

Trebuchets - Design and Building

Questions and Research

1. At the time what made Trebuchets the best siege machines?
2. What were the downsides of a trebuchet when needing to attack an enemy that required travel?
3. Why do we not use trebuchets today (other than for fun)?
4. What ethical considerations do we need to keep in mind when designing and building our projects?

Challenge

-Your challenge is to build a trebuchet that can accurately aim into the 6"x8" doorway of your castle and destroy the not so innocent Royalty (eggs) as well as potentially decimate the cardboard castle! You will need to research the physics and math needed to build a trebuchet that is accurate and safe to use.

Design Requirements (checklist)

- Full size drawn plans required of at least the side view
- Math to determine the length of throwing arm, sling/pouch length
- release pin angle and length
- math to determine approximately (or accurately) how far it will throw your objects. You must have this before you are allowed to throw anything!
- **Need a triggering mechanism or safety hook!**
- Axle must be 12"/30cm from the ground. No more no less!
- "footprint" of trebuchet can be a maximum of 24"x18"
- Everyone will have the same size counterweight (or pretty close in size)
- pouch/sling **MUST** be able to hold the golf ball and shoot it safely
- Trebuchet to castle distance will be 20 feet minimum but you can design it to shoot farther

Materials provided

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| -10" of 3/8 steel rod for axle (which must be 12"/30cm from the ground) | -fasteners (eye hooks, etc) |
| -3/4" square pine strips for frame | -paint to make it look fabulous |
| -runway material (for sling and load to rest on) | -string (you may bring in your own materials if you don't like ours) for the sling |
| -cement and wire to create counterweight | |

Materials not provided

- Material for a pouch
- Extra golf balls (you will get one and only one!)

How you are being Marked

-Marking will be based on research, design, build quality, and accuracy of your trebuchet. Please refer to the detailed marking rubric handout in class