2015 Elementary & Middle School Rube Goldberg Competition

**Saturday, March 7th, 2015 – Time: Setup by 10:00 AM, Judging starts at 11:30 AM**

**OBJECTIVE:**Build a Rube Goldberg machine that will ring a doorbell. A Rube Goldberg machine is a machine that performs a very simple task in a very complex fashion. Normally, they involve the use of everyday items in a whimsical way to create a series of chain reaction steps to complete the simple task.

**RULES:**

* Can compete individually or in a team (4 people per team max)
* Students are encouraged to work in teams of 2 to 4 people.
* Only two (2) team members may interact with the machine once the contest has begun. This includes resetting the machine.
* Depending on participation numbers, individuals and teams may be competing against each other.
* Machine must meet competition specifications as noted below:

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| Machine Specification | Value |
| Complete official challenge | Required |
| Minimum number of steps | 5 |
| Maximum number of steps | Unlimited |
| Minimum number of simple machines | 2 |
| Physical size | Maximum 3’ width x 3’ length x 6’ height |
| Single run time | Maximum 5 minutes |
| Hazardous materials, explosives, or flames | Not allowed |
| Use of profane, indecent, or lewd expressions | Not allowed |
| Objects flying beyond machine boundaries | Points taken away |
| Safe for participants and observers | Required |

* A step is defined as the transfer of energy from one action to another action. Identical transfers of energy in succession should be counted as 1 step. For example, a sequence of dominos hitting each other should be counted as one step no matter how many dominos are in succession.
* The six simple machines are:
  + **Incline**: a ramp or slanted surface (ie: slide, stairs)
  + **Wedge**: shaped like an incline, but a moving incline (ie: nail, ax)
  + **Screw**: a cylindrical body with a helical groove cut into its surface (ie: bolt threads)
  + **Lever**: a bar that pivots upon a point called the fulcrum (ie: stapler shovel)
  + **Axle and Wheel**: a wheel rotating about a fixed axle to bear a load. A gear is a wheel with teeth on it.
  + **Pulley**: consists of a wheel and axle with a groove on the outside of the wheel in which a rope runs to change direction of a load. Used to raise and lower weights.
* The machine must operate within the defined size dimension of 3’ width x 3’ length x 6’ height. Any loose or flying objects must remain within the set boundaries.
* Seventy-five percent of the material you use should be recycled (wood scraps, string, 2 liter bottles, wire, cardboard, etc.). The use of items in your machine must be different from their original function. ***Be creative and resourceful.*** *It is not necessary to spend any money to create a great machine*.
* The machine should be started with ***a single push or pull***.
* ***The final step your machine performs is to ring a doorbell***. The manner in which your machine performs this final task is up to your ingenuity and creative interpretation.
* Can have a maximum of 3 attempts to complete the task with a maximum reset time of 5 minutes.
* Extra steps above the minimum can be counted for extra points.
* A written report describing the steps of the machine is due before presenting the machine.
* A brief verbal explanation of the machine may be required before demonstration. (Max. 2 minutes)
* The machines shall not be removed until the competition has been completed and winners announced.
* Contest participation implies consent to use contest photographs in all forms of publicity.

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