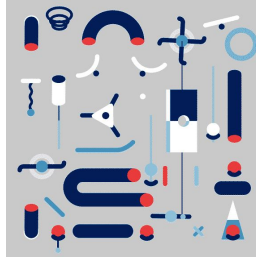




Rube Goldberg



NAME:

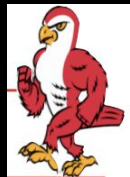
The Builders

SUBJECT:

Science



[RUBRICS](#)



#Flambeau5thGrade



Section 1: Meet Rube Goldberg Activity Stations

Section 2: Creating Small Goldberg Machines

Section 3: Journals

Section 4: Final Product

Section 5: Reflections

Section 1

Section 2

Section 3

Section 4

Insert Text
Section 5
Here

Meet Rube Goldberg Activity Stations

- Station 1: [Background Information](#) (slides 3-5)
- Station 2: [Marble Mass](#)
- Station 3: [Goofy Goldberg Machine](#)
- Station 4: [Balloon Rockets](#)
- Station 5: [Have you been to Sesame St?](#)
- Station 6: [Pendulum Project](#)

Make sure you are on the right slide for each station!

Station 1: Background Information

Slide 1 of 3

Watch the following clips [HERE](#)

What do you notice about the clips?

- It takes more than once to get it right.
- You have to try like more than once when you retry.
- It takes a long time to finish everything.

What clip is your favorite? Why? (RA statement)

My favorite clip in this notebook is the Middle School because I liked watching the kids try again and again to try to get it right.

Meet Rube
Goldberg

Insert Text
Here

Station 1: Background Information

Slide 2 of 3

Read the following background information on Rube Goldberg linked [HERE](#).

The articles tells its reader that Rube Goldberg went to school for engineering. What do you study if you go to college for engineering? *Unsure, look it up!

biotechnology, imaging, structural mechanics, environmental engineering, computer engineering, information science and nanotechnology.

How is Goldberg's educational background helpful in creating is machine cartoons?

His education background is helpful because after getting a degree in engineering from Berkeley, Rube Goldberg **used his drawing skills** to become famous for drawing so-called Rube Goldberg machines.

The background article says, "Rube's perseverance paid off."

Perseverance means the persistence (consistent trying) in doing something despite difficulty or despite it being difficult and not being successful right away. **What happened that made Rube's perseverance pay off?**

The words persistence and perseverance have very similar meanings when it comes to success. **Persistence is the choice to continue something**, in spite of difficulty and opposition, and struggle to achieve that goal.

The article states: "Rube Goldberg never built the machines he created, but his cartoons have become inspiration to would-be engineers and scientists around the world."

Why do you think Goldberg never built any of his machines?

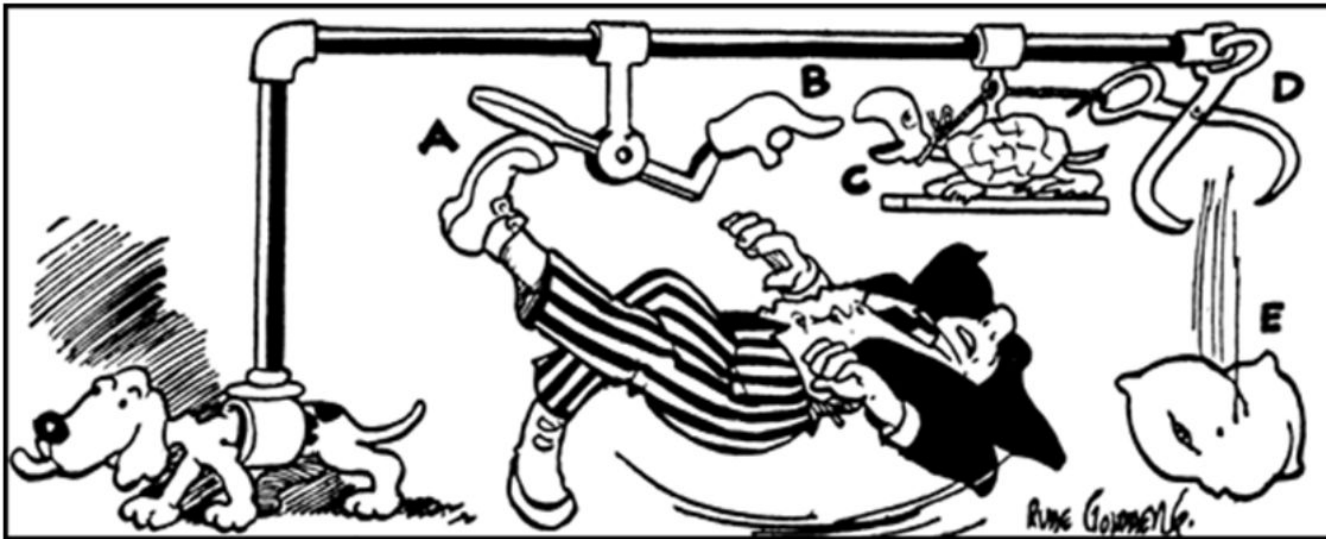
I think he never built any of the machines because The machines may be too complex, clunky and weigh a lot to be really useful.

