Projectile Motion

IB PHYSICS | MOTION

Reminder of our Equations

Units	т	т s ⁻¹	т s ⁻¹	т s ⁻²	S
v = u + at		u	v	а	t
$s = ut + \frac{1}{2}at^2$	S	и		а	t
$v^2 = u^2 + 2as$	S	u	v	а	
$s = \frac{(v+u)t}{2}$	S	u	ν		t

Dropping the Ball

How much time will it take this ball to hit the ground when	S	-25 m
aropped? The impact velocity?	и	0 m s ⁻¹
	v	?
25 m	а	-9.81 m s ⁻²
	t	?

Air Time - Comparison



Which ball will have more air time?

Air Time - Comparison





Horizontal Projectile



One Dimensional Motion

Vertical Accelerating Horizontal **Constant Velocity** [v = d/t]

Horizontal Projectile



Two-Dimensional Projectile



Which one lands first??



Which one lands first??



Lesson Takeaways

- □ I can compare the motion of an object dropped from rest and an object with an initial horizontal velocity
- I can calculate the air time and speed for a horizontal projectile
- I can describe how the vertical and horizontal components are independent from each other for a projectile's motion
- □ I can compare the air time for two projectiles given their trajectories.