A.1

Horizontal Projectiles

IB PHYSICS | PROJECTILES

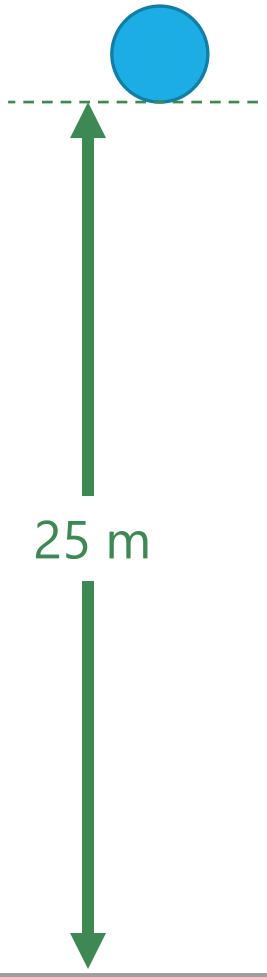
Data Booklet Equations

A.1

A.1 Kinematics	$s = \frac{u+v}{2}t$ $v = u + at$ $s = ut + \frac{1}{2}at^2$ $v^2 = u^2 + 2as$

Dropping the Ball

A.1

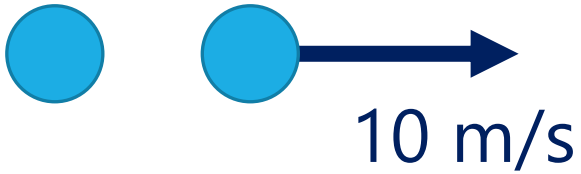


How much time will it take this ball to hit the ground when dropped?

