Do Now

 On a whiteboard or in your notes: Determine the velocity that a car needs to drive off of a 10m plank in order to make it to a 5m landing area with 7m of water in between.

Picture

Variables

- x direction
- Δx •
- Vi,x
- Vf,x
- ax
- t (x and y)

- y direction
- Δy
- Vi,y
- Vf,y
- ay

Equations

Today

- Horizontal trajectory with additional kinematics.
- Cannon Lab
- Basic intro to 2-D kinematics with a non-horizontal projection.

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- Basic intro to 2-D kinematics with a non-horizontal projection.

Food Friday

- If you would like to bring in a snack you may do so.
- There must be enough to share with everyone (29 people).
- Nothing that requires heating or utensils.
- You must get it approved by me by the end of the school day Thursday.

Stunt Driver Kinematics

- Warning: These equations are not applicable to real-world scenarios.
- We do not take into account air resistance. The equations for realworld problems involve multiple integrals and and understanding of advanced calculus.

• Do not attempt to recreate them.

Parameters

- You have a certain distance to accelerate before you go off a flat surface.
- There is a canyon/pit to cross.
- There is a defined braking distance on the other side to stop.

Considerations

- The starting and stopping distances are for the center of the car.
- We will not have to worry about the vertical component of velocity when considering breaking distance.

Evil Kinevil wants to cross deep canyon. He has 20m to get up to speed before the edge of a 90m cliff. There is a 75m cliff 17m across the canyon with 12m of stopping distance before the another cliff.

- How fast does he need to be going when he leaves the 90m cliff?
- What is his acceleration from rest at the 90m cliff?
- What is his acceleration (negative) for on the lower cliff?

Evil Kinevil wants to cross deep canyon. He has 20m to get up to speed before the edge of a 90m cliff. There is a 75m cliff 17m across the canyon with 12m of stopping distance before the another cliff. Picture: labeling is important.

Step I: How fast does he need to be going when he leaves the 90m cliff?

Step 2: What is his acceleration from rest at the 90m cliff?

Step 3: What is his acceleration (negative) for on the lower cliff?



The Leidenfrost Maze

What makes it go?

Project Dare Devil

- You will have the next minutes to create and solve your own problem.
- You will create a *colorful* picture to represent your problem.
- Write the problem on the paper with the picture. Solve it on another.
- I will collect and redistribute them at random. Another group will have to solve it.

Hand Them In

 Place the picture, your solution, and the other groups solution together in the box at the front desk.

Cannon Lab

- We will shoot the cannon with a tennis ball across the room.
- This will happen very quickly and be very loud.
- We will determine all of the variables of the motion when we are finished.