Stanley Middle School

2016 Rube Goldberg Machine Contest

Contest Rules & Guidelines

Open an Umbrella

Create a Rube Goldberg-like, "Unsimple Machine." The goal for your machine is to Open an Umbrella. LPIE will be providing the umbrellas This task is to be done in exactly 12 steps. The interpretation, execution, and use of materials for this goal is the responsibility of you and your group members.

Theme: El Nino/Heavy Rain

Project requirements:

1. Teams may consist of 2, 3, or 4 students.
   It is recommended that no students work alone because this project requires so much time and effort. However, solo entries and groups of 4 are allowed with special permission.

2. The machine must be no larger than the following dimensions:

Length:	130	cm maximum	
Width:	75	cm maximum	**Machines this size will be able to pass through the**
Height:	100	cm maximum	**doors on the 800 wing side of the gym.**

3. **Seventy-five percent** of the material you use should be recycled (wood scraps, string, 2 liter bottles, wire, cardboard, etc.) In other words, the use of items in your machine must be different from their original functions. Be creative and resourceful. *You do not need to spend any money to create a great machine.*

4. Your group must showcase at least **3 aspects of the theme** in your machine.
   To showcase the theme you can:

   - (good) display pictures of **El Nino related ideas** in your machine
   - (best) simulate an aspect of **El Nino related ideas** as one or more of your steps

5. The final step(s) your machine performs is to **Open the Umbrella.** The manner in which your machine performs this final task is up to your ingenuity and creative interpretation, but your entire machine must follow the space restriction mentioned above.

6. Your machine must perform the simple task of opening the umbrella in exactly **12 steps.**

Extra steps are not allowed because of machine size restrictions and your limited 2nd run set up time. Your energy should be focused on 12 creative and ingenious steps, not ways of creating extra steps.

How to Count Steps (Also, see web site listed at the bottom of the last page)

Step 1. A ball crashing into a set of dominoes transfers its momentum to the dominoes.
Step 2. The falling dominoes trigger a mouse trap
Step 3. The mouse trap launches a block of wood into a cup
Step 4. The extra weight in the cup presses down on an electrical switch completing a circuit.
Step 5. The completed circuit turns on a fan which pushes a sail boat in a trough. 7. Your

One step is defined as one action or energy transfer. Each step may incorporate things like; pulleys, levers, ramps, electrical switches, battery, catapults, etc.

7. **Each step/energy transfer must be clearly displayed with a number to help the audience and**

judges see and understand your steps.

8. Your machine must have a title, which should be displayed prominently on your machine. The theme should be identifiable throughout the machine with pictures, small models, props, drama, sound etc.
9. Before starting your machine, the group will give a **short, creative presentation** and identify and describe each of your machine's steps.
10. Everyone in the group is expected to be equally involved in the planning and building of your machine.
11. Your audience presentation and running the machine may not take more than 5 minutes.
12. Machines must be sturdy enough to be brought into the gym from your vehicle. There will be limited time to work on your machine the evening of the contest.

Final Notes:

1. Any falling, rolling, or launched objects must remain within the **150 cm x 75 cm x 100 cm machine space restriction.** Any objects that end up outside the size restriction will cause points to be deducted (see score sheet) Balloon fragments are the exception.
2. Any electricity used must be battery power. **No household current is to be used.**
4. Frequently double check the contest score sheet and guidelines. **Make sure your machine meets all of the requirements.**
5. Remember the machine should be started by a **single** push or pull. Any other human intervention or touches will result in a loss of points (see score sheet).
6. The machine should be reliable. It should run over and over again when reset.
7. At the evening contest, machines should not be removed from the gym until 30 minutes after the final machine is judged. Judges like to take a final look at all machines.

8. Using water or any other liquids are not permitted .

9. A row of 6 dominoes, one falling into another, does not make 6 steps or energy transfers. An energy transfer is defined as one medium to a different medium.... A ball rolling into block of wood would be a good example ... not ball to ball or domino to domino.

10. Combustion of any kind may not be used in your machine.

11. Very Important . . .
When you bring your machines to the gym on the day of the contest, they will be placed on tables to be worked on for 1 hour. At the end of one hour students must stop working on machines. Machines will not be moved after that.

All machines will be run 2 times for the judges. After you run your machine, you will have 5 minutes to reset it. This will be timed. Taking more than 5 minutes will cause points to be deducted (See score sheet). Please practice and time how long it takes to set up your machines. You should have a goal of 3 - 4 minutes of set up time.

