Rube Goldberg Challenge

Learn to build a fun chain reaction machine by participating in the Illinois 4-H Rube Goldberg Challenge!

In this challenge, youth will:

1. Get familiar with the six simple machines and basic energy transfer
2. Learn about the engineering design process and backwards design
3. Create and film their very own Rube Goldberg machine

Challenge resources:

Tutorial Video – Episode 1 on YouTube (DKK 4-H)

Tutorial Video Series on YouTube (DKK 4-H)

Challenge details:

Access the challenge resource materials above, which are hosted on the Illinois 4-H website at https://4h.extension.illinois.edu/programs/home-activities. Watch the video series to learn about the challenge and the basic concepts you can use to succeed. Follow the links in the video descriptions to get additional information and inspiration!

After watching the videos, build your own Rube Goldberg machine (alone or with other family members) that meets the following specifications:

- Machine should use everyday objects from around your house
- Machine should complete a task devised by the creator (use your imagination to come up with any task you'd like, such as delivering a piece of recycling to the recycle bin, putting toothpaste on a toothbrush or filling a pet bowl)
- Machine should have a minimum of 10 steps/components
- Machine should use a minimum of 3 different types of simple machines from the following list:
    - Inclined plane
    - Wedge
    - Screw
    - Lever
    - Wheel & axle
    - Pulley
- Machine should have some repeatability (i.e. with re-setting in between attempts, machine should be able to accomplish the same task without human intervention at least 2 times, not necessary consecutively)
- Machine should be safe for operator, observers, pets and property.
- Humans should only be involved in the movement of the machine to get it started. Once they start the movement, they should not have to intervene to get the task to complete.

Once your machine is complete, record a video using a phone or camera of the machine working successfully. To protect privacy, we encourage you to just focus your video on the machine and not include any people or identifiable personal information in the video. You also can share your video on social media by using the hashtag #thats4H and/or by tagging "Illinois 4-H." Make sure you have parent/guardian permission before you share.

Illinois 4-H At-Home STEM Challenge

Questions?
Email amylh@illinois.edu or visit https://4h.extension.illinois.edu/programs/home-activities

Want to learn more about 4-H near you?
Find your local 4-H office at go.illinois.edu/FindYour4HOffice or learn more about Illinois 4-H at 4h.extension.illinois.edu

Did you have fun with this challenge?
Don't forget to check the descriptions of each YouTube video for more links and inspiration.

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Resource originally produced by Amy Henschen for DuPage, Kane & Kendall County 4-H.