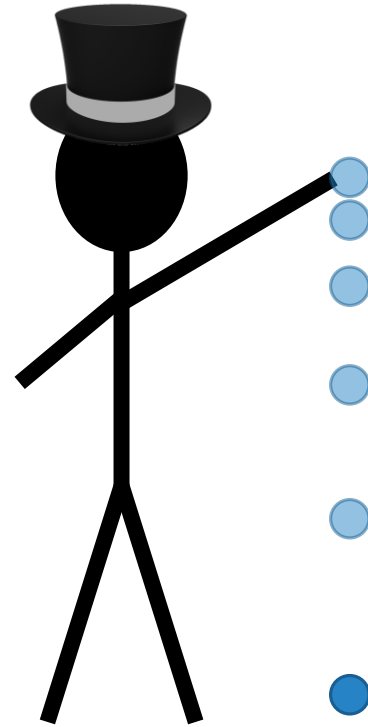
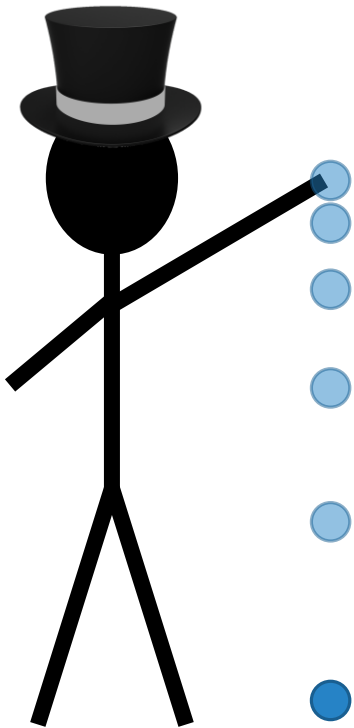


Free Fall

IB PHYSICS | MOTION

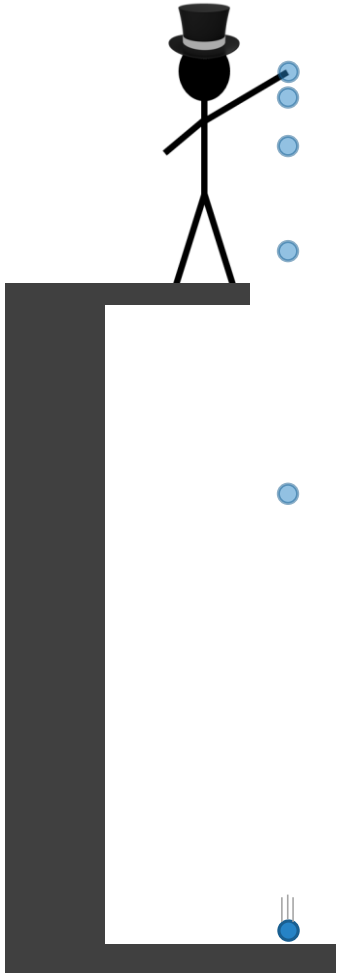


What is Free Fall?



Acceleration due to Gravity

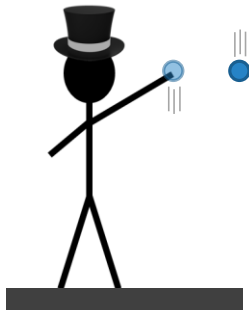
What if you drop something?



What do you know?

s	
u	
v	
a	
t	

What if you throw something up?



1st Half

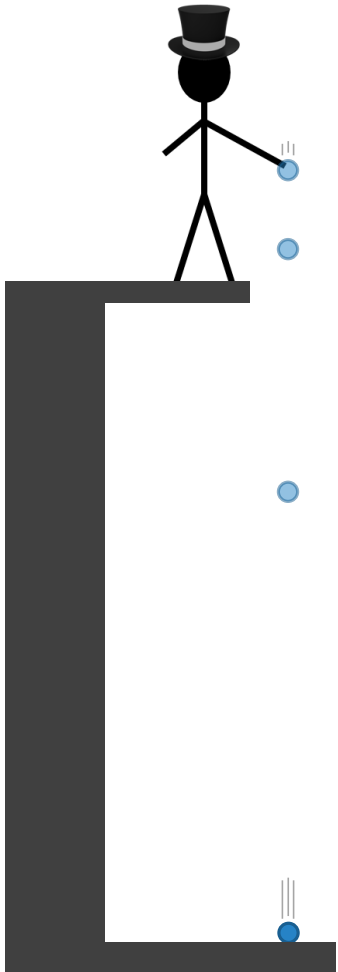
<i>s</i>	
<i>u</i>	
<i>v</i>	
<i>a</i>	
<i>t</i>	

What do you know?

2nd Half

<i>s</i>	
<i>u</i>	
<i>v</i>	
<i>a</i>	
<i>t</i>	

What if you throw something down?



What do you know?

s	
u	
v	
a	
t	

Reminder of our Equations

<i>Units</i>	<i>m</i>	<i>m s⁻¹</i>	<i>m s⁻¹</i>	<i>m s⁻²</i>	<i>s</i>
$v = u + at$		<i>u</i>	<i>v</i>	<i>a</i>	<i>t</i>
$s = ut + \frac{1}{2}at^2$	<i>s</i>	<i>u</i>		<i>a</i>	<i>t</i>
$v^2 = u^2 + 2as$	<i>s</i>	<i>u</i>	<i>v</i>	<i>a</i>	
$s = \frac{(v+u)t}{2}$	<i>s</i>	<i>u</i>	<i>v</i>		<i>t</i>

Dropping a marble

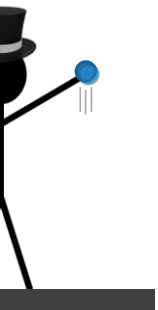
If you drop a marble off of the Empire State Building (~ 380 m), how fast will it be going once it reaches the ground?

s	
u	
v	
a	
t	

Shooting a Basket

What is the vertical velocity of a basketball required to reach the rim of the basketball hoop? (~3.0 m high)

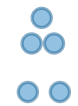
-
-
-
-



s	
u	
v	
a	
t	

Flipping a Coin

You flip a coin and catch it. It is in the air for a total of 0.6 seconds. How high did it go?



s	
u	
v	
a	
t	

Lesson Takeaways

- ☐ I can identify the constant acceleration due to gravity neglecting air resistance
- ☐ I can interpret a free fall problem to identify hidden values and understand when to look at only half of the problem
- ☐ I can use the kinematic equations to solve a free fall problems