Hello!!

- Please take out your notebook, pencil and calculator.

- In your notes, find the knowns for the following problem:

  - A ball is kicked at an angle of 40° at a velocity of 12m/s from a 7m high shed. How far from the base of the shed does it land?

Today

- 2-D kinematics with a change in the y direction.

- Break these problems into 2 parts.

- 1) Launch to maximum height.

- 2) Maximum height to the "landing" height.

Homework

- The last problem from projectile motion worksheet 1.

- A basketball is shot at an angle of 37° at a velocity of 6.3m/s from a height of 1.5m above the ground. If the player makes the basket that is 3.2m off the ground, how far away is it?

Quiz Friday

- 6 total questions.
  - 2 horizontal projectiles.
  - 2 projectiles with no change in y.
  - 2 projectiles with a change in y.

Key Concepts

- Break the problems into two pieces.

- A to B: from launch to the maximum height.

- B to C: from maximum height to the end of the motion.

  - This may not be the landing.

Concepts Continued

- Determine the initial conditions.

- Use this information to solve for all information that allows you to set up the problem from B to C.

- You may/will need to combine totals (generally time) to solve for the entire problem.

- A ball is kicked at an angle of 40° at a velocity of 12m/s from a 7m high shed. How far from the base of the shed does it land? A to B.

  - x direction
  - Δx
  - $V_{i,x}$
  - $V_{f,x}$
  - a_x
  - t (x and y)

  - V_i and θ (neither x nor y)
  - y direction:
  - Δy
  - $V_{i,y}$
  - $V_{f,y}$

- A ball is kicked at an angle of 40° at a velocity of 12m/s from a 7m high shed. How far from the base of the shed does it land? B to C

  - x direction

  - Δx

  - $V_{i,x}$

  - $V_{f,x}$

  - a_x

  - t (x and y)

  - V_i and θ (neither x nor y)

  - y direction:

  - Δy

  - $V_{i,y}$

  - $V_{f,y}$

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  - x direction
  - Δx
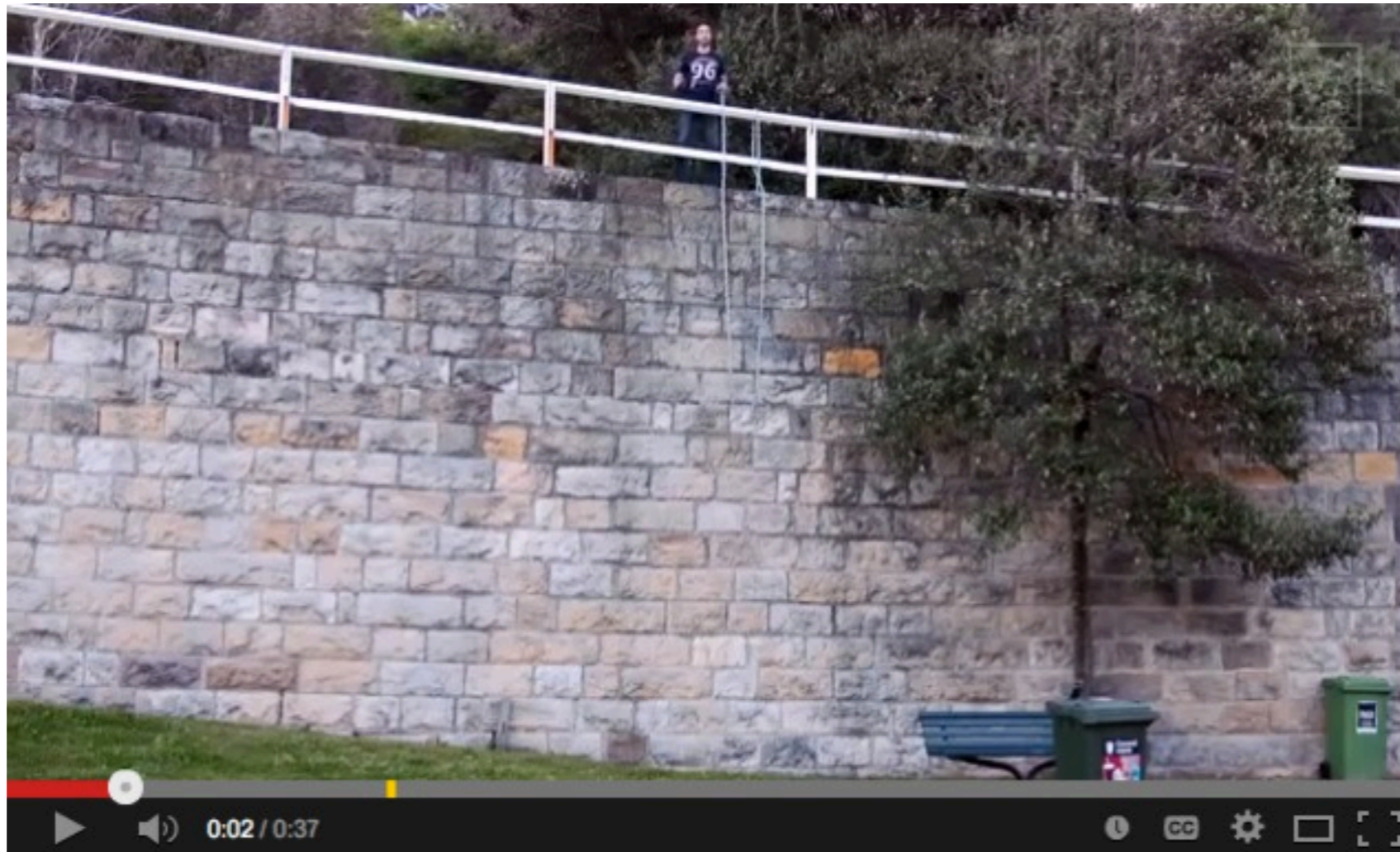 - $V_{i,x}$
  - $V_{f,x}$
  - a_x
  - t (x and y)
  - V_i and θ (neither x nor y)
  - y direction:
  - Δy
  - $V_{i,y}$
  - $V_{f,y}$

