

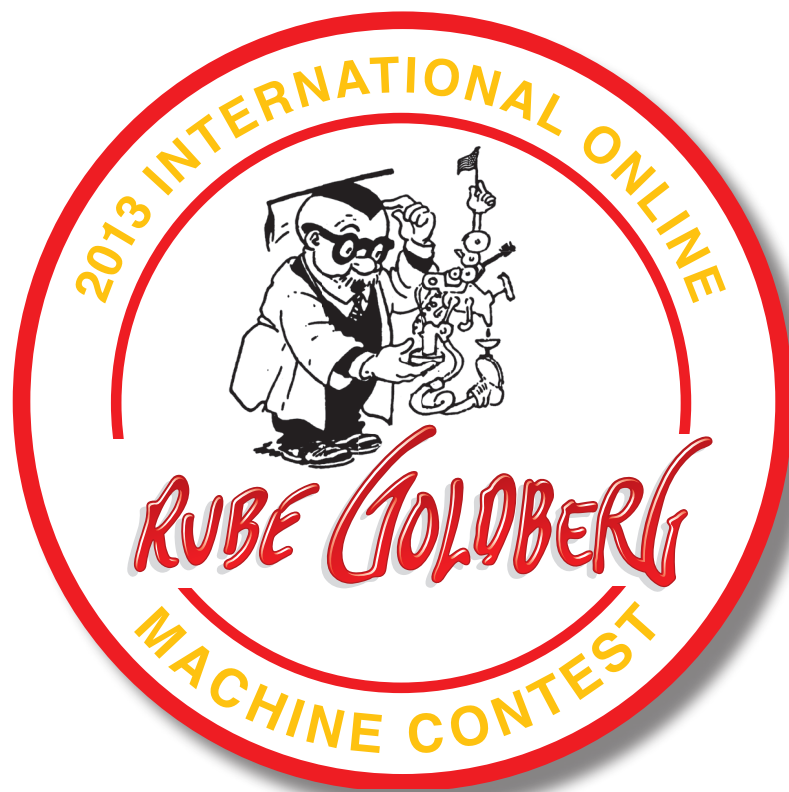
INTERNATIONAL ONLINE

RUBE GOLDBERG

MACHINE CONTEST

AGES 11-14™

Complex Solutions for Simple Tasks



2013 Task: Hammer A Nail

2013 OFFICIAL RULE BOOK

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AUGUST 2013

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MISSION

Our goal, with all levels of competition of the RUBE GOLDBERG MACHINE CONTESTS, is to encourage critical thinking and problem solving in a non-traditional learning environment. And to have fun in the process.

Students from middle school through college, can compete in a RGMC. Our contests are STEM and STEAM friendly. Students who participate in our contests not only employ physics and engineering, but humor and story-telling, to create their RGM's.

Rube Goldberg (1884-1970) was a Pulitzer Prize winning cartoonist, who is best known for his wacky inventions. His cartoons appeared daily for approximately 50 years and his popularity made him cultural touchstone.

"Rube Goldberg" is an adjective, invoked daily – in the news, in print, on the web – to describe an overly complicated effort to accomplish a singular goal. Recent examples include: the mission to Mars, cleaning up the BP oil spill in the Gulf, and the election process.

Rube's influence on some of the great creative minds of the last century, especially in film, is significant. Both Steven Spielberg and Tim Burton have been inspired by his work and employ Rube Goldberg sequences in many of their films.

"The Reuben" – cartooning's highest award, presented annually, is named after Rube Goldberg.

A Rube Goldberg machine is an overly complex contraption, designed to accomplish a simple task. However, the best RGM's emulate their namesake – using a variety of every-day items in a whimsical way to create a series of chain-reaction steps to accomplish the simple task set forth for the annual competition. Most importantly, the best RGM's make us laugh. (Note: if you're not familiar with Rube Goldberg's work, go to the "Gallery" and read on!)

