2017 Junior 6-8 Grade Healdsburg Rube Goldberg Official Rules

Who can enter: The Junior Rube Goldberg Machine Contest is open to any grade 6-8 student from the Healdsburg area. Teams are limited to four (4) people. The age of the oldest team member will determine the grade level in which you will compete. 1st, 2nd and 3rd Place Awards will be granted to 6th, 7th and 8th Grade Teams. 1st Place Winners for each Grade shall rerun their machines to determine who wins the Best of Junior High Award.

How to enter: Register on the day of the competition. This event will be held as part of the Technology Fair at Healdsburg Junior High on **Saturday March 11th, 2017**.

Designing and building the machine
This contest is to combine simple machines and build a contraption to perform a trivial task. Listed below are the requirements for the Jr. High level.

Grades 6-8: Junior Rube Goldberg Contest

Task: Raise and Wave a Flag
Minimum number of steps: **Ten (10)**
Minimum number of simple machines: **Three (3)**
Time limit: 10 minutes total to Run machine, Reset and Run again
Size: No larger than 4 ft x 6 ft x 6 ft high
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Note: The competition for this level is governed by the national rules unless otherwise stated.

1) A **step** is defined as a linear process; a ball rolling down a ramp and triggering a mousetrap is one complete step. The first step of the cycle is considered the first human intervention starting the machine and the final step of the cycle completes the specified task.

2) The six **simple machines** are:
   - **Incline**: a ramp or slanted surface (ie: slide, stairs)
   - **Wedge**: shaped like an incline, but a moving incline (ie: nail, ax)
   - **Screw**: a cylindrical body with a helical groove cut into its surface (ie: bolt threads)
   - **Lever**: a bar that turns around a point called the fulcrum (ie: stapler, see-saw, shovel)
   - **Axle and Wheel**: a wheel rotating about an axle to bear a load. A gear is a wheel with teeth in it. Gears are used to change direction, and to control the speed of things
   - **Pulley:** consists of a wheel and axle with a groove usually in the middle of it in which a rope or belt runs to raise or lower weights.

3) The machine must operate within the defined **size** dimensions. Any loose or flying objects must remain within the set boundaries.

4) **Exclusions:**
   a) Each machine must be safe to the approval of the contest officials. Any questionable items must be given prior consent by the contest chairman.
   b) No combustible fluids, explosives, open flames, or hazardous materials are allowed.
   c) Maximum voltage allowed is 12 volts. No high voltage (110 volt) devices are allowed.
   d) A machine must not imply profane, indecent, or lewd expressions.
   e) A machine may not incorporate any live animal.
   f) A machine may not display any corporate sponsor logos.
   g) No glitter may be used as part of a machine.
   h) No chemicals other than water may contact the multi-purpose room floor.
   i) No hammering or other pounding on the floor is permitted

Day of the Contest

Healdsburg Junior High, Saturday March 11th, 2017.

I) **Registration and setup** starts at **11:00 am. Competition** starts at **Noon.**

II) Each team must submit five (3) copies of a description of its machine to the Judges. The description must include:
   a) School name
   b) Names and Grades of all the team members
   c) A step-by-step description of the machine from first step to last with all steps numbered. The description must be legible and concise. A step is defined as a linear process, not a parallel process. For example, if a plane moves up a wire and triggers a switch, that would be considered one complete step. If the plane causes two things to happen, that would be a parallel result and would still count as one complete step.

III) All machines will be displayed and operated in the space provided at the contest. Only team members may participate in the machine setup. Each team is responsible for the security of its own machine. Intentional destructive action against other machines is cause for disqualification.

IV) During the contest, **the machine must complete two full cycles**.
   a) The first full cycle must be run to completion upon the judge's instruction and take no more than the specified run time for the grade level. All team members may interact with the machine once the run has begun.
   b) The machine must be reset.
   c) A second cycle must be run to completion with the same parameters as the first run.
   d) During the contest, each team may claim one restart of a run without penalty. The machine must be reset within the specified reset time. No additional restarts will be allowed.
   e) 1st Place Winners for Grades 6, 7 and 8 may be required to perform a third Run to Completion to determine the Best of Junior High winner.
   f) All tools, spare parts and other equipment must be kept in a container where they are out of reach of spectators.

V) **Judging Criteria**:
   a) See Judging Form
   b) Judges may question team members on operation of machine.
   c) All decisions of the judges and contest officials are final.
   d) Once a team's official runs are completed, the team is encouraged to make demonstration runs for the audience.
   e) Following the contest, teams are responsible for removing their machine and all related debris.

Official Judging Form
2017 Junior High Rube Goldberg Contest

Group Name: _____ Grade Level: _____

Team Members _____

Initial impressions

	5 max	Quality of written machine description.
	15 max	1 point per step
	5 max	1 point per simple machine used.
	5 max	Use of recycled or unconventional materials in the spirit of Rube Goldberg.
	5 max	Creativity of machine design. Technical Sophistication of Steps Used.
	5 max	Creative, unified theme
	40 max	Sub-total: Initial Impression

Up and running - First run

	30 max	First run to completion
	-14 max	Points lost to human interventions: 2 for first + 4 for second + 8 for third (1 2 3)
	-1/step	Points lost for steps skipped on interventions: 1 for each step skipped
	30 Max	Sub-total: First Run

Up and running - Second run

	30 max	Second run to completion
	-14 max	Points lost to human interventions: 2 for first + 4 for second + 8 for third (1 2 3)
	-1/step	Points lost for steps skipped on interventions: 1 for each step skipped
	30 Max	Sub-total: Second Run
	- 10	Max points lost for exceeding time limit. (1 point per minute)
	100 Max	**Grand total**

Start Time _____ End Time _____ Total minutes _____

Comments:_____

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