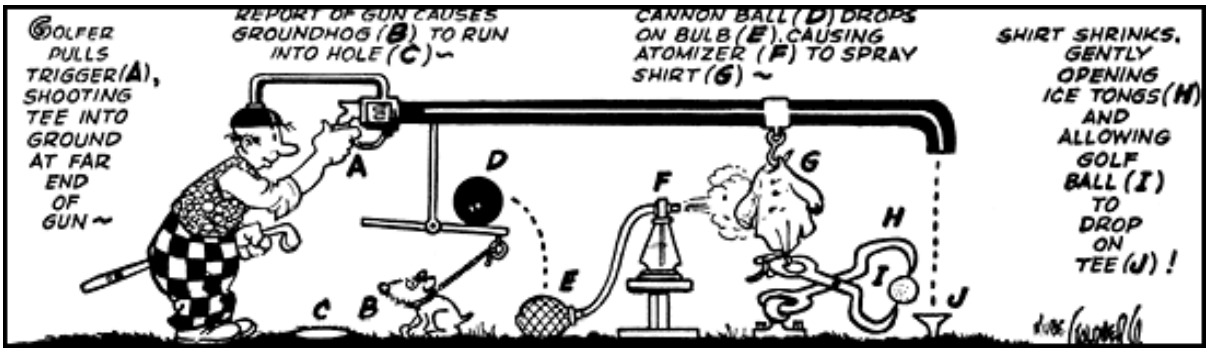
Rube Goldberg Machine Design Challenge



The Challenge

Rube Goldberg machines incorporate everyday machines people are used to seeing and connects them in ways that may seem idiotic or ingenious. It is the mission of your class group to construct a machine that uses individual steps to complete a task.

1. You will work as one large class group to complete this task. Each student will do a part and video it, then all the parts will be put together in one joint machine, in one EPIC video.
    - **This project is optional for students who do not have any type of video capability**
    - **Everyone in the class has the individual option of having this design challenge count as a 50 point TEST grade or of being exempted from the project.**
2. Your class group will decide together what the task is and who will be responsible for the last step of the task. Alternatively, you may want to wait and see everyone's steps and then decide who will do your "last step."
3. Each person in the class will be responsible for a minimum of 4 steps. Each step can be as simple or as complicated, as big or as small as you want. Refer to the Project Score Sheet for possible points.
    - A step in the machine should be considered a transfer in energy from one action to another action.
    - Each person can use a particular transfer device or sequence only one time in their individual set of steps.
    - It is preferred that in the entire class group no transfer device or sequence be repeated more than twice. This will mean that you will need to communicate with everyone in the class to make sure that no particular type of transfer is overly repeated.
    - You can start the first step manually, but each step after that must result from the step before it.
    - There is no maximum number of steps. Additional functional steps can add bonus points to your score.
    - Your steps may be done indoors or outdoors.
4. Each person's sequence of 4 steps should last at least 3 seconds without being boring – or interruption. No video editing!
5. Use random materials. Don't use any pre-made Mouse Trap game pieces or any similar type materials; however, you may use the game for ideas to construct your project.
6. The class machine should have an overall theme that carries throughout the entirety of the project.
7. Use the Discussion Board in PSL to establish communication between everyone in your class group.
8. Remember the most important element of an outstanding Rube Goldberg machine: WACKINESS! Rube saw the humor in every situation. His ludicrous cartoons were a satire on the American public for their complicated methods for solving a problem. GO CRAZY – or as crazy as you can under the constraints in which we are living! **A true Rube Goldberg machine would be boring without some unusual household items (old toys, toilet plunger, egg beater, mousetrap, typewriter...).**
9. The person with the most steps and the person who has most creative step(s) will be crowned Champions of the Rube Goldberg Design Challenge - with all the accolades and privileges this entails.

Task Ideas

Fold a napkin, feed a small animal, light a match, open a soda can, screw a lid on a jar, raise a flag, turn on a radio, set off a party popper, blow up a balloon, prepare a bowl of cereal, turn on a light, turn a page in a book pour a drink in a cup, mix a kool-aid drink, put toothpaste on a toothbrush, put a golf ball in a hole, turn on a flashlight, swat a fly, water a plant. These are only ideas. **Be creative and unique**!

Project Hints

Your own imagination and creativity are all you need to build a super Rube Goldberg machine. But if you're having trouble getting started, here are a few tips to help you. Also, be sure to check out Rube Goldberg cartoons and the Rube Goldberg Machines on You Tube.

1. Gather a few things from around the house - balls, marbles, dominoes, string, toy cars, funnels, fans, mousetraps, etc.
2. Now play with the things! What can the car bump into or knock down? Can the string pull something up? Can water flow through something and hit something else? What can push the ball down the cardboard ramp? Try it out!
3. BRAINSTORM! Get a piece of paper and start writing down any idea that pops into your head. No matter how crazy the idea seems, just write it down for later. Even if you don't use it, it may help you think of more things.
4. Plan on making quite a few changes to your machine as you build it. It may look different from your original idea. Try not to get frustrated, this is part of learning what works best.
5. If you get stuck at a certain step of your machine, why not try to work your way backwards? Start at the last step, and connect the part to it that triggers it. Or take a break away from the machine. Sometimes you'll come back with a fresh solution to the problem.

Rube Goldberg Project Score Sheet Sample

Number of Steps	Two Steps **5**	Three Steps **7.5**	Four steps **10**	For each step over 4 that works **+1**	
Machine Creativity & Originality	Not exciting **5**	Somewhat interesting and creative **7.5**	Creative and clever **10**	Wild and Exciting **+1**	
Theme Implementation Creativity & Originality	Not interesting **5**	Somewhat interesting and creative **7.5**	Creative and clever **10**	Wild and Exciting **+1**	
Risk	Transfers are simple – no real risk **5**	One or two risky steps **7.5**	Three or four risky steps **10**	Totally out there **+1**	
Minimum Time	Runs less than 2 s **5**	Runs 2 s **7.5**	Runs 3 s **10**	Runs longer than 3 s without excessive "lag" time **+1**	

Project Points _____