



## Rube Goldberg Machine Contest Rules and Regulations

### **Challenge:**

Dispense an appropriate amount of hand sanitizer into a hand.

### **Machine Specifications**

- The machine must complete the task as described in the challenge.
- **NEW THIS YEAR:** The machine must be *no larger* than 6 ft. wide x 6 ft. long x 6 ft. high. Height is measured from the bottom of the base to the top of the tallest item. A 5 ft. round table will be available to aid in presentation (tables at Anoka Tech will be 6 ft x 2.5 ft rectangle). Machines do not have to sit on the table but can sit on the floor. The machine cannot sit both on the table and the floor. Whether sitting on a table or on the floor dimensions cannot exceed 6 x 6 x 6.
- The machine must have a minimum of twenty (20) steps. There is no maximum number of steps.
- No corporate logos or names may be displayed on the machines.
- No live animals may be used in the machine.
- The machine must not imply profane, indecent or lewd expressions.
- Any loose or flying objects must remain within the set boundaries of the machine. This includes, but is not limited to, drops of water, slivers of balloon, and other “small” objects. Steam and other gasses are exempt from this rule.
- **NEW THIS YEAR:** The machine may utilize one (1) air compressor hose and one (1) power cord. No other cords may be run to or from the machine; however there is no limit to the

number of hoses and cords utilized within the space of the machine. No water is available at the contest site. Teams must provide their own air compressors which should be reasonable in size.

- No flames may be used on or within the machine.
- No hazardous materials or explosives can be used on or within the machine (ex. acid, gun powder, etc.).
- The machine must be safe to the satisfaction of contest officials. The contest Chairperson must approve any questionable items prior to competition.
- Any destructive action against another machine is grounds for disqualification.

### ***NEW THIS YEAR: Contest Procedures***

- Each team will run their machine twice. The machine must run for no more than two (2) minutes per run. The machine will have a maximum twenty (20) minute reset time.
- Only two (2) team members may interact with the machine once the contest has begun. This includes resetting the machine.
- Teams will compete in a designated order within their assigned row. The teams will compete in that order for the first run. After all teams in the row have completed their first run, teams will begin competing in the second run in this same order.
- If, for any reason, a team so chooses, they may void one (1) run of their machine. A void may only be announced before the machine completes the task. Requests presented after the machine has finished will not be granted. If a team does choose to use their void, they will compete again in the next round of runs.
- Each team will remove their machine and clean up their area after the awards have been handed out and not before.

### ***Team Presentation***

- Teams will have three (3) minutes before the first run to explain their machine. One member of each team must present the machine to the judges, point out the machine's theme, how the theme is integrated into the design and each step of the process.
- ***NEW THIS YEAR:*** Teams must provide five (5) concise, typed copies of a step-by-step description of their machine no later than one (1) hour to the contest chair. This description must include school name, advisor and team member names and grade.

Diagrams and pictures may be included in this description along with the typed information. ([Download PDF Form](#))

- Only two (2) team members may interact with the machine once the contest has begun.

### ***Additional Information***

- A step in the machine should be considered a transfer in energy from one action to another action. Identical transfers of energy in succession should be considered one step.  
*For example:* A set of dominos falling into each other should be considered one step. While technically each single domino falling is a step, stating one hundred steps because of the dominos is repetitive is not in the spirit of Rube Goldberg.
- Programmable Logic Controllers or any other electronic controller may be used on the machines. The use of these devices must be in line with a step. Using these devices as a fail-safe for the machine is illegal and grounds for disqualification.  
*For example:* A ball is supposed to fall onto a switch and turn on a motor which is run by the controller. If the ball misses the switch, but the controller still starts the motor, the controller is not transferring energy from one step to the next step. It is acting as a failsafe so the machine can finish and not in line with the definition of a step. If the ball hits the switch and the controller starts the motor as it should, the device is merely transferring the energy from one step to another, so this is in line with the definition of a step.
- If a controller is used, each instance of its operation should be clearly stated in the step-by-step description submitted before the contest. Each instance should be considered one step, but please supply detailed information of how the step is being accomplished.

### ***Team Criteria***

- Each team member must be enrolled as a full-time high school student to participate in the high school competitions. Contest is open to students in grades 10, 11, and 12 only.
- **NEW THIS YEAR:** Each team may have a maximum of 12 members. Multiple teams per school are allowed. Each team should have a designated team captain.
- Each team must design and build their Rube under the supervision of a teacher advisor. Each team must have a teacher advisor present at the competition.
- Entries are accepted on a first-come, first serve basis. The host site will determine the maximum number of teams.

### *Judges*

- Judging teams will be made-up of Minnesota State University, Mankato faculty, industry representatives and engineering and/or engineering technology students. Judging Criteria

### *Awards*

- Awards will be given to the top five (5) machines.
- ***NEW THIS YEAR: The People's Choice Award.*** Awarded by Minnesota State Mankato engineering and engineering technology students, this award will exemplify the Rube Goldberg spirit in artistry, creativity, innovation and overall entertainment.