Chain Drop Experiment

Predict

- A trebuchet launches a stone at a velocity of 26.5m/s at an angle of 32° from 6m off the ground at a 23m high wall that is 82m away. What is the clearance of the stone over the top edge of the wall? A to B.
  - x direction
  - Δx
  - Vi,x
  - Vf,x
  - ax
  - t (x and y)
  - Vi and θ (neither x nor y)
  - y direction:
  - Δy
  - Vi,y
  - Vf,y
  - ay

- A trebuchet launches a stone at a velocity of 26.5m/s at an angle of 32° from 6m off the ground at a 23m high wall that is 82m away. What is the clearance of the stone over the top edge of the wall? B to C.

  - x direction

  - Δx

  - $V_{i,x}$

  - $V_{f,x}$

  - a_x

  - t (x and y)

  - V_i and θ (neither x nor y)

  - y direction:

  - Δy

  - $V_{i,y}$

  - $V_{f,y}$

  - a_y

- A trebuchet launches a stone at a velocity of 26.5m/s at an angle of 32° from 6m off the ground at a 23m high wall that is 82m away. What is the clearance of the stone over the top edge of the wall? A to C.
  - x direction
  - Δx
  - $V_{i,x}$
  - $V_{f,x}$
  - a_x
  - t (x and y)
  - V_i and θ (neither x nor y)
  - y direction:
  - Δy
  - $V_{i,y}$
  - $V_{f,y}$
  - a_y

Chain Drop Answer 2

Chain Drop Explained

Mr. Breish and Mr. Hayden are playing basketball. Hayden soars into the air at 7m/s at an angle of 75° and dunks over Mr. B. If the ball started from 2m off of the ground and the basket is 3.4m off the ground, how far away from the basket was he when he jumped? What was his maximum height? What was his hang time?

Mr. Breish and Mr. Hayden are playing basketball. Hayden soars into the air at 7m/s at an angle of 75° and dunks over Mr. B. If the ball started from 2m off of the ground and the basket is 3.4m off the ground, how far away from the basket was he when he jumped? What was his maximum height? What was his hang time?

A to B

Mr. Breish and Mr. Hayden are playing basketball. Hayden soars into the air at 7m/s at an angle of 75° and dunks over Mr. B. If the ball started from 2m off of the ground and the basket is 3.4m off the ground, how far away from the basket was he when he jumped? What was his maximum height? What was his hang time?

B to C

Mr. Breish and Mr. Hayden are playing basketball. Hayden soars into the air at 7m/s at an angle of 75° and dunks over Mr. B. If the ball started from 2m off of the ground and the basket is 3.4m off the ground, how far away from the basket was he when he jumped? What was his maximum height? What was his hang time?

A to C

Monkey Hunter

An arrow is fired at 40° at a velocity of 10m/s at the same time that a target is dropped. If the target is hit 1 second later: How far is it from the bow Δx? How high was the target dropped from?