the resultant velocity and angle by combining horizontal and vertical velocity vectors			

2 – Angled Projectiles

I can calculate the horizontal and vertical components of an angled velocity vector			
I can calculate max height for a projectile launched at angle			
I can calculate total air time for a projectile launched at angle			
I can calculate horizontal distance traveled for a projectile launched at angle			

Projectiles

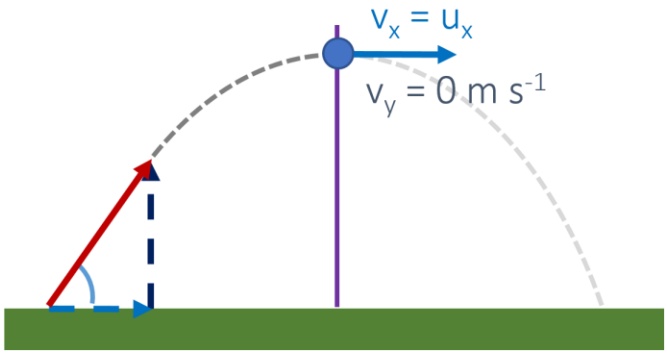
Vertical	
s	Height
u	0 m s^{-1}
v	
a	-9.8 m s^{-2}
t	*Air Time*



Horizontal	
v	u_x
d	Horizontal Distance
t	*Air Time*

$$v = \frac{d}{t}$$

Vertical (1st half)	
s	Height
u	u sinθ
v	0 m s^{-1}
a	-9.8 m s^{-2}
t	Air Time / 2



Horizontal	
v	u cosθ
d	Horizontal Distance
t	*Air Time*

$$v = \frac{d}{t}$$