

Junk Box Wars



Pumpkin Chuckin'!

EACH TEAM needs a THINK ABOUT IT worksheet!

Fill out the front as we discuss the rules & requirements!

What is a catapult?

A CATAPULT is a device which uses an arm to hurl a PROJECTILE a great distance and were often used in ancient times during battle.

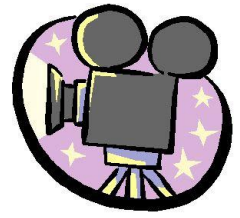
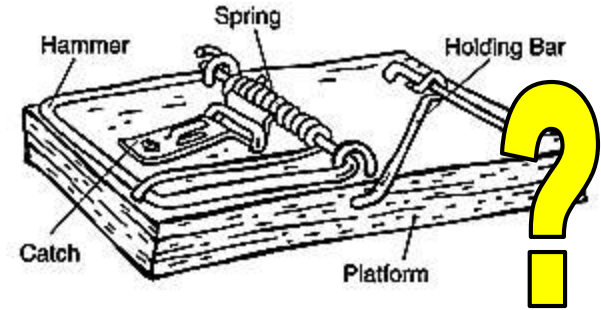


We will be using a mousetrap and other supplies to create a catapult that will launch a marshmallow (or white pumpkins) to earn points.



Think About It ...

How can we modify a mousetrap or add materials to it to create a good catapult?



Some things to consider ...

What type of “flinging” arm will you use? How big will it need to be?

How will the device “hold” the projectile?

How will you release (or snap) the trap?

How will you hold the device during the launch?

Worried about getting “snapped”? Unwrap the small wires holding down the sides of the arm or use a rubberband. Be sure to leave room to reattach the side wires when you are ready to use the device!



Competition Rules – Materials

- Your team will be provided with a bag to store your “junk” (or the materials that could be used to create a catapult using a standard mousetrap.)
- Teams will also receive a “pumpkin” (large marshmallow) to decorate as their projectile and use for practice rounds. Fresh marshmallows will be provided for the final competition. Marshmallows cannot be modified except for decorating them with a marker.
- Each team will receive only one set of materials. You must take all the materials even if you do not think you will use them!
- Teams are not allowed to share materials with other teams or bring in items of their own.
- Teams must keep all their materials, tape page, and the planning page in the ziploc bag provided by the teacher. The bag itself cannot be used as part of the device.
- All unused materials should be saved in case repairs are needed during competition.
- Teams are allowed to use online resources for ideas, but must fill out the **Think About It** page with their own ideas based on what materials they have available.

****ALL MATERIALS MUST REMAIN IN THE CLASSROOM, USED FOR YOUR DEVICE, AND STORED IN YOUR BAG AT THE END OF CLASS! TAKING STUFF WITH YOU OR USING IT TO PLAY WILL RESULT IN A ZERO GRADE!***

Competition Rules - Device Requirements

Your device must be powered by the energy stored in the device – the spring. Your “projectile” or device may not be aided by a helping hand (push, shove, etc.) or other energy source (i.e. rubber bands).

At least a part of the device must be touching the floor at all times before, during, and after the launch. If the device does not touch the floor the entire time, a zero score will be given for that round.

The entire device must remain behind the launch area boundary at all times – before, during, and after the launch. Having the device cross the line will result in a zero score for that round.

Devices may NOT be taped to the floor!

Devices that break and/or do not work will be given a score of zero for the rounds that could not be completed. Teams will have time between rounds for modifications, but not major rebuilds!

Teams will be allowed two class periods (today and tomorrow) to build, practice, and modify their device. Be sure to plan a design that can be done in the time allowed!



Competition Rules - Testing Procedure



Each team will have a total of three trials to earn points in each category - **DISTANCE, HEIGHT, and ACCURACY.**

Points will be awarded based on the landing location (where it comes to a stop) of the “pumpkin” for the distance and accuracy categories.

Points for the height category will be based on the place where the marshmallow hits the point wall and will be determined by the event judges.

Teams will be allowed a 5 minute break between categories to make modifications and/or minor repairs using the remaining materials in their junk bag. This time is not to be used for doing a major rebuild of the device – just repairs and modifications !

The team with the most points overall (sum of all 9 trials) will be named the winner. Awards will also be given for the teams with the most points in each category.

In the case of a tie for the overall winner, teams involved will have one chance to earn points in the accuracy category. The team with the most points on the tie breaker will be the winner.

Do not take apart or destroy your device until told to do so! We will “recycle” as much as we can from your devices and leftover materials.

Things to Remember ...

ONE set of materials – No refunds or replacements!

Does not include mousetraps – each group can receive one replacement mousetrap if needed. No sharing or trading of materials is allowed! All materials must be kept in the classroom in your team's bag unless we are testing/modifying the devices.

Fling or flop?

Make sure you build the launching arm or part is on the correct side of the mousetrap's arm! If you undo the arm supports, leave room to reattach them when you are done building.

Practice! Practice! Practice!

The way you hold the launcher, the distance you are from the target, and the style/length of your flinging arm can play a big role in where the pumpkin will end up.

Three challenges – Height, Distance, and Accuracy

Your team will have to use your device to earn points in all three categories. Each team will have 5 minutes between challenges to make minor changes or repairs to their device. Teams can also use this time for practice.

❑ Fill out the BACK of your “Think About It” page and have it approved by the teacher.

- Need to draw a picture and label the parts.

- Write 3 sentences to tell what materials you are going to use, how you will use them, and how they will help.

❑ Get a Ziploc bag, a tape page, and all the materials listed in the Supply List.

❑ Tape will be handed out in 25 cm sections (after the first 100 cm on the page) and should be stored on a laminated sheet.

❑ Use your class time to build your device and practice flinging the marshmallow. Make modifications to improve it before final testing begins.

Your team will have today and tomorrow to build and practice launching your device.

Final testing will begin on Thursday!

Supply List

1 Mousetrap*

5 Straws

2 Pipe cleaners

3 Rubber bands

2 Plastic **UTENSILS**

2 Index cards

2 Plastic cups

5 Craft sticks

200 cm Masking tape

•Replacement mousetraps will be available to replace broken ones.

•Marshmallows will be provided for each team and cannot be modified except for decorating them with a marker.

•“Fresh” marshmallows will be provided for the final competition.

ALL MATERIALS MUST REMAIN IN THE CLASSROOM AND STORED IN YOUR BAG! TAKING STUFF WITH YOU WILL RESULT IN A ZERO GRADE!





Time is up for today!

Put all your materials in your Ziploc bag along with your tape page and Think About It worksheet.

Put the bag in the correct spot for your class.

Final testing will begin on Thursday!