



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 available at www.projectexploration.org/stemathome.

In this activity, you will:

learn to build your own catapult and launch small projectiles. This experiment won't launch you into space, but it will certainly help show energy, gravity and the Laws of Motion at work.



Supplies Required:

5 - 10 Craft sticks

6 - 10 Rubber bands

1 Plastic Spoon

Small pieces of candy or any small object to use as projectile (sweet tart, gummi heart, marshmallows etc.)

Videos

Science Max Catapult: <https://tinyurl.com/qmq93fp>

Catapult Challenge: <https://tinyurl.com/wxsbov>

Overview

Wow! Catapults are awesome! They sure are! First recorded in ancient Greece around 399, B.C., catapults were used in battle to defeat walls and attack settlements, but in modern times we can use them for something else! Catapults are very useful to learn STEM concepts, particularly Newton's 3 Laws of Motion: an object at rest stays at rest unless acted upon by an outside force; force is equal to the change in momentum per change in time, and for every action, there is an equal and opposite reaction. How can you see some of these laws in action with the catapult?

Playing with the catapult also provides an opportunity to observe gravity, kinetic energy, and potential energy. Will the weight of the projectile make a difference in how far it travels or how fast it falls to the ground? Try out other small objects to measure this. Be sure to use items that are soft and safe – marshmallows, plastic eggs or small paper balls.



Instructions



1. *Optional: paint or color the popsicle sticks before starting.*
2. Take two popsicle sticks and stack them together. Wrap one rubber band around one end of these two sticks to hold them together.
3. Pull the two popsicle sticks slightly apart and place the larger stack of sticks in between the two.
4. Attach the larger stack to the stick on the top using a rubber band.
5. Set the spoon on the top popsicle stick and use a rubber band to lash it down.
6. The spoon should be facing cup side (scoop side) outwards.
7. Place any of the small objects on the spoon
8. Hold the catapult with one hand and use your other hand to pull down on the spoon. Release the spoon and launch your projectile.
9. Record your observations. *Optional: measure the distance the projectile traveled.*

Additional Resources

Think about it! What might make a difference in how far it travels? Try building the catapult with more popsicle sticks. What do you think will happen?

1. Get some more catapult facts: <https://tinyurl.com/y77z57du>
2. Learn more about the history of catapults: <https://tinyurl.com/rw2vs33>
3. Watch this awesome slow motion catapult video: <https://tinyurl.com/vvcftlj>

Share It Out

Talk about it with your family and friends. How many objects were you able to launch with your catapult?

Share on social media: record a video or take a picture of your catapult and post the results online using the hashtags:

#CatapultChallenge
#ProjectExploration
#StemAtHome

Tag a friend and challenge them to build their own catapult!

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 402. Learn more at www.projectexploration.org/explore-store

Join PE's character contest! Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at www.projectexploration.org/character-contest.



Call or text us for help: 312-772-6634

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