

Design an Object to Demonstrate Elastic Potential Energy with a Rubber Band (No Rubber Band Guns)

Learning Objectives

Obj 1. Understand what Elastic potential energy is.

"An object can store energy as the result of its position. For example, the heavy ball of a demolition machine is storing energy when it is held at an elevated position. This stored energy of position is referred to as potential energy. Similarly, a drawn bow is able to store energy as the result of its position. When assuming its usual position (i.e., when not drawn), there is no energy stored in the bow. Yet when its position is altered from its usual equilibrium position, the bow is able to store energy by virtue of its position. This stored energy of position is referred to as potential energy. Potential energy is the stored energy of position possessed by an object." (from <http://www.physicsclassroom.com/class/energy/u5l1b.cfm>)

Obj 2. Understand how a spring is similar and yet is a different object for storing potential energy.

" Springs are a special instance of a device that can store elastic potential energy due to either compression or stretching. A force is required to compress a spring; the more compression there is, the more force that is required to compress it further. For certain springs, the amount of force is directly proportional to the amount of stretch or compression (x); the constant of proportionality is known as the spring constant (k)." (from <http://www.physicsclassroom.com/class/energy/u5l1b.cfm>)

Obj 3. Learn and understand basic skills for creating an object in Tinkercad.

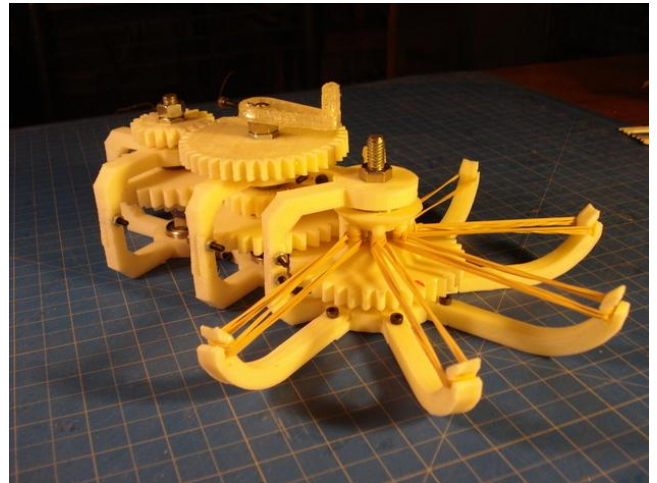
Process

Identify a need or shortfall
Analyze how to fill the need with a design
Create design
Print design
Analyze design
Refine drawing
Reprint design
Apply design to bottle and use

Cool Things Others Have Done On Thingiverse With Rubber Bands
(Click on photo to follow link to Thingiverse)



