4. 9.8 m/s^2 down

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012 (part 1 of 1) 9 points

An autographed baseball rolls off of a 1.1 m high desk and strikes the floor 0.70 m away from the desk.

The acceleration of gravity is 9.81 m/s^2.

How fast was it rolling on the desk before it fell off? Answer in units of m/s.

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013 (part 1 of 1) 9 points

In a TV set, an electron beam moves with horizontal velocity of 4.4×10^7 m/s across the cathode ray tube and strikes the screen, 46 cm away.

The acceleration of gravity is 9.8 m/s^2.

How far does the electron beam fall while traversing this distance? Answer in units of m.

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014 (part 1 of 1) 9 points

A rock is projected from the edge of the top of a building with an initial velocity of 14 m/s at an angle 30.2° above the horizontal. Due to gravity, the rock strikes the ground at a horizontal distance of 37.4 m from the base of the building.

Assume: The ground is level and that the side of the building is vertical. The acceleration of gravity is 9.8 m/s^2.

How tall is the building? Answer in units of m.

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015 (part 1 of 3) 3 points

Neglect: Air friction.

Your teacher tosses a basketball. The ball gets through the hoop (lucky shot).

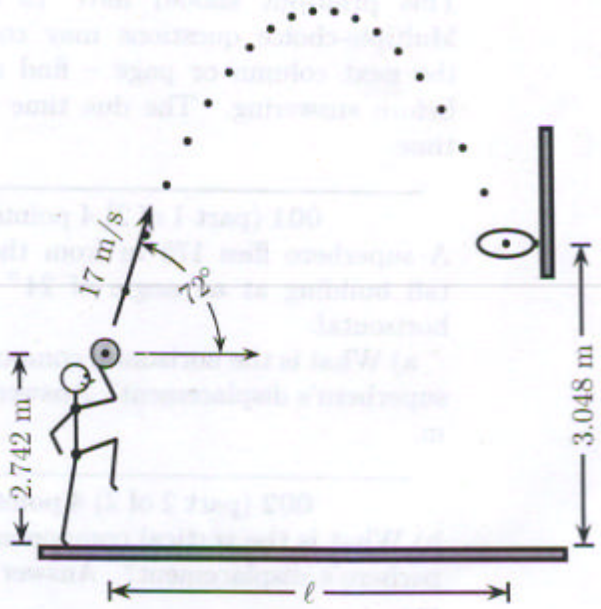

Figure: Not drawn to scale.

How long does it take the ball to reach its maximum height? Answer in units of s.

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016 (part 2 of 3) 3 points

How long does it take the ball to reach the hoop? Answer in units of s.

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017 (part 3 of 3) 3 points

What is the horizontal length ℓ of the shot? Answer in units of m.

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018 (part 1 of 1) 9 points

A car is parked near a cliff overlooking the ocean on an incline that makes an angle of 35.5° with the horizontal. The negligent driver leaves the car in neutral, and the emergency brakes are defective. The car rolls from rest down the incline and has a velocity 10 m/s when it reaches the edge of the cliff. The cliff is 12.4 m above the ocean.

The acceleration of gravity is 9.8 m/s^2.