



Science Fair Rube Goldberg Device (6th - 8th Grade)

Targets for an Excellent Science Fair Project

Advanced Proficient 5		“TRANSLATED”
Task	The device performs a task that is moderately complicated, or that many people would find practical.	Describe the practical task your device will do.
Research	Cites four or more sources of information about energy, in the correct format, using at least three types of information resources. Makes clear and well-elaborated connections to each energy transformations of the device in the student's own words.	Thoroughly research the energy changes your project uses. Connect the research directly to your device.
Preliminary Design	Diagram and notes show a proposed device with at least ten energy transfers using five or more types of energy.	Draw a plan to make lots of energy transfers while doing the task.
Obstacles <i>(double points)</i>	x2 Demonstrates in-depth analysis of the obstacles related to the practical design, construction, and stable function of the device.	Describe difficulties you ran into and how you got past them.
Final Design with Key <i>(double points)</i>	x2 Drawing is made in ink. It clearly shows each operating piece and the necessary structural supports. All energy transfers are well labeled and explained.	Make a neat drawing of the device you built. Point out all of the energy transfers.
Reflection	Student clearly describes challenges and rewards of the project, making numerous applications to personal strengths and possible career goals.	Describe what was hard and what was fun. How might you use what you learned in the future?
Device Operation <i>(double points)</i>	x2 Live device (or video recording) proves complete and reproducible operation without a break and without assistance after starting the device. Student narrates, from start to finish, the transfers of energy from object to object without omissions or inaccuracies.	Show the device working without any help needed. Describe the energy transfers as they happen.

Energy Forms to Use in **Rube Goldberg Device** Projects:

Potential Energy (Stored) Forms

- Gravitational in height
- Chemical in the bonds of fuels/foods
- Elastic in stretched or compressed objects
- Electrostatic in charged objects
- Magnetic in magnetized objects
- Nuclear in the nucleus of atoms

Active Energy Forms

- Mechanical (Kinetic) moving objects
- Electrical moving charges
- Thermal moving atoms/molecules
- Electromagnetic moving photons