s	
u	
v	
a	
t	

Air Time - Comparison

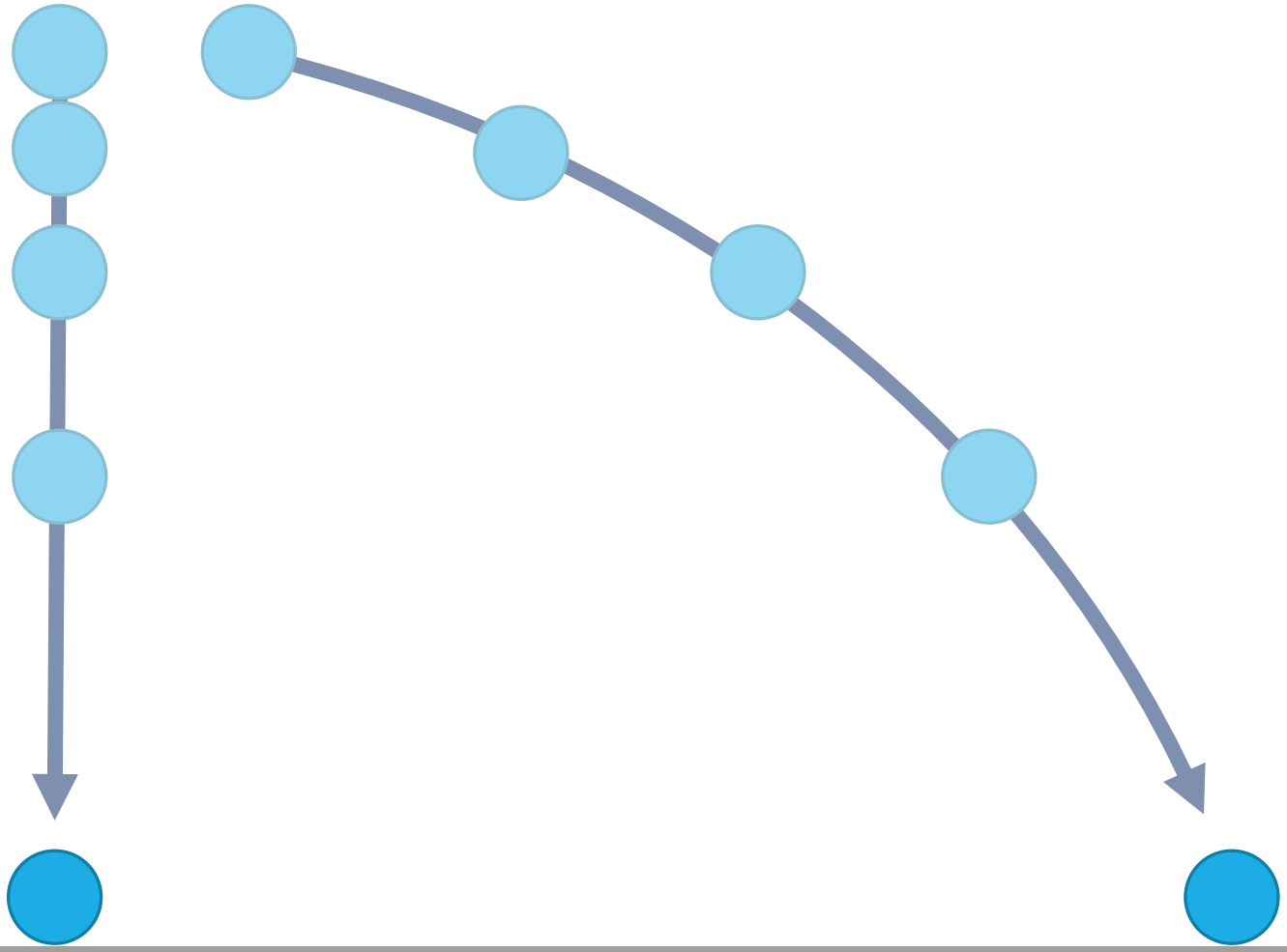
A.1



Which ball will have more air time?

