This print-out should have 14 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Reaction Force 04
001   10.0 points
You hit someone with a force of 209 N.
How much force is exerted on you?

Hewitt CP9 04 P02
002   10.0 points
What is the acceleration of a 42 kg block of cement when pulled sideways with a net force of 576 N?

Rock Thrown Down
003   10.0 points
A rock is thrown downward from an unknown height above the ground with an initial speed of 29 m/s. It strikes the ground 1.2 s later.

Determine the initial height of the rock above the ground. The acceleration of gravity is 9.8 m/s^2.

Correct answer: 41.856 m.

Dropping Medical Supplies
004   10.0 points
A plane drops a hamper of medical supplies from a height of 3310 m during a practice run over the ocean. The plane's horizontal velocity was 128 m/s at the instant the hamper was dropped.

What is the magnitude of the overall velocity of the hamper at the instant it strikes the surface of the ocean? The acceleration of gravity is 9.8 m/s^2.

Correct answer: 285.061 m/s.

Barefoot Kicker 02
005   10.0 points
A barefoot field-goal kicker imparts a speed of 53 m/s to a football initially at rest.

If the football has a mass of 0.46 kg and the time of contact with the ball is 0.039 s, what is the force exerted by the ball on the kicker's foot?

Correct answer: 625.128 N.

Supercharged Sports Car
006 (part 1 of 3) 10.0 points
A certain automobile manufacturer claims that its super-deluxe sports car will accelerate from rest to a speed of 38.5 m/s in 7.84 s.

Find the acceleration of the car. Assume that the acceleration of the car is constant.

Correct answer: 4.91071 m/s^2.

007 (part 2 of 3) 10.0 points
Find the distance the car travels in the first 7.84 s.

Correct answer: 150.92 m.

008 (part 3 of 3) 10.0 points
What is the speed of the car 10.3 s after it begins its motion, assuming it continues to accelerate at the same average rate?

Correct answer: 50.5804 m/s.

Accelerating Plane
009 (part 1 of 2) 10.0 points
A plane cruising at 248 m/s accelerates at 18 m/s^2 for 7.8 s.

What is its final velocity?

Correct answer: 388.4 m/s.

010 (part 2 of 2) 10.0 points
How far will it have traveled in that time?

Correct answer: 2481.96 m.

Accelerating Electron
011 (part 1 of 2) 10.0 points
An electron has an initial speed of 1.73×10^5 m/s.

If it undergoes an acceleration of 2.5×10^{14} m/s^2, how long will it take to reach

a speed of 8.54×10^5 m/s?

Correct answer: 2.724×10^{-9} s.

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012 (part 2 of 2) 10.0 points
How far has it traveled in this time?

Correct answer: 0.00139877 m.

High PopUp
013　10.0 points
During a baseball game, a batter hits a high pop-up.
　If the ball remains in the air for 5.8 s, how high does it rise? The acceleration of gravity is 9.8 m/s^2 .

Correct answer: 41.209 m.

Building Height 01
014　10.0 points
A 0.97 kg rock is projected from the edge of the top of a building with an initial velocity of 6.7 m/s at an angle $39°$ above the horizontal. Due to gravity, the rock strikes the ground at a horizontal distance of 10.7 m from the base of the building.
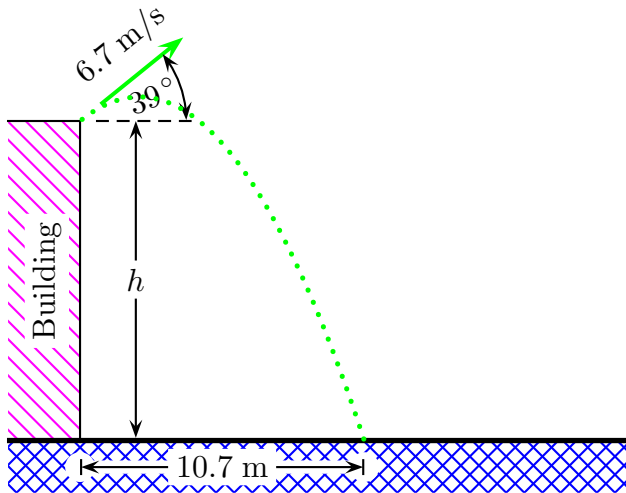
　How tall is the building? Assume the ground is level and that the side of the building is vertical. The acceleration of gravity is 9.8 m/s^2 .

Correct answer: 12.0276 m.