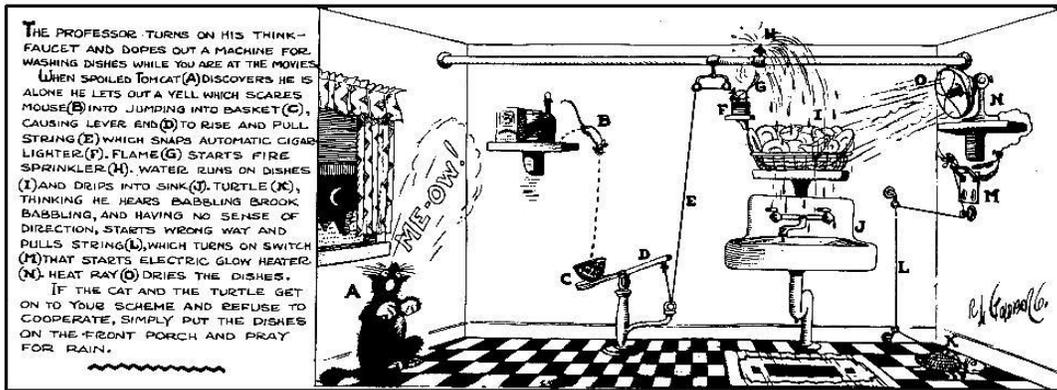


Rube Goldberg Assignment

Learning Target: E6- I can design, build, and refine a device that converts one form of energy to another (Product).

Introduction: Every time something in the Universe moves, heats, cools, or explodes, some form of energy is transferred from one piece of matter to another. Since there are many different forms of energy, there are also a large number of ways to transfer it. This project is designed to let you demonstrate your understandings of those transfers by creating some of your own.

Automatic Dishwasher



From <http://www.rubegoldberg.com/gallery#>

Rube Goldberg (1883-1970) was a cartoonist who is famous for his drawings of marvelous inventions that did simple things. You are going to create a marvelous invention that uses many transfers of energy to do one simple thing.

Group Task: Your task is to design and construct a Rube Goldberg machine using at least 3 simple machines, which include pulley, lever, wedge, screw, wheel and axle, and inclined plane) and **at least 2 energy transfers** to successfully complete an “end task.” For example, your machine can:

- Pour water into a cup;
- Shut off an alarm clock;
- Put toothpaste on a toothbrush;
- Hit play on your iPod;
- Put coins into a bank;
- Ring a bell; or
- Any number of things you could think of on your own.

You will be working in your lab groups to complete this machine. You can choose to work on your own if you wish.

Machine “Rules”:

1. The machine must complete a described task (as reliably as possible).
2. Your machine must have a title.
3. The machine must contain at least 3 simple machines and 2 energy transfers.
4. There is a minimum of 5 steps if working individually (8 steps if you have partners). There is no maximum number of steps.
5. No live animals or hazardous materials may be used by the machine.
6. The machine must not imply or contain any profanity, indecent or lewd expressions, or any illegal items.
7. Any loose or flying objects must remain within the set boundaries of the machine.

Final Presentation: Your group will be presenting your final Rube Goldberg machine to the class. Each student will be expected to explain the energy transfers that occur in your machine.

Individual Task: Each student will also complete a written assignment as a conclusion to the project. Written assignment should include:

1. Draw a picture of your machine labeling each step with A, B, C...
2. Provide a written explanation of each step.
3. Include a description of the energy transfers.

Grading:

Rube Goldberg Rubric

(Partner Requirements)

	4 Excellent	3 Good	2 Poor	1 Needs Improvement
Energy Transformations	Includes 2 energy transformations.	Includes at least 2 energy transformations.	Includes at least 1 energy transformation.	Does not include any energy transformations.
Machine Types	Includes at least 3 machine types. Each machine is used as a true, different simple machine	Includes at least 3 machine types. Each machine is used as a true simple machine, but some machines may repeat	Includes at least 3 machine types. Some machines are not used as true simple machines.	Less than 3 simple machines.
Machine Process	Includes at least 5(8) distinct and separate steps to accomplish the task.	Includes at least 5(8) steps to accomplish the task, but a few steps seem to blend together.	Includes at least 5(8) steps to accomplish the task, but many steps seem to blend together.	Includes less than 5(8) steps to accomplish the task.
Reliability	Machine works reliably every time and does not require human intervention.	Machine works reliably, but required human intervention at some point.	Machine frequently does not work.	Machine does not really work.
Introduction	Machine has a name and the steps of the machine are explained to the viewer.	Machine has a name and the steps of the machine are not clearly explained to the viewer.	Has inappropriate name or the steps of the machine are not explained to the viewer.	Has inappropriate name and the steps of the machine are not explained to the viewer.
Creativity	Rube Goldberg Master! A novel and amusing idea!	A Rube Goldberg Apprentice! Interesting, but no "wows!"	A straightforward implementation.	A straightforward implementation.
Written Explanation	Picture and written explanation are well written, amusing and follows Rube Goldberg's format.	Picture and written explanation are included and follows Rube Goldberg's format.	Picture and written explanation are included but does not follow Rube Goldberg's format.	Missing written explanation and/or picture.

Comments: