

Physic² 121: Fundament^oIs of Phy²ics I

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PHYS 121

Gravity as Force

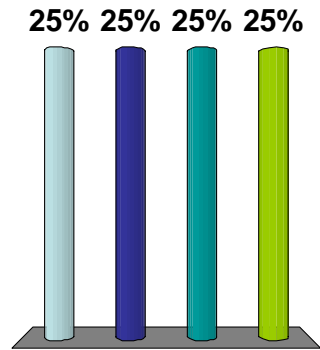
- $g = 9.8 \text{ m/s}^2$
- Gravitational Force
 - $F_{grav} = -mg$ (from N2, $F = ma$ with $a = -g$)
 - Be careful of sign! g is a positive number!
 - Value of g would change if you weren't on surface of earth (on the moon, for example)
 - Value of mass doesn't change
- Weight is magnitude (absolute value) of grav force, mg
 - Unit of weight is Newton (just like force)



You are throwing a ball straight up in the air. At the highest point, the ball's:



1. Velocity and acceleration are zero
2. Velocity is non-zero, but its acceleration is zero
3. Acceleration is non-zero, but its velocity is zero
4. Velocity and acceleration are both non-zero



Velocity and accelera...
 Velocity is non-zero, b..
 Acceleration is non-z..
 Velocity and accelera...

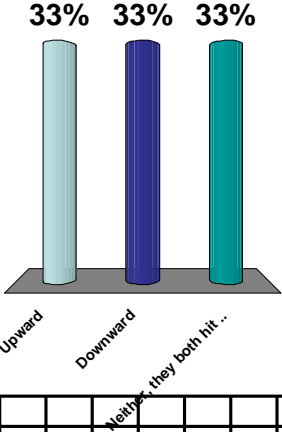
1	2	3	4	5														



A person standing at the edge of a cliff throws a ball straight up and another ball straight down at the same initial speed. Neglecting air resistance, the ball to hit the ground below the cliff with the greater speed is the one initially thrown:



1. Upward
2. Downward
3. Neither, they both hit at the same speed



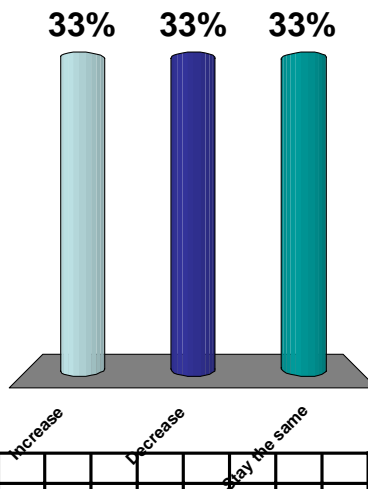
1	2	3	4	5															



You drop a rock from a bridge to the river below. When the rock has fallen 4m, you drop a second rock. As the rocks continue their free fall, does their separation:



1. Increase
2. Decrease
3. Stay the same



1	2	3	4	5															
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Example Problem

- Chapter 2, Prob. 44
 - It is possible to shoot an arrow at a speed as high as 100 m/s.
 - A) If friction is neglected, how high would an arrow launched at this speed rise if shot straight up?
 - B) How long would the arrow be in the air?