This is a wonderful experience for students who enjoy and look forward to building and designing things. Surveys of past participants have revealed that, on average, groups spend 40+ hours on their machines. This time frame includes concept development, construction, and testing. It's best to spread this kind of effort over several weeks. We strongly encourage everyone to participate. However, be sure you can devote the amount of time this type of project requires.

Important Dates & Times To Remember

Thursday, March 10th from 3:00 - 5:00 in room 804:

Preliminary round for all participants. Students will bring photographs of their machines to show that consistent and appropriate time and effort has been put into their machines. Students will also provide a written explanation of their machines' steps (see Preliminary Round Information Sheet).

Wednesday, March 30th from 6:00 - 9:00 in the Gym

Final round details provided and questions answered at a lunch meeting to be announced.

Past Rube Goldberg Machine Contest Themes and Machine Goals.

2000	**1st**	**Time Machine**	**Place an object into a box and close the box**
2001	**2nd**	**Johnny Apple seed**	**Plant an apple seed and water it.**
2002	**3rd**	**America the Beautiful**	**Raise the American Flag and Unfurl it**
2004	**4th**	**Elections**	**Mark a ballot and put it in a ballot box**
2006	**5th**	**Recycling**	**Deposit shredded paper into a receptacle**
2008	**6th**	**Fast Food**	**Assemble a Hamburger**
2010	**7th**	**Stop the Flu**	**Dispense hand sanitizer**
2012	**8th**	**Party Time**	**Pop two Balloons**
2014	**9th**	**Zip**	**Zip up a zipper**

Additional Help:

This web site shows some great photographs of Rube Goldberg Machines. The steps are numbered in the photographs and the explanations are fairly clear.

www.geocities.com/MadisonAvenue/Newsstand/7000/cool-machines-3.html

For clarification of any of the rules or procedures please contact Mr. Meneghetti

927 - 3530 ext. 1804 mmeneghe@lafsd.k12.ca.us

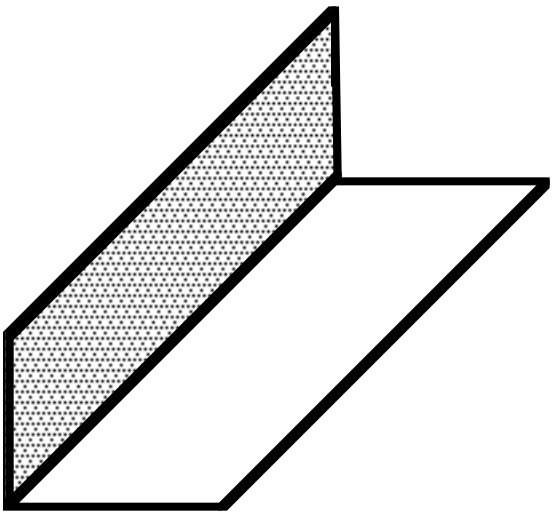
drop by at lunch, break, or after school in room 804

Good Luck and Enjoy Creating Your Unsimple Machines!!

Additional Important Design Information

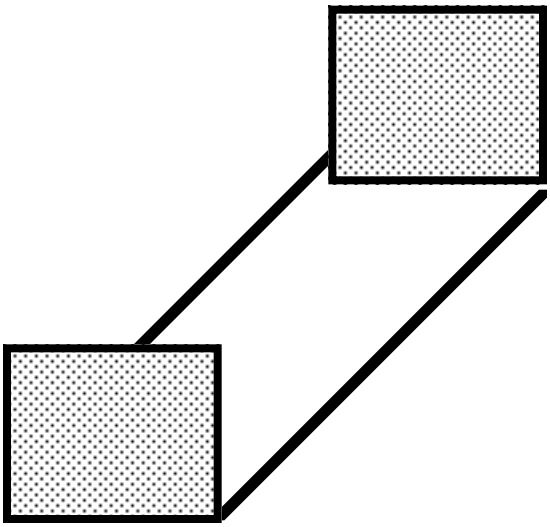
The judges will be positioned behind or to the sides of your machine so the audience may also enjoy seeing the machines operate. <u>A solid back or sides are not required.</u> However, your machine may have a solid back or one or two solid sides. You may not have both a solid back and solid sides that would obstruct the view of the judges.

A BACK



OR

1 OR 2 SIDES



NOT BOTH