

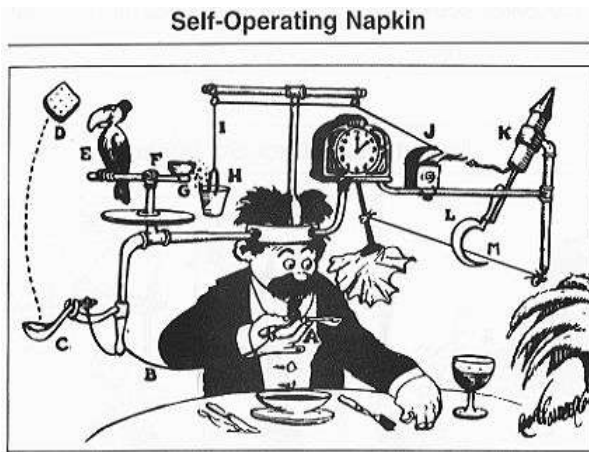
Force and Motion Project 1/11/19

Option 1:

Here you may work with a partner but make sure you complete the 6 tasks instead of 3 if you work with a partner.

Objective: To build a complex machine that will complete a simple task using at least 3 steps (or 5 if you work with a partner)

Background Info: Rube Goldberg is a cartoonist that created elaborate ways to do simple things. Use the website: www.rubegoldberg.com and <http://www.anl.gov/Careers/Education/rube/rube.html> to investigate Rube's ideas further. See example below:



Rube Goldberg's cartoons became well known for depicting complex devices that performed simple tasks in indirect, convoluted ways. The example on the left is Goldberg's "Professor Butts and the Self-Operating Napkin". The "Self-Operating Napkin" is activated when soup spoon (A) is raised to mouth, pulling string (B) and thereby jerking ladle (C), which throws cracker (D) past parrot (E). Parrot jumps after cracker and perch (F) tilts, upsetting seeds (G) into pail (H). Extra weight in pail pulls cord (I), which opens and lights automatic cigar lighter (J), setting off skyrocket (K) which causes sickle (L) to cut string (M) and allow pendulum with attached napkin to swing back and forth, thereby wiping chin.

Requirements:

1. Must accomplish a simple task:
 - a. FILL UP A DIXIE CUP WITH WATER
 - b. POP A BALLOON
 - c. TEAR A CHIP BAG
 - d. RAISE A FLAG
 - e. RING A BELL
2. Must have an appropriate name.
3. Must execute at least 3 steps. All steps must be clearly defined and separated. **(6 steps if with a partner)**
4. Steps are creative and interesting... inspired by Rube!
5. Must include at least 2 different simple machines. **(4 if with a partner)**
6. The machine must work on its own, after being started.
7. Must include a written description and picture modeled after Rube's comics.

Bonus Points:

Students can earn **up to 10 bonus points** for creating a machine that can be performed live for the class. The machine must be smaller than 1.5 cubic meters.

Important Note!!!

Please DO NOT spend money on this! You can find many of your supplies around your home. Use toys, blocks, sporting goods, recyclables etc.

Name(s) _____

Rube Goldberg Rubric
(Partner Requirements)

	Excellent	Good	Poor	Needs Improvement
Machine Types (10 points)	Includes at least 2(4) machine types. Each machine is used as a true, different simple machine	Includes at least 2(4) machine types. Each machine is used as a true simple machine, but some machines may repeat	Includes at least 2(4) machine types. Some machines are not used as true simple machines.	Less than 2 simple machines.
Machine Process (20 points)	Includes at least 3(5) distinct and separate steps to accomplish the task.	Includes at least 3(5) steps to accomplish the task, but a few steps seem to blend together.	Includes at least 3(5) steps to accomplish the task, but many steps seem to blend together.	Includes less than 3(5) steps to accomplish the task.
Reliability (5 points)	Machine works reliably every time and does not require human intervention. One continuously recorded clip.	Machine works reliably, but required human intervention at some point and/or Video is recorded in multiple clips. Could be edited for viewing.	Machine frequently does not work. Video has separate clips.	Machine does not really work.
Introduction (5 points)	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 (5 points)	Rube Goldberg Master! A novel and amusing idea!	A Rube Goldberg Apprentice! Interesting, but no "wows!"	A straightforward implementation.	Copied and boring...
Written Explanation (15 points)	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.

Total Points: _____ / 60 + _____ bonus points