C:\Documents and Settings\sfischer\Local Settings\Temporary Internet Files\Content.IE5\KL2E7HFT\MC900311686[1].wmfC:\Documents and Settings\sfischer\Local Settings\Temporary Internet Files\Content.IE5\N5AF6NO8\MC900384226[1].wmfPunkin’ Chunkin’ Contest

**When**: Thursday, October 10th

**Where:** Ms. Fischer’s Classroom (rm 1410)

**What:** You and your team (2-4 people per team) must build a mini catapult to launch your pumpkin (and by pumpkin, I mean Brach’s mellowcreme candy pumpkins). Building should be done outside of class. You may come before school or after school to build as well. See my website <http://mathwithmsfisch.weebly.com> for examples and sample instructions on how to build a mini catapult. This is **YOUR** design so you can choose to build it however you want, out of whatever materials you want. **Note:** Catapults can be no more than 12” high.

On Thursday, October 10th, our class will hold trials and competitions of punkin’ chunkin’. Prizes will be awarded for each of the following categories:

* Most creative team name
* Most creative catapult design
* Furthest Launch
* Highest Launch

On the day of trials, your team will need to fill out the following trial sheet showing all calculations. One sheet per group will be turned in.

Each individual student will need to fill out the assessment survey rating yourself and your team members’ roles in your projects. This will be done privately on an individual basis and turned in the day of the competition as well.

On the day of competition, one group will perform while another group witnesses. Cheating **will not** be tolerated and will result in immediate disqualification and a grade of zero.

**Punkin’ Chunkin’ Trial Sheet**

Team Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Members Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 1:** Place the catapult on the ground. BE CAREFUL that is its fixed in that position and does not change position during tests. During each test make sure that you pull the catapult back to the same distance, **it is very important to make sure that your shots are as consistent as possible!**

**Step 2:** Try a few practice runs to make sure that you can hit close to the same spot with each spot.

**Step 3:** Designate one student as a ‘launcher,’ one as a ‘spotter,’ one as a ‘recorder,’ and one as a ‘timer.’ Record who does what here:

**Launcher:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Spotter:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Timer:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Recorder:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* The **launcher** will be in charge of firing pumpkins from the catapult 3 times. The launcher must make sure to launch the pumpkins the same way each time.
* The **spotter** will put a piece of tape on the exact mark where each pumpkin lands and then measure (in meters) from the point of launch to the tape.
* The **timer** will time the number of seconds between the point at which the pumpkin leaves the catapult to the time that it hits the ground. This person needs a good eye and quick reflexes!
* The **recorder** will record the data in the table on the back of this page.

|  |  |  |
| --- | --- | --- |
| **Launch** | **Distance (meters)** | **Time (seconds)** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |

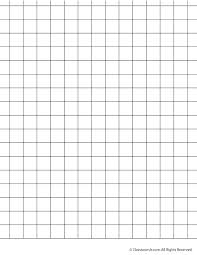
|  |  |
| --- | --- |
| **Average Distance** | **Average Time** |
|  |  |

**Step 4:** Find the maximum height by using the following formula and your average time you calculated above:

**Maximum Height** = 0.5 \* 9.81 \* (Average Time ÷ 2)2

FYI: 9.81 m/s2 is the effect of gravity.

Write your calculated **maximum height** here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 5:** The previous steps should allow you to determine the vertex of your quadratic function. Think of the starting point of your pumpkin in terms of coordinates. Use this information and **vertex form** of the quadratic function to determine the quadratic. Once you have found the quadratic function for your pumpkin, graph it on this sheet. Make sure you think about what your axes labels should be.

**Equation**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Graph:**

**Self and Peer Assessment**

Fill out one table per person in your group. Make sure you are very detailed about what that person’s responsibilities were in the group.

**Your Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Role in Group: | | | | | |
| This person shared equal responsibility with the rest of the members in the group. | 1 | 2 | 3 | 4 | 5 |
| This person worked well with the other members of the group. | 1 | 2 | 3 | 4 | 5 |
| This person was on task while working on the project. | 1 | 2 | 3 | 4 | 5 |

**Team Member: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Role in Group: | | | | | |
| This person shared equal responsibility with the rest of the members in the group. | 1 | 2 | 3 | 4 | 5 |
| This person worked well with the other members of the group. | 1 | 2 | 3 | 4 | 5 |
| This person was on task while working on the project. | 1 | 2 | 3 | 4 | 5 |

**Team Member: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Role in Group: | | | | | |
| This person shared equal responsibility with the rest of the members in the group. | 1 | 2 | 3 | 4 | 5 |
| This person worked well with the other members of the group. | 1 | 2 | 3 | 4 | 5 |
| This person was on task while working on the project. | 1 | 2 | 3 | 4 | 5 |

**Team Member: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Role in Group: | | | | | |
| This person shared equal responsibility with the rest of the members in the group. | 1 | 2 | 3 | 4 | 5 |
| This person worked well with the other members of the group. | 1 | 2 | 3 | 4 | 5 |
| This person was on task while working on the project. | 1 | 2 | 3 | 4 | 5 |