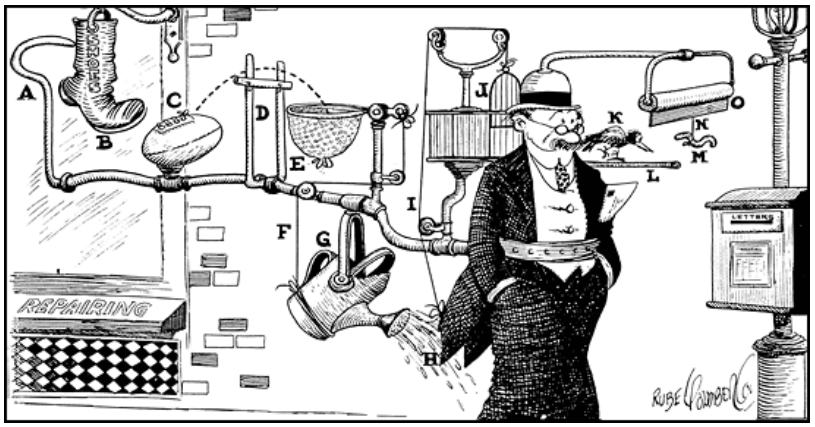
Name: _____

Lab- Rube Goldberg Machine



Background: Rube Goldberg was a cartoonist (New York Post) that became famous for drawing very complicated machines that performed very simple tasks. A typical Rube Goldberg device could not perform a job as straightforward as turning on a faucet without the assistance of pulleys, fulcrums, mousetraps, cables, and gears. By the time the cartoonist retired, the term "Rube Goldbergian" had been enshrined in the language to describe anything characterized by excess complexity.

Problem: Your task is to build a Rube Goldberg machine with 6 energy transfers (potential to kinetic) that will ring a bell, pop a balloon or roll dice.

Supplies: plastic cups, car tracks, cars, chopsticks, dominoes, bells, dice, balloons, clothes pins, binder clips, marbles, toilet paper tubes, pvc pipes, spools, index cards, cardstock, paper, string, popsicle sticks, pulleys, screws, pencils, rulers, push pins, masking tape, etc.

Machine Construction:

a. Your machine must be unique--- different from everyone else in the class.
b. Your machine must have a minimum of 6 different energy transfers.
c. At least 3 different simple machines must be used.
d. You may not have two of the same type of simple machine in a row.
e. The final step must accomplish one of the following tasks: **ring a bell, pop a balloon, roll dice.**

Sketch– Draw a sketch of your Rube Goldberg Machine that shows the step-by-step operation of your machine. Make it neat and easy to follow. **Label each energy transfer with a number (1-6)**. These numbers should be the same numbers used in the explanations of energy transfers on the next page. On the sketch, **label the types of energy (kinetic or potential).**

Explanation of Energy Transfers: Explain each energy transfer in a complete sentence. (Example: A human pushes the ball (transfer 1), the balls knocks down the dominos (transfer 2), a hammer breaks a pencil (transfer 3), etc.

Transfer 1-

Transfer 2-

Transfer 3-

Transfer 4-

Transfer 5-

Transfer 6-

Circle Finishing Task(s) **(Ring a bell) (Pop a balloon) (Roll a pair of dice)**

Simple Machines (Pully, Lever, Inclined Plane, Screw, Wheel & Axel, Wedge)
Provide an **explanation** for each simple machine. (ex: in step 1 we rolled a ball down a wrapping paper tube. This is an inclined plane). You must have at least 3 simple machines in your design.
Simple Machine 1-

Simple Machine 2-

Simple Machine 3-

Questions:

1. Describe the places your machine has potential energy?

2. Describe the places your machine has kinetic energy?

3. How can a small change to your first step have an effect on the final step?

4. How does a Rube Goldberg machine show potential and kinetic energy transfers?