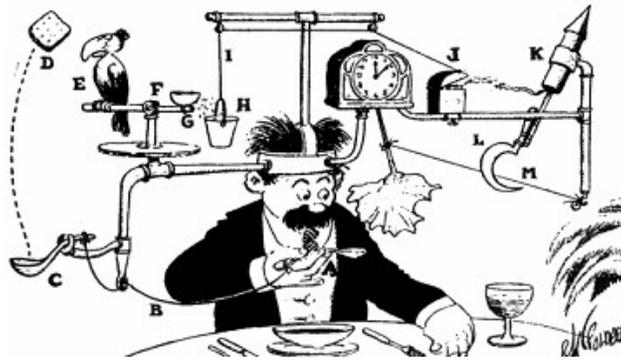


Literature Based STEAM Challenge



Can you create a Rube
Goldberg Machine that will
roll a marble into a cup?

Requirements:

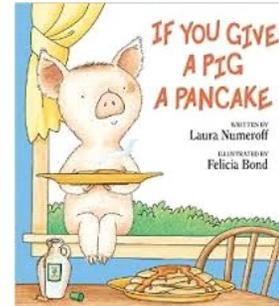
- You must include at least two different types of simple machines
- You must include at least four chain reactions in your design.

Constraints:

- You may only use the materials provided by your teacher.
- You must complete your design in the time frame provided.

Teacher Directions

If you Give a Pig a Pancake by Laura Numeroff



Curriculum Connections:

ELA: If... then; Cause and Effect

Social Studies: Wants and Needs

Science: Newton's Third Law of Motion, simple machines

Engineering: Rube Goldberg Machines

Background Knowledge:

According to Newton, every action has an equal and opposite reaction. A Rube Goldberg Machine builds on this knowledge. A Rube Goldberg Machine is a contraption or invention designed to make an easy task more complicated.

Challenge:

Create a Rube Goldberg Machine that will roll a marble into a cup.

Time Frame: 1.5-2 hours

Student Resource:

<http://pbskids.org/zoom/games/goldburgertogo/index.html>

Teacher Overview:

- Read: If you Give a Pig a Pancake
- Discuss *Cause and Effect* and connect to Newton's Laws of Motion
- Discuss Rube Goldberg Machines (there are a lot of videos out that you could show) and review different kinds of simple machines
- Place students in groups for the challenge (groups of 2-3 work best)
- Let the STEAMing begin!

Possible Materials:

Rube Goldberg Machines can be made from anything. Some materials you may want to offer your students include:

straws	popsicle sticks	Legos	yarn
dominos	pipe cleaners	magnets	paper clips
aluminum foil	cereal box	paper towel rolls	Hot Wheels car
wooden blocks	lids (pop, juice, baby food)	cup (required)	marble (required)

S.T.E.A.M. Expectations

1. Be safe:

S.T.E.A.M. challenges are exciting! Have fun, but make sure you are safe and using materials appropriately.

2. Be responsible:

S.T.E.A.M. challenges require teamwork. Make sure you are being a good teammate and are doing your part!

3. Be persistent:

S.T.E.A.M challenges will test your patience. When things don't go as planned, don't give up! Be calm, reflect on your thinking, and revise your plan. You've got this!!!



Student's Name: _____

Date: _____

Challenge: Rube Goldberg Machine

Ask: What is the problem?

Can you create a Rube Goldberg Machine that will roll a marble into a cup?

Requirements:

- You must include at least two different types of simple machines.
- You must include at least four chain reactions in your design.

Constraints:

- You may only use the materials provided by your teacher.
- You must complete your design in the time frame provided.

Imagine: What do you know about Rube Goldberg Machines?

Research and brainstorm possible strategies for creating a Rube Goldberg Machine.

Jot new learning below:

Materials: Choose up to 8 of the materials below. Circle your choices.

10 straws

10 popsicle sticks

10 Legos

1 ft. yarn

10 dominos

4 pipe cleaners

2 magnets

10 paper clips

1 ft. aluminum foil

1 cereal box

3 paper towel rolls

Hot Wheels car

5 wooden blocks

4 lids

cup (required)

marble (required)

Your Plan: Draw a diagram of your machine. Remember to label. Use a separate sheet of paper if necessary.

Share your plan with your group. Listen to your teammates share their plans. Combine your thinking and draw your team's plan below.

Group's Plan: Draw a diagram of your team's solution. Remember to label.

...CREATE...

Revise: What revisions did you make along the way?

Present and Reflect: Did your design work? What would you do differently next time? What did you learn?

S.T.E.A.M Rubric

Student's Name: _____

Group Member's Names: _____

Grading Scale:

4: Exceeded Expectations- Way to Go!!!

3: Meets Expectations- On Target- Good Job!

2: Making Progress- Room for improvement, but you put forth some effort.

1: Needs a lot of improvement-See Teacher

	Self Assessment	Teacher's Assessment
Worked well with group members- You stated your opinion and listened to other's opinions		
Developed a <u>collaborative</u> plan with your group and revised your plan as needed		
Stayed on task		
Persevered to overcome challenges and frustrations		
Completed STEAM challenge and documented your thinking (made a plan, collected data, and reflected on the challenge)		
Cleaned up work area and put away materials in the correct location		
Overall Grade: What grade would you give yourself for this challenge? 4-3-2-1?		
Student Reflection:		

This packet is for classroom use and not for distribution. Our products would not be possible without the use of the following talented font and clipart artists:

Ashley Hughes



Creative Clips by Krista Wallden



Fancy Dog Studio

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