Rubber band Tie Down Device

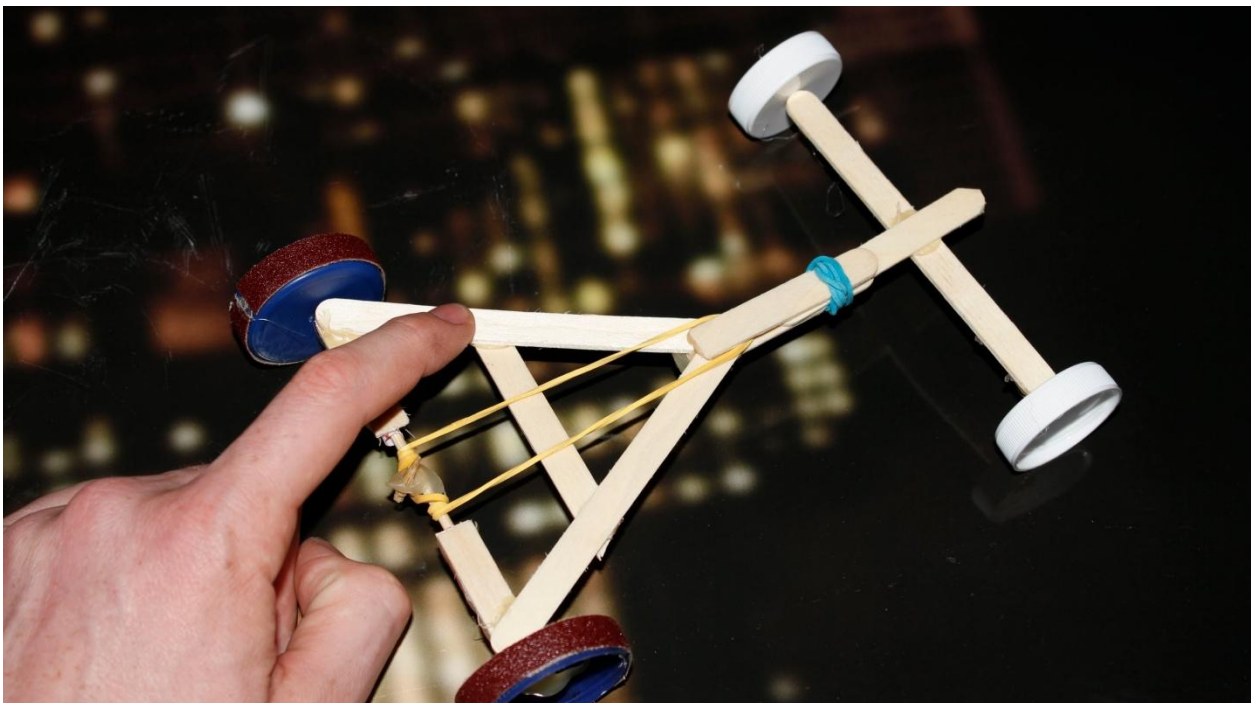


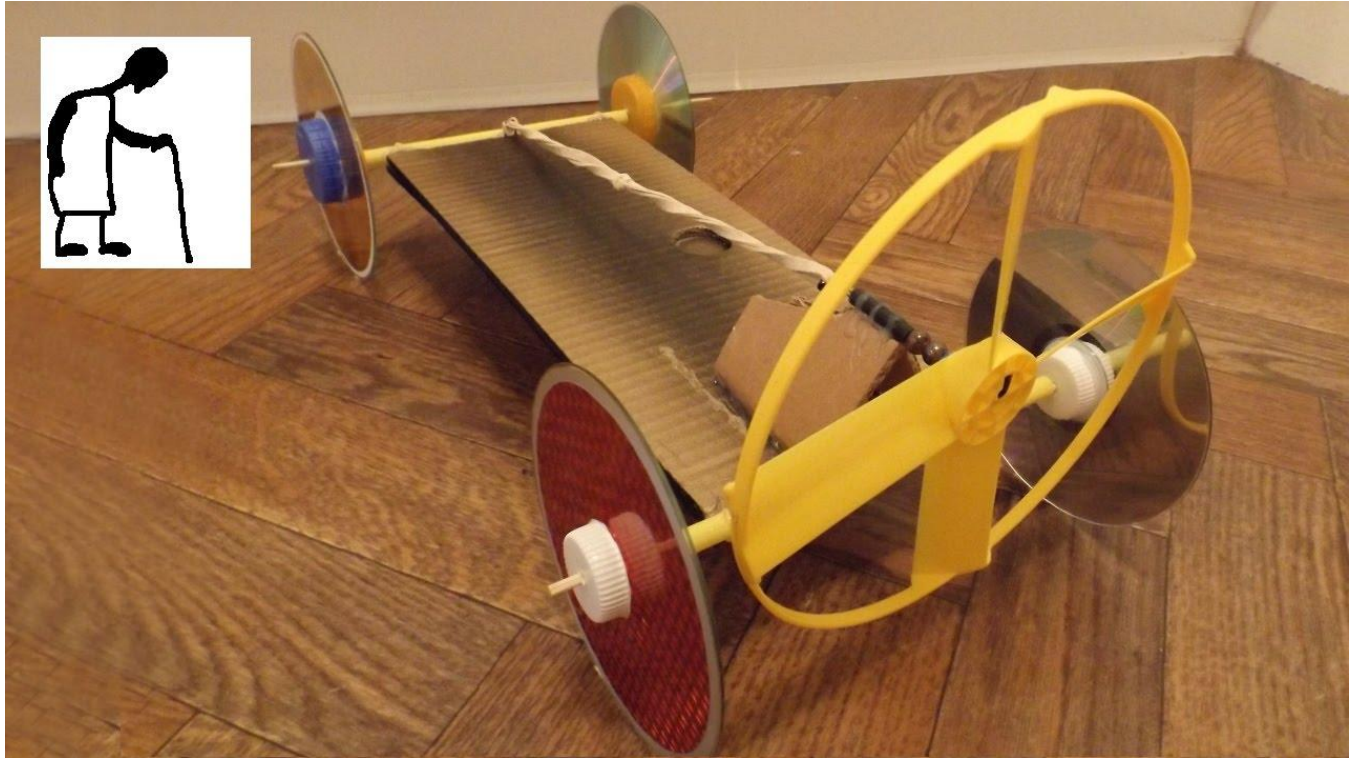
Rubber Band Gear Mechanism



Rubber Band Powered Car

Other cool things from around the web!





Assessment

Allow students decide best design

or

Best use of Tinkercad

Most creative (thoughtful) design

Most useful design