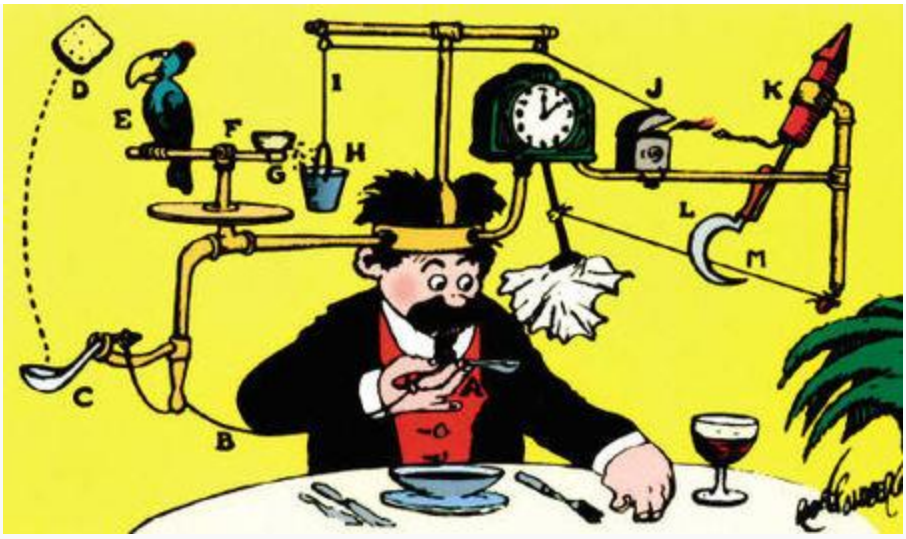
The "Chain Reaction Contraption": Using Simple Machines to Solve Life's Problems

Name: _____ Period #_____ Seat #_____

A **Rube Goldberg machine**, **contraption**, **invention**, **device**, or **apparatus** is a deliberately over-engineered or overdone machine that performs a very simple task in a very complicated fashion, usually including a chain reaction. The expression is named after American cartoonist and inventor Rube Goldberg (1883–1970).

Over the years, the expression has expanded to mean any confusing or complicated system. For example, news headlines include "Is Rep. Bill Thomas the Rube Goldberg of Legislative Reform?"[1] and "Retirement 'insurance' as a Rube Goldberg machine".[2]

Origin



Professor Butts and the Self-Operating Napkin

Rube Goldberg's cartoons became well known for depicting complicated devices that performed simple tasks in indirect, convoluted ways. The example on the right is Goldberg's "Professor Butts and the Self-Operating Napkin", which was later reprinted in a few book collections, including the postcard book *Rube Goldberg's Inventions!* and the hardcover *Rube Goldberg: Inventions*, both compiled by Maynard Frank Wolfe from the Rube Goldberg Archives.[3] The "Self-Operating Napkin" is activated when soup spoon(A) is raised to mouth, pulling string (B) and thereby jerking ladle (C), which throwscracker (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.

In 1931, the Merriam–Webster dictionary adopted the word "Rube Goldberg" as an adjective defined as accomplishing something simple through complicated means.[4]

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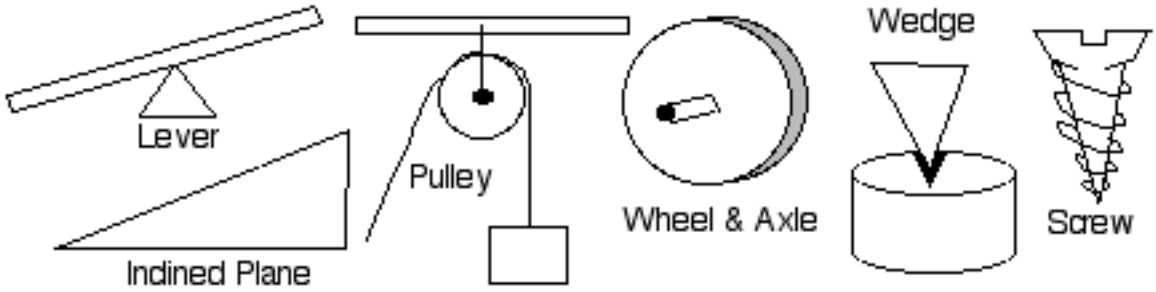
Simple Machines



Simple machines are tools that **make work easier**. They have few or no moving parts. These machines use energy to work. Simple machines are incorporated into the Rube Goldberg machines and in almost every machine on earth!

