

Find solutions for your homework

Search

home / study / science / physics / physics questions and answers / a 0.87 kg rock is projected from the edge of the top of a building with an initial ...

Question: A 0.87 kg rock is projected from the edge of the top of a buildi...**Post a question**

Answers from our experts for your tough homework questions

Enter question

Continue to post

20 questions remaining

My Textbook Solutions

University...

14th Edition



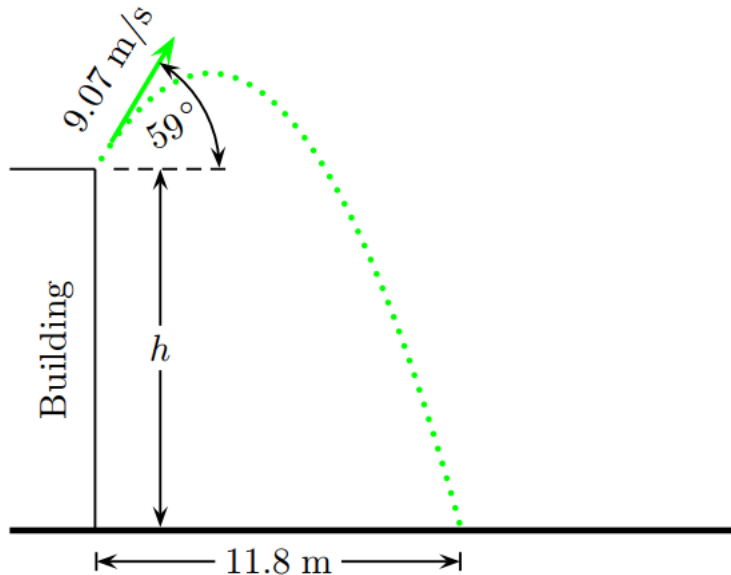
Introductio...

2nd Edition



Reference...

2nd Edition

[View all solutions](#)

A 0.87 kg rock is projected from the edge of the top of a building with an initial velocity of 9.07 m/s at an angle 59° above the horizontal. Due to gravity, the rock strikes the ground at a horizontal distance of 11.8 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, h , is the building? Answer in units of m.

[Show transcribed image text](#)**Expert Answer**

Anonymous answered this
10,762 answers

Was this answer helpful?



using Kinematic equations

$$S = (V_{oy} * t) + (0.5 * a_y * t^2)$$

$$S = -h = - \text{height of the building}$$

$$V_{oy} \text{ is the y-component of initial velocity} = 9.07 * \sin(59) = 7.77 \text{ m/sec}$$

a_y is the vertical component of acceleration

$$-h = (7.77 * t) - (0.5 * 9.8 * t^2)$$

t is the time for which the body is in air

along X-axis, there is no forces acting hence $a_x = 0$

horizontal range is $X = V_{ox} * t$

$$11.8 = (9.07 * \cos(59)) * t$$

$$t = 2.52 \text{ sec}$$

then

$$-h = (7.77 * t) - (0.5 * 9.8 * t^2)$$

$$-h = (7.77 * 2.52) - (0.5 * 9.8 * 2.52^2)$$

$$h = 11.53 \text{ m}$$



Home

Study tools ▾

My courses ▾

My books

My folder

Career

Life



Practice with similar questions

Q: A 0.8 kg rock is projected from the edge of the top of a building with an initial velocity of 8.99 m/s at an angle 51° above the horizontal. Due to gravity, the rock strikes the ground at a horizontal distance of 13.6 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, h , is...

A: [See answer](#)

Q: A 0.57 kg rock is projected from the edge of the top of a building with an initial velocity of 7.97 m/s at an angle 51° degree above the horizontal. Due to gravity, the rock strikes the ground at a horizontal distance of 12.2 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 increased to...

A: [See answer](#)

[Show more ▾](#)

Questions viewed by other students

Q: A 0.6 kg rock is projected from the edge of the top of a building with an initial velocity of 8.09 m/s at an angle 52° above the horizontal. The building is 9.82 m in height. 8.09 m/s o 52 Building 9.82 m x At what horizontal distance, x , from the base of the building will the rock strike the ground? Assume the ground is level and that the side of the building is vertical. The...

A: [See answer](#) 100% (2 ratings)

Q: A freight train has a mass of 1.6 10⁷ kg. If the locomotive can exert a constant pull of 7.9 10⁵ N, how long does it take to increase the speed of the train from rest to 90 km/h? min

A: [See answer](#) 100% (14 ratings)

[Show more ▾](#)

COMPANY ▾

LEGAL & POLICIES ▾

CHEGG PRODUCTS AND SERVICES ▾

CHEGG NETWORK ▾

CUSTOMER SERVICE ▾



© 2003-2022 Chegg Inc. All rights reserved.

