

Design a Rube Goldberg Machine

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 understanding of those transfers by creating some of your own.

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 1-2 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.

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 2-3 simple machines and 2 energy transfers.
4. There is a minimum of 5 steps
5. No live animals or hazardous materials may be used by the machine.
7. Any loose or flying objects must remain within the set boundaries of the machine.

Individual Task:

Each student will also individually complete a written assignment as a conclusion to the project. The 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.

As a group you will demonstrate the Rube Goldberg Machine in class and the individual task should be uploaded on MHO by the due date.

TAAB

L4/ Y9	TOWARDS	AT	ABOVE	BEYOND
Energy	You have explored and described different types of energy and energy sources	You have explored and described with examples, different types of energy and energy sources	You have explored and accurately described in some detail, different types of energy and energy sources	You have explored and coherently explained different types of energy and energy sources
<i>Energy transformation</i>	You have explored and described different types of energy transformation	You have explored and described with examples, different types of energy transformation	You have explored and accurately described in some detail, different types of energy transformation	You have explored and coherently explained different types of energy transformation
Communicating Science	You have used several scientific symbols, conventions, and/or vocabulary	You have used at least two of: relevant scientific terms, symbols, simple representations, or simple models to communicate effectively	You have used a range of relevant scientific terms, symbols, simple representations, and simple models to communicate effectively	You have used a range of relevant scientific terms, symbols, representations, and models to communicate effectively