Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are availble at www.projectexploration.org/stemathome.

In this activity, you will:

use the Engeering Design Process to make a hovercraft, that use different force to work.

independent activity

Supplies Required:

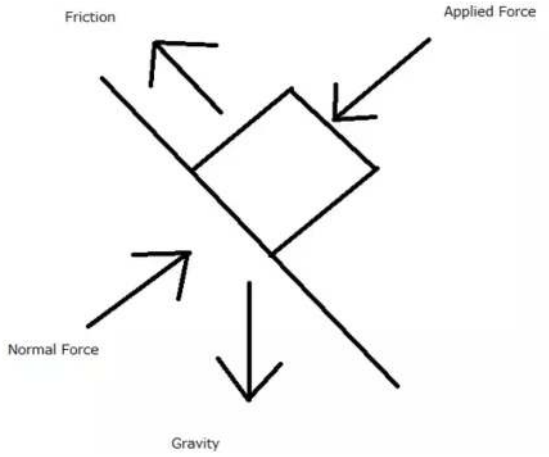
One compact disc
One pop-top cap
One balloon
Super glue
Tac

Video

Defining gravity: https://tinyurl.com/jgttx5j
Learn about force: https://tinyurl.com/y2uj2am4
Learn about friction: https://tinyurl.com/y9z2bm32

Overview

How can we see force, gravity and friction work? In this project we will make a hovercraft to see all three of elements at work.The definition for these elements are as followed. Friction is the resistance that one surface or object encounters when moving over another. Gravity is the force that attracts two bodies toward each other, the force that causes apples to fall toward the ground and the planets to orbit the sun. The more massive an object is, the stronger its gravitational pull. Force is strength or energy as an attribute of physical action or movement. Using this information we are going to make a hovercraft that use these froces to work.



Instructions

1. STEP 1: Problem: What do we want to solve?
   How can we see friction and force at work?
2. STEP 2: Solutions: What are some ways to solve the problem? Illustrate their ideas and discuss them with your peers.
3. STEP 3: Model: Build your design!
   - Put several holes in the bottle cap.
   - Use the hot glue gun or super glue to carefully glue the bottle cap over the center hole of the CD and let it set. Make sure the edges are fully sealed.
   - Blow up the balloon, then twist the end, so that no air escapes, but don't tie it off. Stretch the mouth of the balloon over the bottle cap (you may need an assistant to help you do this so that you don't lose any air from the balloon).
   - Set the hovercraft on a hard, smooth table and; then watch to and see what happens.
4. STEP 4: Test: Does your model work?
5. STEP 5: Reflect & Redesign: Was your model successful? Does it need to be redesigned?
   Explain what was successful and unsuccessful in their model.
   Does it need to be redesigned? If so, how?

Additional Resources

Think about it! Additional links ways you can further your cursoity.

1. Is there gravity in space?? Learn more: https://tinyurl.com/yxpyuwe2
2. Why doesn't the moon fall down to Earth? Find out: https://tinyurl.com/yyaktwm7
3. Fun gravity experiments you can do: https://tinyurl.com/yybkdyk6.
4. An experiment that defies gravity: https://tinyurl.com/yx8uz2fv

Share It Out

Share what you learned today! How does gravity work? Talk about the forces that can be used to defy gravity! How does your balloon car defy gravity?

Share on social media: Share a photo of your experiment on social media using the hashtags:

#BalloonHovercraft
#ProjectExploration
#STEMatHome

For more activities like this one, go to www.projectexploration.org/stemhome. If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!