A **lever** is a simple machine. A lever is a board or bar that rests on a turning point. This turning point is called the fulcrum. An object that a lever moves is called the load. The closer the object is to the fulcrum, the easier it is to move.

An **inclined plane** is a simple machine. It is a flat surface that is higher on one end. You can use this machine to move an object to a lower or higher place. Inclined planes make the work of moving things easier. You would need less energy and force to move objects with an inclined plane.

The **wheel and axle** is another simple machine. The axle is a rod that goes through the wheel. This lets the wheel turn. It is easy to move things from place to place with wheels and axles.

A **screw** is a simple machine that is made from another simple machine. It is actually an inclined plane that winds around itself. A screw has ridges and is not smooth like a nail. Some screws are used to lower and raise things. They are also used to hold objects together.

A **wedge** is a simple machine used to push two objects apart. A wedge is made up of two inclined planes. These planes meet and form a sharp edge. This edge can split things apart.

A **pulley** is a simple machine made up of a wheel and a rope. The rope fits on the groove of the wheel. One part of the rope is attached to the load. When you pull on one side of the pulley, the wheel turns and the load will move. Pulleys let you move loads up, down, or sideways. Pulleys are good for moving objects to hard to reach places. It also makes the work of moving heavy loads a lot easier.

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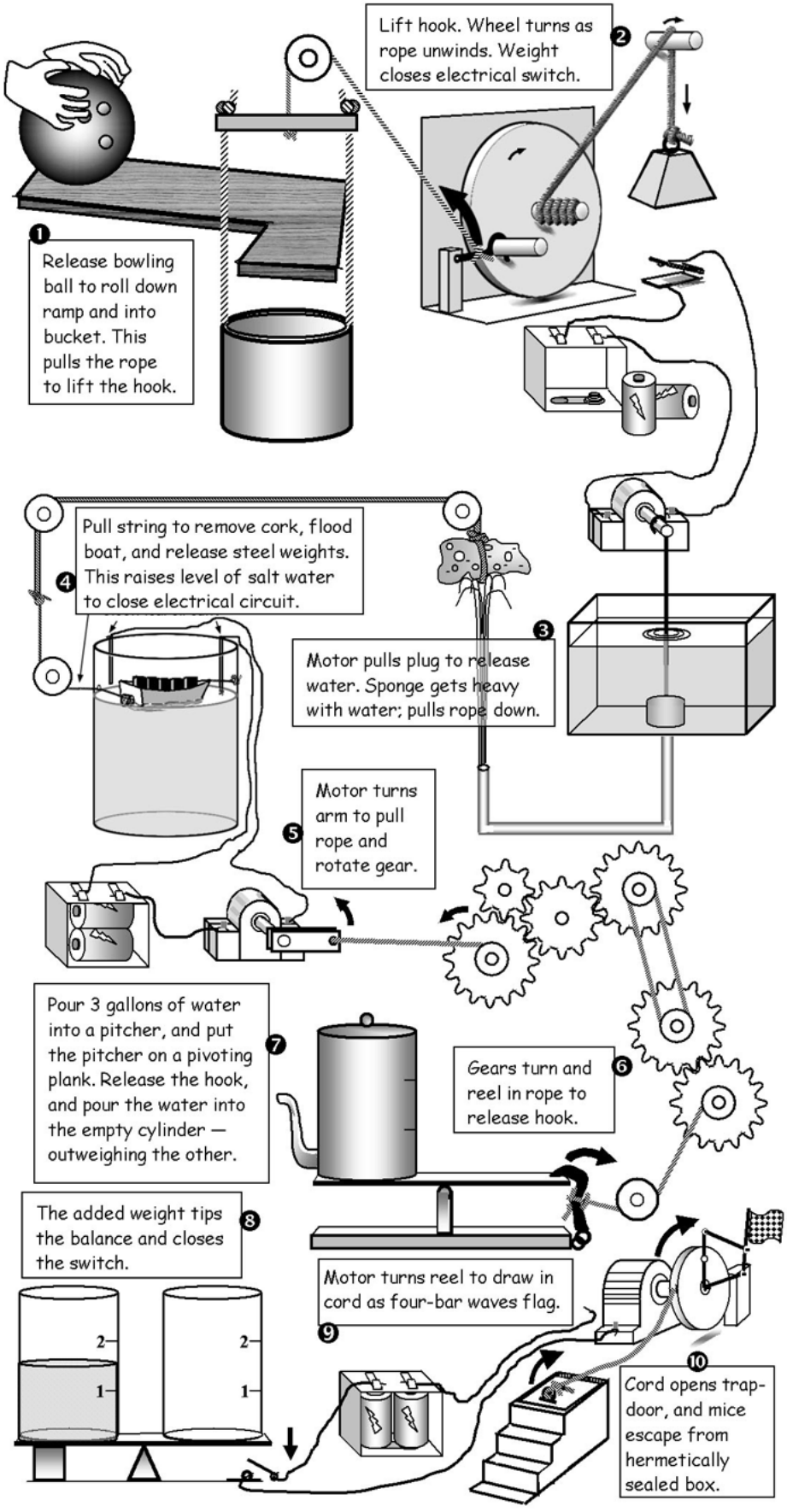

