RUBE GOLDBERG MACHINES

INDEPENDENT INVENTOR ACTIVITY 1: WHO WAS RUBE GOLDBERG?

Today I Will…

Today you will be introduced to Rube Goldberg Machines and how they combine a series of everyday objects in a comically complicated "chain reaction" effect to complete an ordinary, simple task. You will learn about Rube Goldberg, his wacky cartoons, and how he has come to be known for his examples of these complex machines.

Good Things to Know Before I Begin…

If you have ever played the board game, *Mouse* Trap, you have used a Rube Goldberg Machine. This wild game is a great example of how a simple task can be made complicated in a Rube Goldberg Machine. We encourage you to play it if you can as it's lots of fun and will introduce you to how simple machines can connect to form a wacky chain reaction to achieve an end goal.

YIP provides slides which include videos to compliment our activities. While you do not have to use the slides, they may be valuable to help you better understand the concepts behind the simple machines that combine to make a complex contraption.

Zach Umperovitch, the World's Leading Authority in Rube Goldberg Machines, has worked closely with YIP for nearly a decade, serving as a YIP Head Judge, performing educational outreach, as well as helping to develop our RGM curriculum. He is a three-time Guinness World Records breaker, Professional RGM builder (including OkGo, Disney, Sonic, RedBull, and many others), National Contest Director at the Rube Goldberg Institute, and the Creator and Co-Host of "*Contraption Masters*" on Discovery Channel. Through partnership with YIP, his Youtube channel: Zach's Contraptions, features video resources for students and educators specifically designed to provide simple to follow guidance, examples, and advice for building RGMs.

- Educational video resources can be found here: https://tinyurl.com/24fa3ztb
- A preset video playlist of additional Rube Goldberg Machines can be found here: https://tinyurl.com/yju4ec95

I will Need…

- Google Slides: YIP RGM Lesson 1: Who Was Rube Goldberg? **(optional)**
- **VIDEO** (included in Google Slides): **Disney RGM**
  LINK: https://www.youtube.com/watch?v=eXD5FFwrFK8
- **VIDEO** (included in Google Slides): **Who Was Rube Goldberg?**
  LINK: https://www.youtube.com/watch?v=-FKQEIPRVGI

- Cardboard Tubes (ie: paper towel, toilet paper tubes)
- Egg Cartons
- Masking tape
- Scissors
- Marbles
- Small paper or plastic cups
- Pens/pencils

Inventor Activities

Watch this video to see a Rube Goldberg Machine in action. Notice the everyday objects used to create the machine (alarm clock, skateboard, bicycle, drum, etc.). Rewatch as necessary since the video is only 15 seconds in length.

Video: Disney XD commercial (Video included in Google Slides RGM Lesson 1)
Link: https://www.youtube.com/watch?v=eXD5FFwrFK8

Have you ever tried to perform simple task in a more complicated than necessary manner such as climbing out of the way back of the car rather than using the regular passenger door, eating peas using a knife, or trying to turn off your bedroom lights without having to leave the bed to do so.

Rube Goldberg loved to draw cartoons of people doing just these sorts of things. To learn more about Rube Goldberg, you may watch the video or read about him below.
Video: Who Was Rube Goldberg?. (Video is included in Google Slides RGM Lesson 1)
Link: https://www.youtube.com/watch?v=-FKQEIPRVGI

Basic Biography of Rube Goldberg:
Reuben Lucius Goldberg (Rube Goldberg) was born in San Francisco in 1883. He later became a cartoonist and an engineer. He preferred drawing and so he took a job with a San Francisco newspaper and later moved to New York to draw daily cartoons for the *Evening Mail*. Rube Goldberg became famous for drawing cartoons that showed a crazy and complex contraptions that completed a very simple task. These wacky contraptions used a set of reactions that work in order, one triggering the next, and the next, and so on, and soon they were known as Rube Goldberg Machines.

Look at the picture of the Rube Goldberg Machine in the Google Slides for this activity. Can you identify the simple task the machine is supposed to complete?

Activity: Rube Goldberg Inspired Marble Run
Now it's your turn to make a Rube Goldberg inspired marble run.

CHALLENGE: Using *only* the materials listed (cardboard tubes, an egg carton, masking tape, scissors, a marble, and a cup) you must figure out a way to knock over the cup using a marble that has rolled through a "maze" that you create. Remember that to make the marble roll, the marble will need to roll "downhill",

which means that it must start higher so that it can roll lower towards the cup. You may use tables, chairs, and the floors to create height, as well as the materials on the list.

It's okay if your marble run does not work the first time or if it's difficult to set it up. We believe in the phrase "Fail early and fail often." Test your marble rolls frequently and if adjustments are needed, make changes so the marble rolls as you intend. You may need to try lots of ideas to be successful.

When finished, reflect on the activity:

- Did you struggle with your marble rolling as you wished.
- How did you feel when things did not work?
- How did you overcome your challenges?
- What changes did you make to your marble run along the way?
- Do you think Rube Godberg Machines work every time? Why or why not?