Let’s Build a Rube Goldberg Machine!

For our final days together in science, we will be applying the knowledge we have gained about energy forms and create something uniquely amazing! A Rube Goldberg machine is a cleverly designed machine made using multiple a few simple machines. These machines work in a chain reaction to perform a simple task, such as pressing a button, popping a balloon, letting go of a marble, cutting a string, turning on a light, etc. by using everyday objects. The key is that NO other additional human actions are required once your “machine” has started.

***Possible Ideas for the “Simple Task”:***

* Erase A Chalkboard
* Zip A Zipper
* Inflate A Balloon and Pop It!
* Squeeze the Juice from an Orange
* Shred 5 Sheets of Paper
* Turn on a 2-battery Flashlight
* Select, Crush and Recycle and Empty Soft Drink Can
* Set a Golf Tee and Tee Up a Golf Ball
* Shut Off An Alarm Clock
* Put Coins in a Bank
* Turn on a Radio
* Put the Lid on a Ball Jar
* Put a bottle in a bin
* Water a plant
* Shut a door
* Turn something on or off (a light, a radio, an alarm)
* Ring a bell
* Sort coins
* Make a ball go into a hole
* Pop a balloon

***To help with brainstorming about materials to use:***

* [LEGO Bricks](http://www.amazon.com/gp/product/B00NHQFA1I/ref%3Das_li_tl?ie=UTF8&camp=1789&creative=390957&creativeASIN=B00NHQFA1I&linkCode=as2&tag=brapowboy-20&linkId=OJ32SJSRYU4WFKDD) – you can make things to knock down or build contraptions
* paper tubes
* funnels – use several for best effect
* piping ([clear is a great choice](http://amzn.to/2eaDwKg) so you can see the ball go through!)
* pvc elbows – for turns in tubing or to use to catapult a ball out of
* tubing – flexible tube is a good idea for having liquid, marbles or other objects go through
* pulleys – get a few of these and have elements of your machine drop onto other things
* dominos – perfect for a long chain. These are used quite often.
* butterfly nets – drop things into them and balance them to spin into something
* marbles and other small balls are perfect for knocking things over or rolling along a track.
* string – for tying things together and for swinging things into something else
* cardboard – so many uses! Use if for everything.
* paperclips and binder clips – great for holding things together
* pipe cleaners or [chenille stems << best deal](http://amzn.to/1qxjiOg) – hold things together, make things out of them or use them to drop onto another item.
* bottles – plastic bottles of all sizes for dropping, rolling and even cutting apart
* boxes (cereal, other)
* cans – good for rolling or attaching a string to and swinging into something else.
* cups – same purposes as cans and also for using liquids or for stacking a high pyramid to knock over (impressive!)
* straws and jumbo straws – various uses, these make a colorful addition to your machine.
* books – great for stacking either to make a tower to set other things on or domino style for knocking over.
* balls (ping pong, tennis, golf, other) – perfect for any type of rolling through tubes, knocking things over or bouncing onto a target.
* shoelaces – for tying things together or swinging things into something else
* [Hot Wheels](http://www.amazon.com/gp/product/B00FBW88Z6/ref%3Das_li_tl?ie=UTF8&camp=1789&creative=390957&creativeASIN=B00FBW88Z6&linkCode=as2&tag=brapowboy-20&linkId=CE2ZVEGMQU5SNNL5) or Matchbox cars – for rolling along a track into another object or rolling into another object.
* hot wheel track
* game pieces (Mousetrap is great for this) – Game pieces are colorful and great for so many things.
* rubber bands – for holding tubes together, and you can also set them to shoot into something else.
* wooden train track – use the same way as Hot Wheels and Hot Wheels track
* wooden trains – you can [try a motorized train such as this to run into something](http://amzn.to/2i233cu)
* [marble run tracks](http://amzn.to/2eaFH0g) – perfect, just perfect! These wonderful toys can add so much to your machine. They are both colorful and fun to watch. Use to trigger another reaction.
* craft or “popcicle’ sticks – try making a craft stick bomb [like this one](http://www.thisiscolossal.com/2011/10/a-1000-piece-popsicle-stick-bomb/).
* clothespins – great for holding things together. I like the mini clips the best.
* thread spools – good for rolling into something or for tying and swinging
* aluminum foil – ideal for creating any bits you need really. It can be shaped and wrapped around things to make them work better
* wax paper – we have used this to rub against something when we couldn’t quite get it together.
* wooden blocks – build and topple or hold things up. You can also stack in a pyramid or gradations
* [Tinkertoys](http://www.amazon.com/gp/product/B00CTJOGOG/ref%3Das_li_tl?ie=UTF8&camp=1789&creative=390957&creativeASIN=B00CTJOGOG&linkCode=as2&tag=brapowboy-20&linkId=LEVF7ZLWXPDBYL5T) – so many useful pieces!
* pull back toys – we like to use these to start off machines.
* Slinky! – of course you have to include a slinky in one of your machines! For fun it’s a wonderful toy

***General guidelines:***

* Three simple machine types must be incorporated into your final machine
* Anything you would like to have back MUST have your last name taped on it somewhere
* Each group is allowed to have TWO reusable grocery bags of materials
* Anything that will not fit inside of a bag must be approved by me beforehand
* I may request that ANY item you bring in to use in building your machine not be used for any reason and at any time
* There will be one form for EACH group, not person; this will count as a class work grade and I must initial each day on line provided