

Making of a Great Machine

A successful Rube Goldberg machine (one that is competitive in Rube Goldberg Machine Contests), combines a number of objective and subjective qualities that fulfills tasks, follows rules and impresses judges.

- It has a unifying theme. This year's theme is "**Watering a Plant.**" Use your imagination.
- **Using at least 10 steps**, your challenge is to water a plant while strictly adhering to the rules of the competition.
- **Using simple machines, in the spirit of Rube Goldberg's machines, power the steps of your machine.** Electrical or battery powered steps are not allowed. Wind-ups are allowed.
- **It has clearly visible steps.** On many machines, it is hard to follow all the steps. Judges appreciate machines that are laid out so that as many steps as possible are clearly visible in sequence.
- **The project boundaries cannot exceed a base larger than 2 foot by 4 foot and the height of the project cannot exceed 3 feet.** Everything, including any loose or flying objects must remain within the set boundaries of the machine.
- **The machine works.** When it starts, it runs all the way through to completion with no human intervention and completes the required task.
- **Any human intervention on a machine in motion will cause the run not to count.** You will only have 2 attempts for your machine to make a complete run. Once the motion starts, no one can touch anything on your device. If someone does, it counts as one of your attempts but the results do not count.
- **Use safety precautions at all times when inventing.**
- **Do not invent anything that will damage a floor or a table.**
- **Live (or dead) animals are not allowed! Don't use flammable or other dangerous chemicals!** This violates the rules. When the judges sit down to determine the winners, your machine will not be considered.
- **Have your display board showing your theme and steps clearly.** We don't want a conflict between steps used on the machine and what is on the display board. Make sure you label each step.
- **Keep your presentation from 2-3 minutes in length.** Have all skits and other presentations in keeping with your theme.
- **You are responsible for cleaning up any mess you might create with your Rube Goldberg.**
- **You may work on your own, with a partner, or in a group of 3.**
- **Themes must be submitted by January 24th**
- **The Rube Goldberg Competition will be at the end of 3rd quarter.** This has not been a problem in the past.
- **Projects being worked on will be stored in your assigned drawer.** You are not allowed in anyone's drawer other than your own.

Design Strategy

Start with how you are going to finish your project. Perhaps a string is going to pull something. Work your way backward from there. How is the string going to be pulled? Maybe a weight will pull it? Or how about a mousetrap? Yeah...a mousetrap! How will the mousetrap be triggered? You see the pattern? Come up with more than one way to "finish" the machine. Perhaps a lever arm will be used in place of the string to "finish" the machine. Now begin to think backwards as to how the lever arm will be moved. It is very important that the machine be built on a stand. A stand will make sure that everything is in its proper place when the device is set up and will force your machine to work within its boundaries. Finally, the most important step in the process, test everything together before the competition day!

Dates to Remember:

January 17th: Begin Rube Goldberg project

January 24th: Theme is due

End of 3rd Quarter: Project will be in a competition with other projects.

How is it judged?

A rubric will be used to score each machine. You have been given a copy of the rubric, so it would be wise to make sure that your machine would be given the highest marks!

The awards will be given in the following categories:

Rube Goldberg Machine Circle of Winners

Number of steps

- Did the machine have the required number of steps?
- Did the machine have more steps than required?
- How easily could you follow the machine's steps?
- Could you see the steps easily from one point, or did you have to move around?

Creative use of materials

- How many objects in the steps do not appear to be bought, but found or pieced together?
- How many of the objects in the steps are used in an unusual way?

Use of themes in machine

- How many different types of simple machines were used?

Successful completion of task

- Did the machine complete, without human intervention, the task in at most two attempts?

Top Honors

One project will win earn the top spot in the competition. This machine will be kept as a display for future contests.

The Group Contact List

Name

Phone Number

Working together as a group means everyone needs to apply good group skills. Everyone needs to contribute ideas, manual labor, supplies, and time in order for your machine to be a success.

Cooperation and teamwork will be your key words!

The Group Responsibility List

Name	Responsibility

Remember, your goal is to invent a clever and complicated device – NOT to OUTSPEND the other teams. Recycle items, use old items in new ways, and clean out those junk drawers!