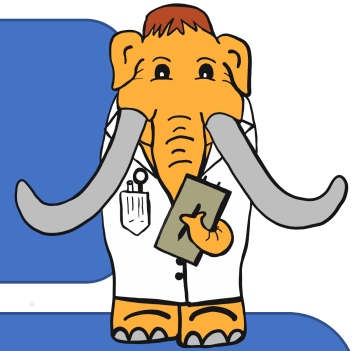


Science Saturday @ Home

Gravity Cars



Gathering Supplies:

String
2 Large Paper Plates
Small Heavy Objects as Weights (Bolts work well)
Cardboard Tube
Glue
Markers

Use gravity to power your paper plate car!

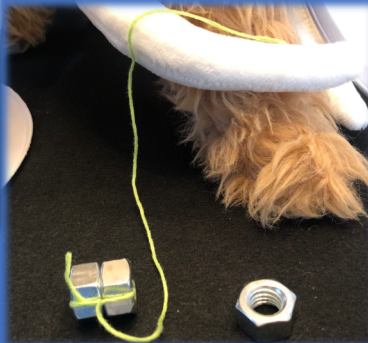
How To Steps:

1. Glue the cardboard tube to the center of your paper plate. Let the glue dry, then glue the second plate to the other end of the tube and let it dry completely. Try to get the tube directly in the center of the plates.
2. Cut a piece of string a few inches longer than the diameter of your plate, and on one end of the string tie your weights. Metal bolts or washers work well as weights since they are small, heavy and have a circle in the middle.
3. Hold the other end of the string against the center tube and wrap the string around the tube until the weight is at the top. Do not tape the string in place. You want it free to let go of the tube when it unwinds.
4. Set your car down and see how gravity helps get your car moving!
5. Decorate the plates to make a colorful car!
6. Also try different sized tubes or different amounts of weights. How do the changes affect the distances or speed your car goes?

Building Max's Gravity Car!



Glue the tube.



Tie the weights.



Wrap the string.



Start it moving.

Did You Know?

For these cars we are using the force of gravity to start them in motion. The weights (mass) are pulled down towards the ground by gravity. They pull the string along with them causing the car to start moving. Once the weights have hit the ground they stop pulling the string but the car keeps going! This is momentum.

Besides Isaac Newton's study of gravity he also studied what became known as Newton's Three Laws of Motion. His laws of motion can also be seen in the Gravity Cars.

Newton's First Law: Objects at rest remain at rest and objects in motion remain in motion in a straight line unless acted upon by an unbalanced force. The car will not move until gravity starts to pull on the mass of the bolts. When the car is moving it moves in a straight line.

Newton's Second Law: Force equals mass times acceleration ($f=ma$). When the force of gravity becomes greater than the mass of the weights along with the car, the car starts to move or accelerate! This gives the car momentum to keep moving.

Newton's Third Law: For every action there is an equal and opposite reaction. The opposite action that will stop the car is the friction that builds up resistance between 2 surfaces, the edge of the plate and the floor. The resistance from the friction will eventually become greater than the momentum caused by the weights dropping and the car stops.