



Trajectory/Storm the Castle

Science Olympiad 2023 Coaches Clinic

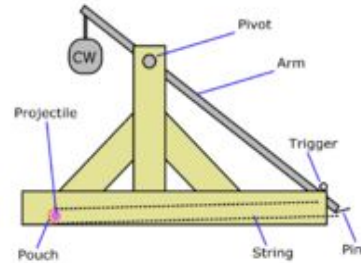


Event Objective

Precisely launch a projectile into a specified location

Needed Items

- High Impact Glasses
- Device Ready for Impound
- Design Log
- Objects to be thrown (C Team)



Storm The Castle (B Event) - Building Parameters

Device must be able to fit inside 100cm x 100cm x 70cm box

The triggering device doesn't need to be within the box, needs to extend 75 cm from launch area

Must be able to accommodate a standard Tennis Ball, Racquetball, and ½ inch eye bolt

Launching Components must be comprised of entirely gravity

Electrical Components are not allowed on devices

Storm The Castle (B Event) - Design Log

- **COVER WITH TEAM NAME AND NUMBER**
- Items used in construction
- Photo of device, important pieces labeled
 - Such as: Counterweight location, Projectile location, etc.
- Graphs/Tables comparing arm length to distance travelled
- If a 3-D printer is used in construction, include details on the type of file used, and where it came from
- Please list all values in proper SI units
- Once a log is submitted it will not be returned, you can have a second copy if you need.

Storm The Castle (B Event) - Day of Event

- There will be 2 Counterweights a lightweight and a heavy weight
 - You get two shots with each counterweight
 - Each counterweight has an associated ball (Light -> Racquetball) (Heavy -> Tennis Ball)
- Launch area will be a 1.5x1.5m square, the device must stay within the box the entire time
 - Launching mechanism must be 75cm out of this
 - This box should be labeled with tape on the ground
- The target will be a standard 5 Gallon bucket

Trajectory (C Event) - Building Parameters

Device must be able to fit inside 60cm x 60cm x 60cm box

The triggering device doesn't need to be within the box, needs to extend 75 cm from launch area

Must be able to accommodate a standard Tennis Ball, Racquetball, or ping pong ball and ½ inch eye bolt

Launching Components must be comprised of entirely elastic force; Rubber band, Bungee Cords, etc.

Electrical Components are not allowed on devices

Trajectory (C Event) - Design Log

- **COVER WITH TEAM NAME AND NUMBER**
- Items used in construction
- Photo of device, important pieces labeled
 - Such as: Counterweight location, Projectile location, etc.
- Graphs/Tables comparing arm length to distance travelled
- If a 3-D printer is used in construction, include details on the type of file used, and where it came from
- Please list all values in proper SI units
- Once a log is submitted it will not be returned, you can have a second copy if you need.

Trajectory (C Event) - Day of Event

- Launch area will be a 1.5x1.5 m square, the device must stay within the box the entire time
 - Launching mechanism must be 75cm out of this
 - This box should be labeled with tape on the ground
- There will be two targets set up, you get two shots against each target
 - The near target: Will be a raised 1m square,
 - Can be raised by .5 m or 1 m at regionals and between 1-1.5m at State
 - Must be at least 2 - 8m away from the launch area
 - 1 m intervals for Regionals and .5 m intervals for State
 - The far target: Will be level to the ground
 - Must be at least 2 - 8m away from the launch area, but needs to be 2 m from the near target



Commonly Asked Questions?

Will projectiles be provided?

Projectiles will be provided for the B team (Storm the castle event)

While projectiles are not required to be provided for the C team (Trajectory) event, it is likely they will be there as most locations do both of the events at the same time and location

Can devices be altered once impounded?

No, anything impounded will not be allowed to be altered once completed

However you are given 8 minutes to set up your device properly before your first launch

Can I get back my design log for trials?

No, once design logs are submitted with impound, they are unable to be accessed again

I suggest having a second copy if you need it for measurements or calculations

Note: Label your design log/have a front page for easy reference

Will Storm the Castle and Trajectory be held together?

I don't know

I can say that in past years they have been held in the same location at the same time, due to the two events being so similar to each other, that one test administrator can handle both at the same time in the same area. This being said, there is nothing forcing that to occur

Are there any bonus points?

Yes and No

B team (Storm the castle) has no bonus points, all points can only be gotten through how close you can get to the bucket

C team (Trajectory) has bonus points, if you are able to land your first shot in the target, you can ask for a bucket shot for more points

What happens if you miss impound or have construction errors?

If you miss impound or have a construction error, you will induce a .7 multiplier to your final score

If the error can't be fixed before impound, you will be ranked behind every team that didn't have a violation

What happens if a launch fails, or the target isn't stated before the launch?

If a launch occurs by accident during setup it will count against one of your 4 launches

If a launch doesn't operate properly, it will also count against one of your 4 launches

(While not required, I personally count the launch distance to be from the edge of the launch box to the target or max distance)

If a launch is not called, but occurs it will count against one of your 4 launches



Overall, Shoot Straight, Good Luck