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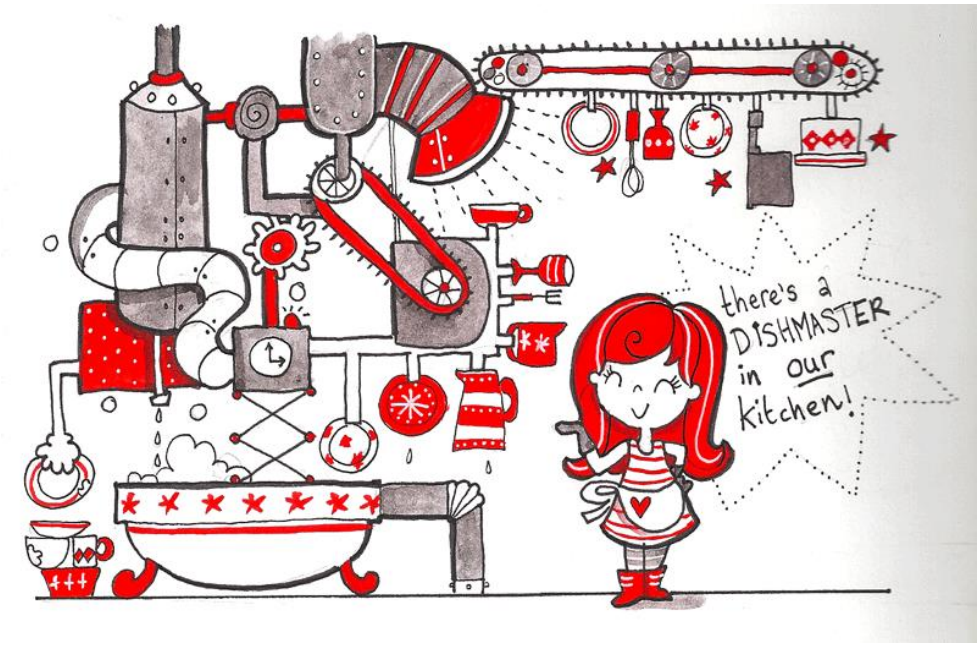
http://coolmaterial.com/roundup/rube-goldberg-machines/

http://www.youtube.com/watch?v=4MiYtvbK4JY

*__These live links__ are on my LDSD.org website, __go to this packet__ under __Rube Goldberg & Simple Machines__ - http://www.ldsd.org/Domain/318



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Now it's your turn to get creative! Think of a challenge, a problem or a chore that could be solved by utilizing simple and complex machines strung together to complete each step along the way to solving the problem you chose**. You are to Name your C.R.C. and use at least one example from all 6 simple machines.** Use at least one inclined plane, one screw, one wedge, one lever, one pulley, and one wheel and axel. **You will also communicate the solution by numbering or lettering each step** along the way so **you can explain what is happening during each step**. Remember; you are going way overboard to do something that might actually take one or two steps and going bonkers by stringing it out to take many more steps by being as creative as you can be.

Chain Reaction Contraption sketch #1:

Name of Chain Reaction Contraption: _____

Steps Explained: (A,B,C…or 1,2,3, etc.)

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Name of Chain Reaction Contraption: _____

Sketch #2: (new problem & new solution)

Steps Explained: (A,B,C…or 1,2,3, etc.)