Station 1: Background Information

Slide 3 of 3

1. Read over the information on this [slide](#).
2. Take a look at Goldberg's safety machine for walking your dog on an icy day:

When you slip on ice:



Describe each step in the chain reaction:

A	The dog walks forward it pulls the tube.
B	Then the pointer goes in the turtle's mouth.
C	The turtle goes down and the scissors cut the rope.
D	The the pillow falls
E	The pillow breaks your fall.

Station 2: Marble Mass

→ INSTRUCTIONS



Marbles	Data	
	Height of Ramp	Distance cup traveled
1	7 mm	10 mm
2	28 mm	21 mm
3	29 mm	30 mm

Based off our science reading, what effect does the surface over which an object rolls have on the object's inertia? (RAC)

RA: The effect the surface has over which objects rolls the cup is the inertia because it was the thing that stopped the marble.

C:

- In the book it says inertia stopped the marble. [B51]
- It worked because the pennies on the bottom of the cup.

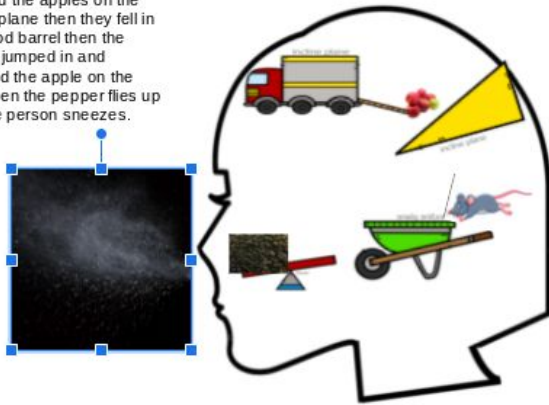
Station 3: Goofy Goldberg Machine

Instructions Needed Slides are in Google Classroom

Type your machine name here

How to sneeze

First the truck came and dumped the apples on the incline plane then they fell in the wood barrel then the mouse jumped in and knocked the apple on the lever then the pepper flies up and the person sneezes.



- A. Sneezy magee
- B. Truck
- C. Apples
- D. Compound
- E. Mouse
- F. Stable
- G. Pepper
- H. Person

Meet Rube
Goldberg

Insert Text
Here

Station 4: Balloon Rockets



INSTRUCTIONS

Hypothesis:

If you make the opening of a balloon smaller, will the distance of the balloon rocket travel be reduced? Type out your hypothesis down below (RA). If I make the balloon smaller I think that the rocket won't fly as far.

DATA	Opening of Balloon	Opening Size	Distance Balloon Traveled
	<i>Large</i>	13	1.05 ft
	<i>Medium</i>	11	27 inches
	<i>Small</i>	4	12

Conclusion:

How does your hypothesis compare to your results?

RA: My hypothesis compare to my results.

How the size of the opening affects the distance a balloon rocket can travel? Explain.

RA:

Station 5: Have you been to Sesame Street?

Watch this video: [HERE](#)

1. Are Rube Goldberg machines simple machines or compound machines?

Rube Goldberg machines are compound machines.

2. What are some different parts of Rube Goldberg machines?

- lever
- cup
- pulley
- ramps

Meet Rube
Goldberg

Insert Text
Here

Station 6: Pendulum Project

➡ INSTRUCTIONS

What did you do to change the pendulum's motion? We shook the chair but it was already moving.

How did you change the direction of the motion? We changed the direction by moving the chair.

