The *Unsimple* Machines Project
Egg Machines
Design a "Rube Goldberg" Device

Materials:

- An egg (hard boiled for practice) raw for testing
- A pan of water (you can bring your own if needed, 5 cm of water)
- Any recycled materials needed to build the device that are NOT
    - Toxic (spray paint – limit)
    - Explosive
    - Dangerous
    - Sharp

Background:

Rube Goldberg's syndicated cartoons of the 1930's through the 1960's often featured a "weekly invention" consisting of an elaborate, humorous device for solving problems such as walking safely on icy pavements. Goldberg's "unsimple" machines became so widely known and copied that the term "Rube Goldberg" device is now used to describe any elaborate, inefficient, or awkward looking machine.

Objective:

1. To apply your knowledge of simple machines in order to design and build a "Rube Goldberg" machine.
2. To carefully lower a raw egg 0.5 meters to a bowl of water without breaking it using a minimum of 6 steps. Additional steps add bonus points.

Time Line:

November 10	Introduced and given written instructions - set due date
November 8- 14	Class instruction and labs for background on machines
November 10 -29	**Work AT home on machines**
November 29, 30	**Egg machine demonstrations in class**

Please make arrangements to have machines brought to school on November 29th before school. Then make arrangements to have machines picked up Friday December 2nd! ***Thank you.*** Please think SAFETY and eliminate sharp edges or dangerous pieces on the machine.

***** Please NOTICE YOU HAVE NO CLASS TIME dedicated to working on this project. It is a do at home project. I am more than willing to have you ask questions about the project and I will help as much as possible. *****

Procedure & Explanation:

1. Study examples of simple machines and labs performed in class.
2. Use this knowledge to design a simple machine.
3. Does not need to be elaborate or expensive – USE recycled materials!!
4. Groups of no MORE than 3. BE VERY CAREFUL of WHO you work with – pick someone you can easily get together with after school!! NO SAD stories the day it is DUE.
5. Must have a PULLEY, INCLINED PLANE, LEVER, WHEEL & AXLE
6. No padding allowed in pan or around egg
7. Pad the machine as much as you like!
8. Height between where egg begins and where it hits the water must be between 0.5 meters – 1.0 meters.
9. You CANNOT touch the egg once it is in motion – no pushes or bumps! (this costs points)
10. The egg must end up in the water alone –no part of machine can still be in the water
11. Test it out and adjust! Begin testing with golf ball, upgrade to boiled egg and then try the raw egg
12. **Watch and follow your rubrics!**

Expectations (in other words how you get a grade!)

1. Sketch the machine with an explanation that labels each machine and how the egg travels through it – one per group (20 pts) – all names on paper please
2. Performance of machine (200 pts)
3. A written evaluation of the machine's performance. (100 points)

Points will be deducted if the machine is over 1.0 meter or under ½ meter at the rate of 10% for every 5 cm difference. The approximate height the egg must drop is 20 inches. That means there should be a 20 inch difference in the height from where the egg was placed on the machine and where it landed in the water.

Precaution!!

DO NOT place anything of value on the machine! We cannot be certain no one will remove pieces during the day when I am not around.

Extra Credit:

- Ingenuity and originality
- Additional machines not require (wedge, screw or gear)
- Motorization

Egg Machine Rubric

Participants _____

Pulley (10) Wheel & Axle (10)

Inclined Plane (10) Lever (10)

Task Accomplished (40) Crack (10) Break (0)

Neatness (10) – can be recycled and still look neat

Height (10)

Extra Effort:

Ingenuity (5) Creativity (5) Gears (5) More than 8 steps (5)

Motor (5) Screw (5) Wedge (5)

Total (100) _____

Deductions – sharp edges (5) Under/over allowed height (-10% for every 5 cm difference)

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