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PAST CONTEST TASKS

- 2012 Inflate A Balloon and Pop It!
- 2011 Watering A Plant
- 2010 Dispense an Appropriate Amount of Hand Sanitizer into a Hand
- 2009 Replace an Incandescent Light Bulb with a More Energy Efficient Light Emitting Design
- 2008 Assemble a Hamburger
- 2007 Squeeze the Juice from an Orange
- 2006 Shred 5 Sheets of Paper
- 2005 Change Batteries and Turn on a 2-battery Flashlight
- 2004 Select, Mark and Cast an Election Ballot
- 2003 Select, Crush and Recycle and Empty Soft Drink Can
- 2002 Select, Raise and Wave a U.S. Flag
- 2001 Select, Clean and Peel an Apple
- 2000 Fill and Seal a Time Capsule with 20th Century Inventions
- 1999 Set a Golf Tee and Tee Up a Golf Ball
- 1998 Shut Off An Alarm Clock
- 1997 Insert and Then Play a CD Disc
- 1996 Put Coins in a Bank
- 1995 Turn on a Radio
- 1994 Make Cup of Coffee
- 1993 Screw a Light Bulb into a Socket
- 1992 Unlock a Combination Padlock
- 1991 Toast a Slice of Bread
- 1990 Put the Lid on a Ball Jar
- 1989 Sharpen a Pencil
- 1988 Adhere a Stamp to a Letter
- 1987 Put Toothpaste on a Toothbrush

Rube Goldberg (rōōb göld'berg), n. a comically involved, complicated invention, laboriously contrived to perform a simple operation – *Webster's New World Dictionary*

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**TO PARTICIPATE IN
THE INTERNATIONAL ONLINE RUBE GOLDBERG MACHINE CONTEST**

1. **Form a team** of at least 3 people

2. **Register**
 - a. Go to <http://www.rubegoldberg.com> <http://www.rubegoldberg.com>
 - b. Click “Register” and choose the Online Contest
 - c. Complete the online registration form and pay the \$150 registration fee by 3/17/2013. There are no refunds.

3. **Design and build a machine**

2013 Task - **HAMMER A NAIL**

4. **Compete** by submitting documentation of your machine online by 4/1/2013

5. **Win** if the judges choose your entry

6. **Have fun!**

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1. FORM A TEAM

All Teams

- Must have a Teacher/Parent Advisor and at least 3 eligible members

Each team member must be between the ages of 11 and 14 and enrolled as student or member of a youth program in order to participate in the online competition.

- Upon completion of registration, the Teacher/Parent Advisor will receive an Online Welcome e-mail with instructions on how to build your Team Page.
- Will receive a 3" embroidered contest participant badge displaying the year and the task for each registered team member (up to 12). These badges will be mailed to the team Teacher/Parent Advisor at the address provided during the registration process. Additional badges are available for \$5 each by emailing rube@rubegoldberg.com. Please include the contest you are attending, the school your team is from, and your mailing address.



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2. REGISTER

- Online contest registration will open in November 2012.
All contest registrations must be completed through <http://www.rubegoldberg.com>

- The \$150 registration fee is payable to RGI.

- Entry fees are non-refundable.

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3. DESIGN AND BUILD A MACHINE

2013 Task

The 2013 Task is **HAMMER A NAIL**. The task each year is determined by Rube Goldberg, Inc. and changes on an annual basis. The 2014 task will be posted at <http://www.rubegoldberg.com> on Rube’s 130th birthday, July 4, 2013.

Machine Specifications

Machine Specification	Value
Complete official challenge	Required
Minimum number of steps	10
Maximum number of steps	Unlimited
Physical size	Unlimited
Single run time	Maximum 2 minutes
Air compressor hoses running to the machine	Maximum 1 hose
AC or DC power cords running to the machine	Maximum 1 cord
Air compressor hoses and power cords used within the machine boundaries	Unlimited
Hazardous materials, explosives, or flames	Not allowed
Electrical arcing	Allowed with safety precautions
Use of live animals	Not allowed
Corporate logos	Allowed, with written permission from the logo owner. All responsibility for copyright permission rests with the team.
Use of profane, indecent, or lewd expressions	Not allowed
Objects flying beyond machine boundaries	Allowed
Safe for participants and observers	Required
Reset Time	Unlimited

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3. DESIGN AND BUILD A MACHINE *continued*

Frequently Asked Questions

Question: What is a step?

Answer: A step in the machine is a transfer of energy from one action to another action. Identical transfers of energy in succession should be counted as 1 step.

Example: A sequence of dominos hitting each other should be counted as 1 step. Counting 100 dominos as 100 steps is repetitive and not in the spirit of Rube Goldberg.

Question: Can programmable logic controllers or microcontrollers be used?

Answer: Yes, but their use must fit within the definition of a step. Steps that use controllers should be clearly stated in the written step list and include detailed information on how the transfer of energy is accomplished. Using controllers as a fail-safe is illegal and will result in disqualification.

