

RUBE GOLDBERG



Science, Technology, Engineering & Math

DESCRIPTION: A Rube Goldberg Machine is a crazy contraption which accomplishes a simple task in the most complicated - and funniest - way possible! They use everyday items, they tell a story and, most important of all - they make you LAUGH. In this event, students compete with the machines they have imagined, designed and created. The competition encourages teamwork and out-of-the-box problem solving. To compete, participants need a good imagination and a pile of random stuff!

A Team Of Up To: 6 per grade level

Event Parameters:

- a. The machine must pour an 8-oz. Styrofoam cup of water (half-full) into a container placed 4 inches below the bottom of the cup.
- b. The machine must have a minimum of ten (10) steps. There is no maximum number of steps.
- c. The machine must run for no more than one (1) minute per run.
- d. No live animals may be used in the machine.
- e. Any loose or flying objects must remain within the set boundaries of the machine. This includes, but is not limited to, drops of water, silver balloons, and other "small" objects. Steam and other gasses are exempt from this rule.
- f. No flames, hazardous materials or explosives can be used on the machine.
- g. The machine must be safe to the satisfaction of the officials. The contest coordinator must approve any questionable items prior to competition.
- h. The machine will be planned and constructed prior to the competition. At the STEAM Olympiad, the machine will be reassembled and demonstrated for judging.

Rube Goldberg (Cont.)

Scoring:

The machine will be judged based on a total score of 100 points. Teams can earn up to 30 points from the use of the materials listed in the Simple Supplies list and 30 points from the use of the simple machines listed in the Simple Machines page. The final 40 points come from an average score derived using the rubric below:

1. Judges' Rubric (40 points)

Creativity (10 points)

- Was there variety?
- Did they make the machine thematic?
- Unique?
- Different?
- Did it stand out?

Innovation (10 points)

- Are the students using tools with well known functions in a new way?
- Was I surprised?
- Impressed?

Originality (10 points)

- How original is the Rube Goldberg machine?
- Have I seen similar setups before?

Difficulty (10 points)

- Is it appropriately challenging for the age group?

2. Count the number of supplies used to create the Rube Goldberg Machine.

_____ items/30 items = _____ points

1 item equals 1 point. For example, 20 items/30 items = 20 points

Rube Goldberg (Cont.)

3. Total Score

Judge's Rubric = _____/40 points

Simple Supplies = _____/30 points

Simple Machines = _____/30 points

Total Score = _____/100 points

Simple Machines:

A simple machine's purpose is to help complete a job more quickly and efficiently than would have been possible without it. For example, a pulley system can be used to move a heavy item up ten flights of stairs more quickly, safely and easily than climbing the ten flights while carrying the item yourself. A simple machine is, in essence, a tool made from other tools! The six types of simple machines are shown. Teams must use a combination of simple machines to achieve success in their Rube Goldberg machine. Each machine used is worth 5 points. They can earn up to 30 points if they use each of the simple machines at least once in their Rube Goldberg machine creation.

Rube Goldberg (Cont.)

Pulley

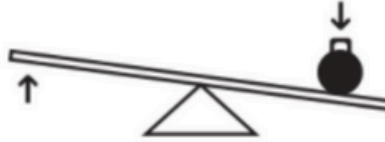
A pulley is used to move an item from one place to another.



Image courtesy of Iconpack26

Lever

A lever is used to release or set an item's position.



Wedge

A wedge is used to separate or connect two items.



Image courtesy of Those Icons

Wheel and Axle

A wheel is used to create movement using a circular movement.



Screw

A screw is used to hold two items together in a fixed position.



Image courtesy of Prettycons

Inclined Plane

An inclined plane is used to serve as an angled transition between two uneven points.



___ machines / 6 machines = ___ points

1 machine equals 5 points. For example, 4 machines / 6 machines = 20 points

Simple Supplies:

The supply lists 105 materials that will help teams create a Rube Goldberg machine and earn points. Each item utilized from the list earns one point. Teams can earn up to 30 points for using 30 items from the list. It is important to note that teams cannot earn points by using multiples of the same item. For example, if they use a basketball and a golf ball in their machine, they will still earn only 1 point for the use of the supply. Teams are welcome to use additional materials not listed, but cannot earn points from materials not listed.

Rube Goldberg (Cont.)

Office and School Supplies

Rubber bands	Binder Clip	Pencil or pen
Tape	Chair	Liquid glue
Paper	Table	Glue stick
Paper clips	Scissors	Sticky notes
Push pins	Crayons	Eraser
Books	Markers	Rolling chair
Ruler	Colored pencils	Trashcan

Crafting Knick-Knacks

Paper towel tube	Corks	Pipe cleaners
Toilet paper tube	Beads	Pom poms
String	Tealight candle	Stickers
Yarn	Spool	Jingle bell
Ribbon	Buttons	Modeling clay
Dowel	Plastic needle	Thimble
Popsicle stick	Twine	Paint brush

Tools Tools highlighted in red must be used with adult supervision.

Gear	Measuring tape	Screw
Metal washers	Gutters	Screwdriver
Mouse trap	Hammer	Wrench
Funnel	Zip ties	Paint roller
PVC pipe	Clamp	Pliers
Spring	Fan	Wood
Wire	Hair dryer	Brick

Household Items

Paper or foam plate	Aluminum foil	Cup
Cereal box	Water bottle	Chopsticks
Cardboard	Broom or Mop	Plastic bag
Bowl	Pitcher	Vinegar
Spoon	Dust pan	Baking Soda
Water	Blanket	Straw
Can	Pillow	Bucket

Miscellaneous

Balloon	Toy car	Magnets
Marble	Hand bell	Shoe
Playdough	Toy train tracks	Rock
Jump-rope	Bike wheel	Coin
Dominoes	Sand	Dice
Playing cards	Door	Ball
Pool noodle	Action figure	Stuffed animal