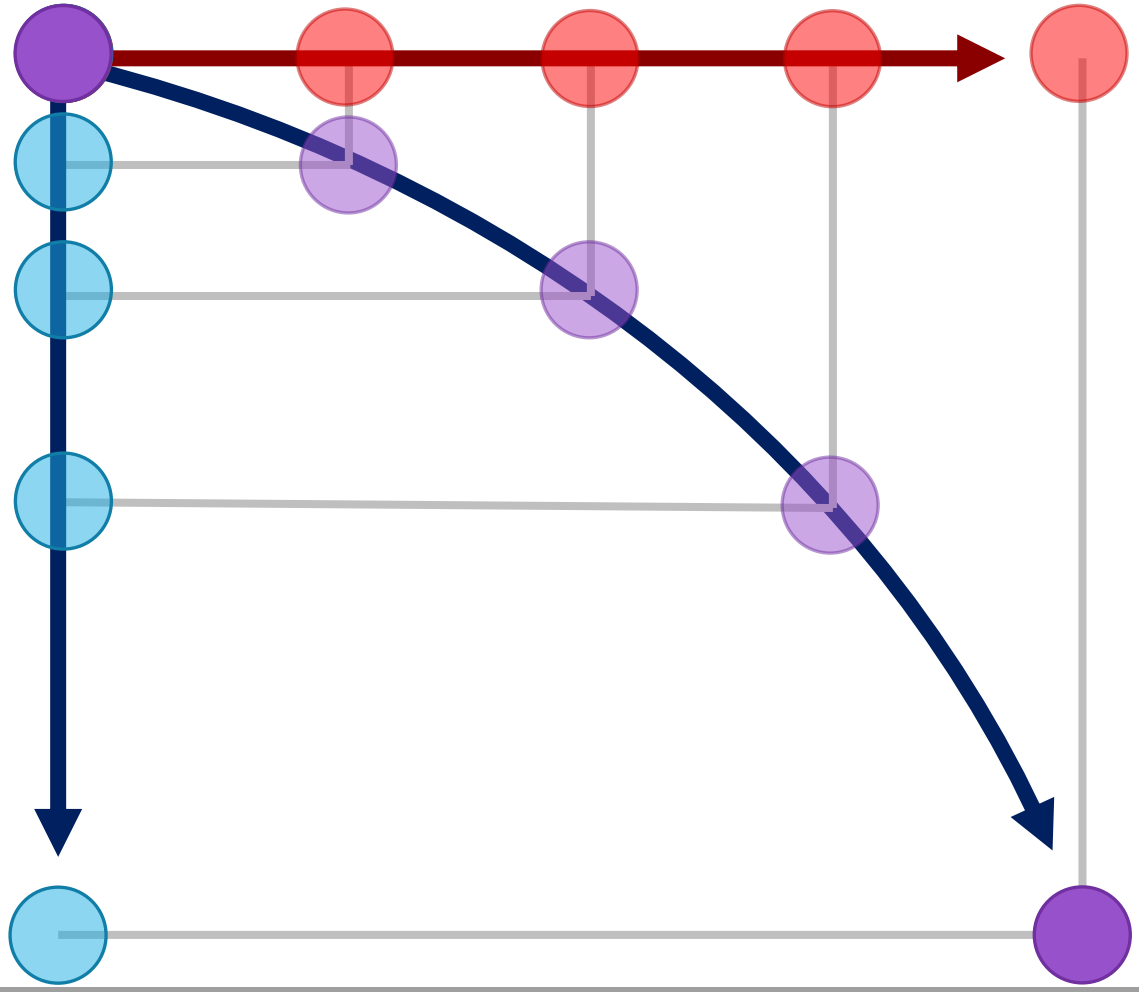
Air Time - Comparison

A.1



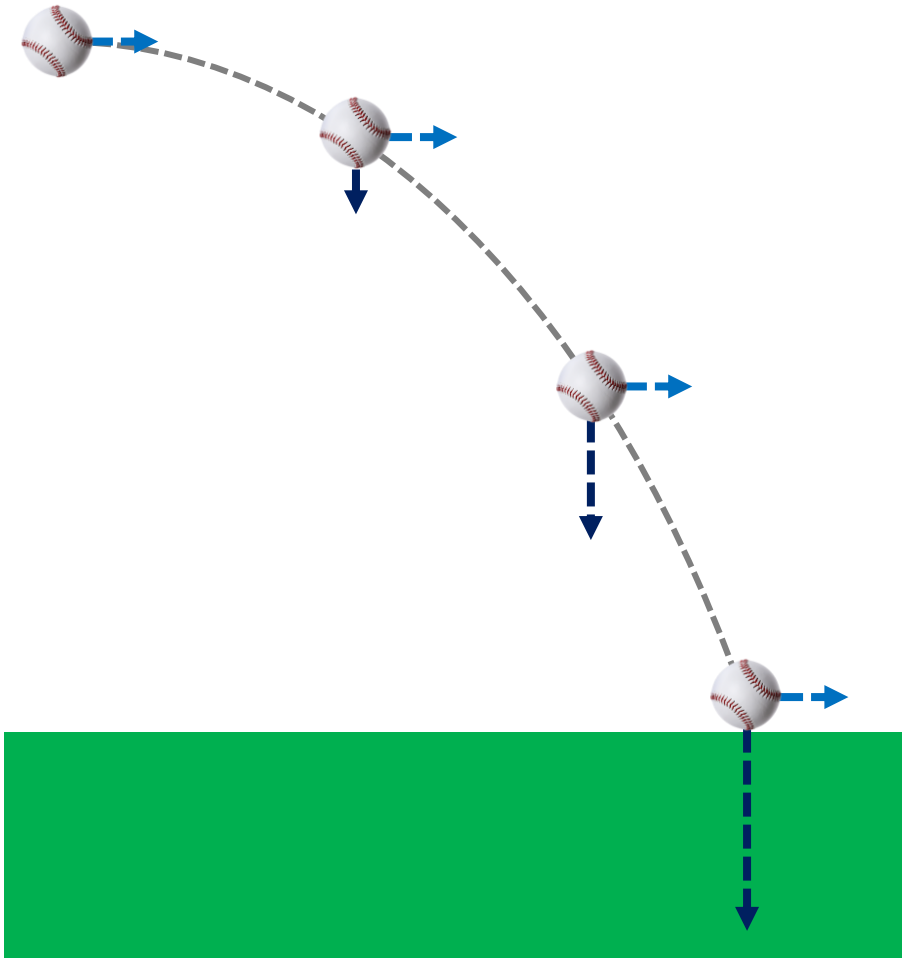
Air Time - Comparison

A.1



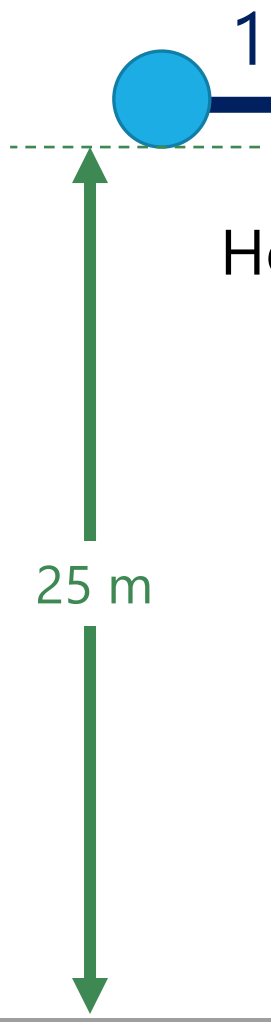
Horizontal Projectile

A.1



Horizontal Projectile

A.1

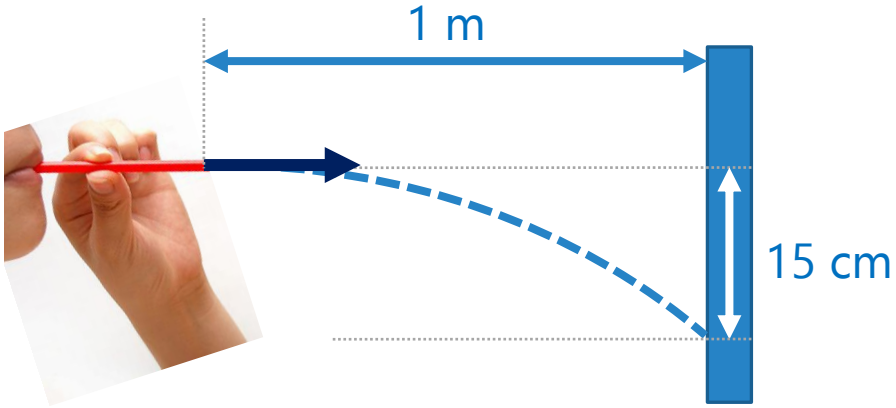


From Previous Problem →

How far does the ball travel?

