Minds in Motion

Rube Goldberg Machine

Activity Rundown:

Today you will learn about simple machines by making a Rube Goldberg contraption. It is a machine that completes a simple task with many moving parts, in a complex way. You will use materials to make a system of these simple machines to complete a goal of your choosing! To get an idea about what exactly a Rube Goldberg machine is, watch this fun video. https://bit.ly/39oYLSB

You will need:

- ❑ Paper Cups
- ❑ Toilet Paper/Paper Towel Rolls
- ❑ Funnels
- ❑ Rubber Bands
- ❑ Aluminum foil
- ❑ String Cardboard (old cereal boxes work well!)
- ❑ Straws
- ❑ Popsicle Sticks
- ❑ Bottle Caps
- ❑ Tape
- ❑ Scissors
- ❑ Marbles

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Let's do it!

1. Before you begin this activity be sure to watch the video linked above to gain inspiration for your very own Rube Goldberg Machine!
2. Once you are ready to begin you must start by setting out a simple goal for yourself. This can be anything from getting a marble from one place to another, knocking over a cup of water, or even popping a balloon. The possibilities are endless and all up to you.
3. The key to a successful Rube Goldberg machine is to have multiple simple machines throughout your project that can help you meet your end goal. They will work in conjunction with each other to create a series of reactions.
4. This can include creating levers, pulleys, leading into catapults or dropping weights. For example, can your machine lead to a catapult throwing a marble to knock over your cup of water?
5. Take time designing your machine as this will take a lot of trial and error.
6. It is always best to start with the engineering design process. Begin by drawing out your design, what simple machines will you use and why. As well as how will they all work together.
7. Be sure to fix and tweak your machine until you are able to reach your initial goal!

Background:

What is a Rube Goldberg machine?

In 1931, the Merriam-Webster Dictionary added "Rube Goldberg" as an adjective. It meant "accomplishing by complex means what seemingly could be done simply." For Goldberg, his inventions were a way of seeing the humour in everyday situations. He loved that his work made people laugh. Over time, the cartoon inventions leapt off the pages and became real-life working machines. They were built purely for the joy of engineering and watching science in action. Goldberg's work has inspired millions. People love building their own complex machines to carry out simple, mundane tasks. Today, people even hold Rube Goldberg machine contests. In 1987, the Phi Chapter of Theta Tau, a national engineering fraternity, started the annual National Rube Goldberg Machine Contest at Purdue University.

How do Simple Machines help us?

Simple Machines are devices that include the wedge, wheel and axle, lever, inclined plane, screw, and pulley — these machines have been used for thousands of years going all the way

back to the days of ancient Egypt and the construction of the great pyramids! By doing this activity, you also learned all about the Engineering Cycle. You started with a problem, designed a solution for it, built a prototype (a simple model of your idea) and then tested it out. If the prototype works, then the engineers will use it in their final design. However, if it doesn't work the first time, it's okay, you just go through the cycle again and keep making changes until it works!

Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please click below to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

https://bit.ly/MindsSurvey2020

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