What would happen to the pendulum's motion if you used a shorter string? It would probably move more and not hit the dominoes.

Variables that may affect the outcome...

- If we used something different it may not fall over because the battery.
- **Say we used books the probably would not knock it over.**

Develop a plan to answer this. (Think like a scientist and reflect on what you just did)

A scientist may do this to turn on a light or move a bucket or feed an animal.



Section 2: Creating Small Goldberg Machines

- [Marble Station](#)
- [Crack an Egg Station](#)
- [Pour Water in a Bowl](#)
- Becoming a Goldberg Expert

How tall is your final maze? 70 cm

How wide is your final maze? 71 cm

Marble Station Requirements

Run Time: 32 sec

Was your group able to meet specifications on your first marble run? What worked well OR what modifications did you need to make? No we had to make modifications.

On a scale of 1-5* how did your group work together? EXPLAIN.

5

Unsuccessful today

List the steps of your machine in the table below. Please write in complete sentences.

Crack an Egg

Requirements

1. First we had wooden sticks that held the marble then we tipped them up.
2. Next the marble fell and went down a ramp then it hit a car.
3. The car hit dominoes and the dominos hit the egg.
4. Then the egg fell and cracked.
- 5.



List the steps of your machine in the table below. Please write in complete sentences.

Pour Water Requirements

- | |
|--|
| 1. The bag was used for putting water into a cup. |
| 2. Straws the straws were used to pour the water into the cup. |
| 3. Balloon the balloon was used for falling down into the bowl and then the water will pour out. |
| 4. Bowl the bowl was used to put the water in. |
| 5. Tape the tape was used to put the bag on the chair. |

Unsuccessful today.

Section 1

Section 2

Becoming a Goldberg Expert

Section 1

Section 2

Analysis Linked [HERE](#)

Unsure how to link: [CLICK HERE](#)

Design Process

Date: Wednesday, February 16

Recycled/Repurposed Materials: dominoes, darts, marbles, cars, tubes, cups, toilet paper rolls, cardboard box,

Purchased materials: balloons

Price of GROUP purchased materials: \$ 1.99



List Chain Reaction Steps:

1. First the marble went down the tube.
2. Then the marble hit the car.
3. Then the car went and hit the dominoes.
4. Then the dominoes hit a car.

