Chain Reactions and Energy!

What is a CHAIN REACTION?

A chain reaction is a series of events caused by the previous one. Just like removing a link from a chain would break the line, removing one action from the series would stop the reaction. If you've ever knocked down a line of dominoes, you've seen a chain reaction in action!

How Does a CHAIN REACTION Work?

A chain reaction relies on two types of energy: kinetic energy and potential energy.

POTENTIAL ENERGY

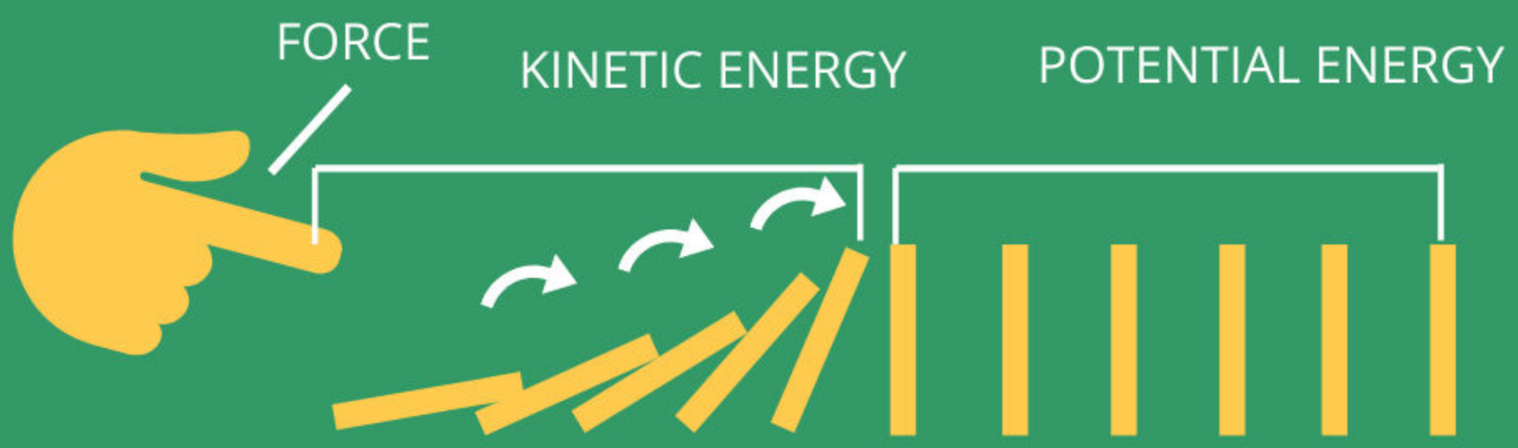
Potential energy is the stored energy that an object has when it is at rest. Potential energy is related to an objects mass (weight and size) and position.

KINETIC ENERGY

Kinetic energy is the energy of motion. The greater the mass of an object and the faster its speed, the greater the kinetic energy!

How POTENTIAL ENERGY Becomes KINETIC ENERGY in a CHAIN REACTION:

When items are placed in a chain reaction that has not yet been started (for example, a line of dominoes waiting to be knocked down), they have POTENTIAL ENERGY. Once the chain reaction begins, the energy in the items in motion is changed from POTENTIAL ENERGY to KINETIC ENERGY. When one item hits the next, triggering the next action in the chain reaction, it transfers its KINETIC ENERGY to the next item.



Rube Goldberg was an engineer and cartoonist who liked to draw simple tasks being completed by complicated chain reactions. He used his knowledge of motion and energy to inspire his art and has inspired many people to build their own chain reaction contraptions. Check out this video of a Rube Goldberg inspired machine!

https://ed.ted.com/best_of_web/V3IqROaT#review

Now that you've seen one in action, it's time to design your own! Use the next page to plan out your design and submit it to our Rube Goldberg Challenge! A winner will be selected for both of the following categories: Most Creative, and Longest Chain Reaction!

Tips for creating your Rube Goldberg Machine:

- **Select a simple task that you want your machine to perform (ex: moving a piece of garbage into the garbage can, dunking a cookie into a glass of milk, pop a balloon, close a door)**
- **Come up with a few ideas for different parts of your machine. Consider building a pulley system from recycled materials or using household items such as books as dominoes. Think about using rolling items such as marbles or toy cars. Sketch three ideas on the next page and test each part separately before adding it to the chain reaction.**
- **Sketch your complete plan for your design in the space provided on the next page.**
- **Once the machine is complete, test it to see if it works.**
- **Take notes on which parts of the machine work and which ones don't.**
- **Does it achieve the task?If something doesn't work, what can you do to make it work next time? Try one small change each time you test it until your amazing machine works!**
- **ALWAYS have a parent/guardian supervise so you can make sure you are staying safe!!!**