Example: A ball falls onto a switch connected to a controller that turns on a motor.

NO: If the ball misses the switch but the controller still starts the motor, the controller is not transferring energy from one action to another action. It is acting as a fail-safe instead of a step and is illegal.

YES: If the ball hits the switch and the controller starts the motor, the controller is transferring energy from one action to another action and is consistent with the definition of a step.

Question: Can I enter a machine that has been previously built and posted online?

Answer: No. All entries must be new machines built for entry into the competition.

Question: Where can I find answers to other frequently asked questions?

Answer: Visit <http://www.rubegoldberg.com/contest/faq>

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4. COMPETE

Complete your Team Page by 4/1/2013

1. Your Online Welcome email will have a link your Team Page.
3. Download the 2013 Official Poster and Certificate of Ingenuity.
4. Follow the directions on your Team page to submit the following required information by 4/1/2013:
 - School, teacher and team information
 - A Step list (3 pages maximum). OUR STEP LIST
 - A maximum of 3 close-ups (scanned diagrams, photos). OUR CLOSE-UPS: PHOTOS
 - A maximum of 3 close-up videos. OUR CLOSE-UPS: VIDEOS
 - A video explanation of the machine and step walkthrough (2 minutes maximum) OUR MACHINE EXPLANATION AND WALKTHROUGH
 - A video of the machine running (2 minutes maximum). OUR MACHINE RUN VIDEO. This video must be a single continuous view with the machine in view at all times and no video editing or breaks. Any evidence of editing will result in disqualification.

You can also add a team logo and further customize your Team page (optional).

Your Team page will only be editable until 4/1/2013.

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5. WIN

Judging Process

1. All entries will be judged and individual feedback provided by a panel of experts
2. Winners will be announced on 5/1/2013 in an official video presentation available on <http://www.rubegoldberg.com>
3. The top 10 teams will be announced and videos posted on <http://www.rubegoldberg.com> for People's Choice Award voting
4. Prizes will be distributed to winning teams

6. HAVE FUN

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JUDGING FORM - ONLINE

TEAM NAME: _____

100 Points

Judging will be based on a one hundred (100) point scale broken down into the following categories:

■ GENERAL IMPRESSIONS (45 POINTS)

_____ *Step List (0 to 5 points)*
How clear, concise, and creative is the written explanation of the machine?

_____ *Theme or Story (0 to 10 points)*
How well is a recognizable theme or story integrated into the machine?

_____ *Laugh Barometer (0 to 10 points)*
Similar to Rube Goldberg's cartoons, how funny is the machine?

_____ *Complexity (0 to 10 points)*
How well does the machine complete the task in a manner more complex than necessary?

_____ *Team Chemistry (0 to 5 points)*
How well does the team communicate and work together?

_____ *Everyday Items (0 to 5 points)*
How well does the machine use recognizable everyday items in a creative, unique, funny way?

SUBTOTAL GENERAL IMPRESSIONS

■ RUN RELATED (55 POINTS)

_____ *Explanation/Description (0 to 5 points)*
How clear, concise, creative, and charismatic is the video explanation of the machine?
Time (up to 2 minutes: no penalty; 2:00 – 2:15 minutes: -3 points; over 2:15 minutes: -5 points)

_____ *Run Task Completed (0 to 25 points)*
25 points - if the machine completes all steps without human intervention
15 points - if the machine skips some steps before completing the task
0 points - if the machine does not complete the task

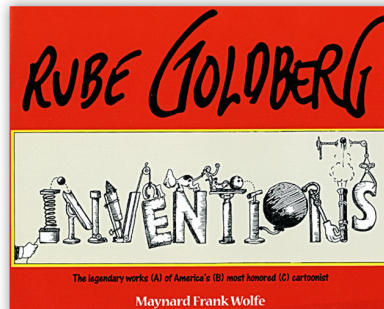
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RUBE STORE AND zazzle.com

Rube Goldberg products are available in the Rube Store on our web site: rubegoldberg.com/?page=store. RGI gives a 30% discount, off the Suggested Retail price, to any host site using the items as awards.

Check out the wide selection of Rube Goldberg products on zazzle.com/rubegoldberg, where you can create your own team T-shirt, sweatshirt or cap, and put your school logo or team name!



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CONTEST CONTACT INFORMATION

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"To invent, you need a good imagination and a pile of junk."
– Thomas Edison