Section 1

Section 2

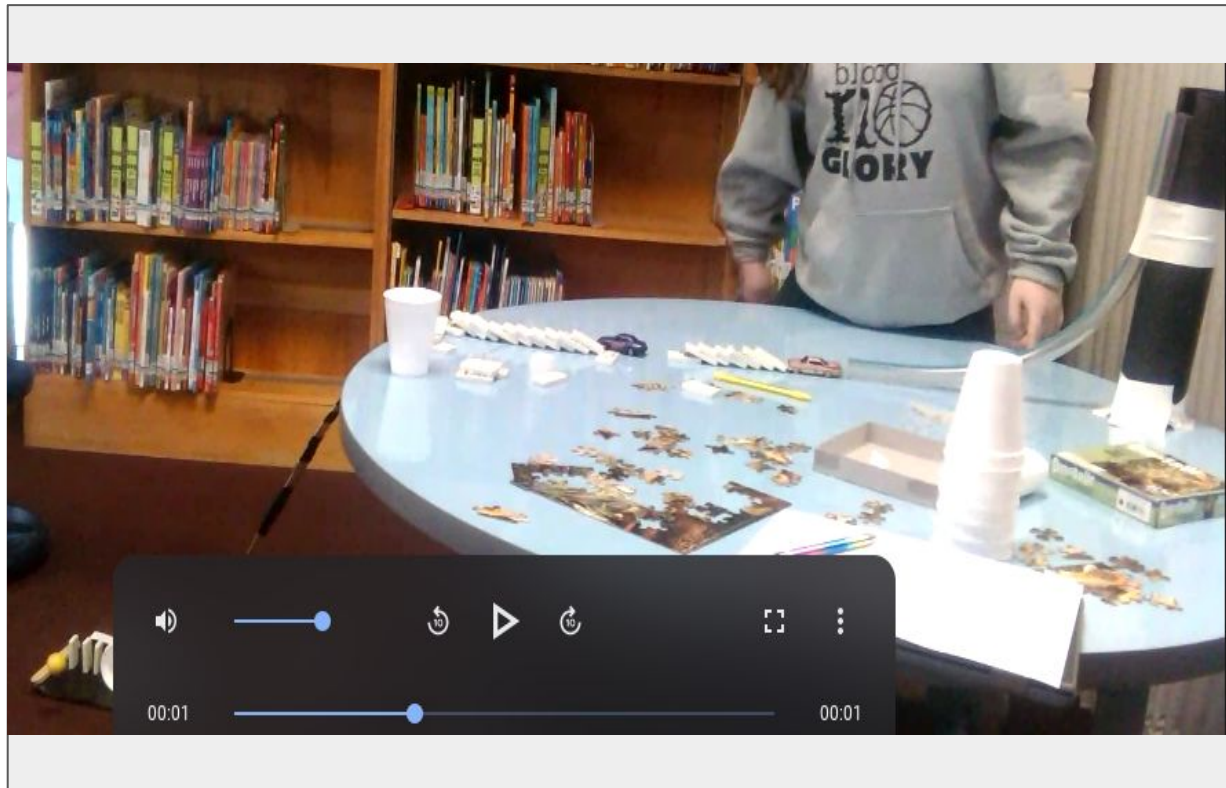
Section 3

Design Process

What were changes you made today's original plan?
We changed what we were going to do.

What was a problem you encountered today?
We couldn't set up the dominoes.

What was a success you had today?
We finally got it to work.



List Chain Reaction Steps:

1. First the marble went down the tube.
2. Then the marble hit the car.
3. Then the car went and hit the dominoes.
4. Then the dominoes hit a car.

Design Process

Day 2 of Building

Date: Thursday, February 17

Recycled/Repurposed Materials: dominoes, darts, marbles, cars, tubes, cups, toilet paper rolls, cardboard box, pvc pipe, cardboard pipes, cardboard tape.

Purchased materials: balloons

Price of GROUP purchased materials: \$1.99



List Chain Reaction Steps:

- 1.
- 2.
- 3.
- 4.

Section 1

Section 2

Section 3

Design Process

Day 2 of Building

What were changes you made today's original plan?

What was a problem you encountered today?

What was a success you had today?



Look at the first one for the first steps.

List Chain Reaction Steps

1. Then the car hit the dominoes.
2. Then the dominos hit a marble.
3. Then the marble went down some pvc pipe.
4. Then hit some dominoes.
5. Then they hit a cup.
6. Then it hit the dominoes.
7. Then they hit more dominoes.
8. Then it hit a cup of dog food and it spilled on a plate.

Design Process

Day 3 of Building

Date: Wednesday, February 23

Recycled/Repurposed Materials: tape, darts, box, pvc pipe, cardboard, pipe, tape, dominoes, marbles.

Purchased materials: balloons

Price of GROUP purchased materials: \$ 1.99



List Chain Reaction Steps:

1. Marble goes down tube
2. Hit car
3. Car hits dominoes
4. Dominoes hit another car
5. Car hits more dominoes
6. Marble Goes down pvc pipe
7. Hits dominoes
8. Hits cup
9. Hits dominoes
10. Hits big marble
11. Hits cup with dog food
12. Dumps food

Section 1

Section 2

Section 3

Design Process

Day 3 of Building

What were changes you made today's original plan? Nothing

What was a problem you encountered today? Nothing

What was a success you had today? We didn't fight



List Chain Reaction Steps:

1. Marble goes down tube
2. Hit car
3. Car hits dominoes
4. Dominoes hit another car
5. Car hits more dominoes
6. Marble Goes down pvc pipe
7. Hits dominoes
8. Hits cup
9. Hits dominoes
10. Hits big marble
11. Hits cup with dog food
12. Dumps food