Vertical Only	
s	-25 m
u	0 m s^{-1}
v	----
a	-9.8 m s^{-2}
t	2.26 s

How fast was the spitball?



Vertical Only	
s	
u	
v	
a	
t	

A.1

One Dimensional Motion

A.1

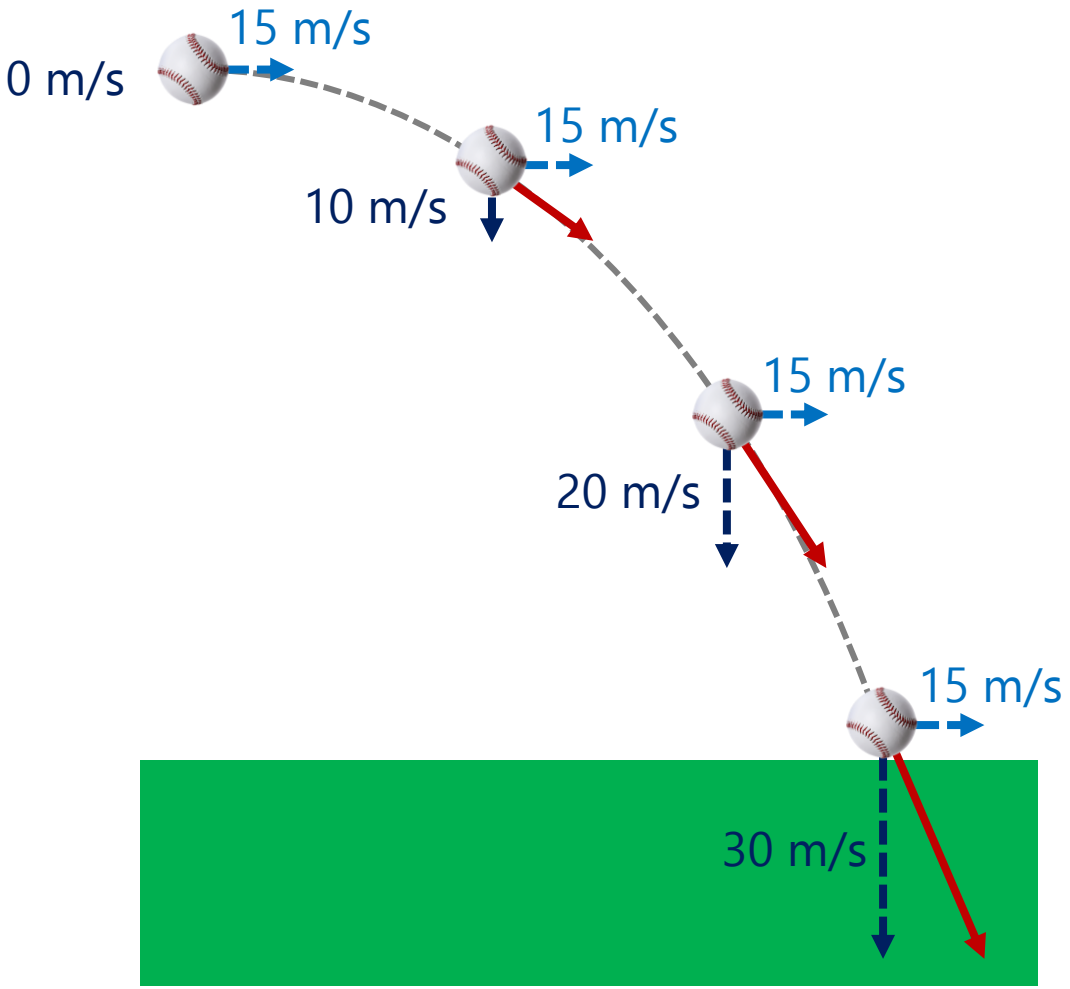
Vertical
Accelerating

Horizontal
Constant Velocity

[v = d/t]

Horizontal Projectile

A.1



Lesson Takeaways

A.3

- ❑ 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 horizontal 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