Design Process

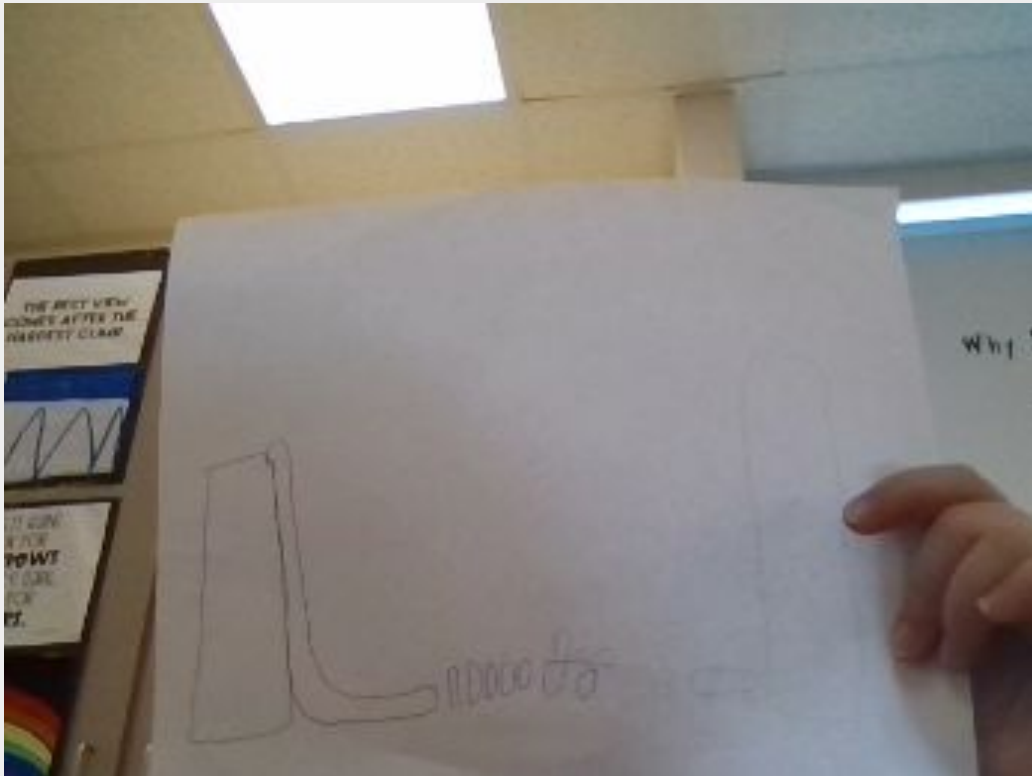
Day 4 of Building

Date: Thursday, February 24

Recycled/Repurposed Materials: tape, darts, box, pvc pipe, cardboard, pipe, tape, dominoes, marbles.

Purchased materials: balloons

Price of GROUP purchased materials: \$ 1.99



List Chain Reaction Steps:

1. Marble goes down tube
2. Hit car
3. Car hits dominoes
4. Dominoes hit another car
5. Car hits more dominoes
6. Marble Goes down pvc pipe
7. Hits dominoes
8. Hits cup
9. Hits dominoes
10. Hits big marble
11. Hits cup with dog food

Section 1

Section 2

Section 3

Design Process

Day 4 of Building

What were changes you made today's original plan?

Today's original plan was to get the thing set up and get a video by the teacher.

What was a problem you encountered today? The problem we encountered was we couldn't get the dominoes to all tip over.

What was a success you had today? Today the success we had was getting dog food tip over with a marble when we pushed it.



List Chain Reaction Steps:

1. Marble goes down tube
2. Hit car
3. Car hits dominoes
4. Dominoes hit another car
5. Car hits more dominoes
6. Marble Goes down pvc pipe
7. Hits dominoes
8. Hits cup
9. Hits dominoes
10. Hits big marble
11. Hits cup with dog food

Design Process

Updating & Problem Solving

Date: Week of April 11

What were changes you made the original plan? It was suggested at the conference that we should make our machine easier to transport and that anything that was cardboard should be made more durable.

What was a problem you encountered this week? A problem that we encountered this week was we couldn't get the dominoes to stop setting off when we were setting up the machine.

What was a success you had this week? We were able to get seven successful steps on day one on this new platform.



List Chain Reaction Steps:

1. Marble goes down tube
2. Hits dominoes
3. dominoes hits marble
4. Marble down the funnel
5. Marble down the 'windmill'
6. Marble goes down inclined plane
7. Marble hits awaiting car

Section 1

Section 2

Section 3

Design Process

Updating & Problem Solving

What were changes you made today's original plan?

What was a problem you encountered today?

What was a success you had today?



List Chain Reaction Steps:

1. Marble goes down tube
2. Hits dominoes
3. dominoes hits marble
4. Marble down the funnel
5. Marble down the 'windmill'
6. Marble goes down inclined plane
7. Marble hits awaiting car

Final Products Items Linked

1. Budget
2. Team Presentation