

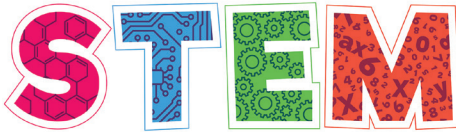
AGES 5-10

TIME

20 minutes

CANDY CORN CATAPULT

Lilly Girls & Young Women In



At The Children's Museum of Indianapolis

CANDY CORN CATAPULT

Investigating STEM as a family is a great way to build a child's confidence and interest in STEM topics. This short investigation is designed to be completed with an adult. A videos is available on the museum's website to help with the investigation.

INVESTIGATION QUESTION

- How can you change your catapult to make your candy corn launch farther?
- What path does a piece of candy corn take when it's released from a catapult?

WHAT'S THE STEM?

A **catapult** is a device that is used to launch an object, called a **projectile**. The path the projectile takes when it leaves the catapult is its **trajectory**. To launch a projectile, a catapult relies on **kinetic** and **potential energy**. A way to remember this is kinetic energy is the energy of motion, and potential energy is the energy that can be released. In this case, potential energy is created when the arm of the catapult is pushed down, and the rubber bands are stretched. When the catapult is released, the potential energy is released and becomes kinetic energy.



MATERIALS

Each participant should have:

- 10 tongue depressors or wide popsicle sticks
- 4 rubber bands
- 1 water or soda bottle cap
- Tape or hot glue
- Candy corn



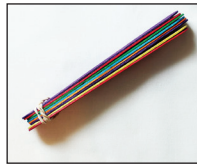
Photo Credits: Candy corn (Cover), Maksim Shmeljov / Adobe Stock; Materials (above), The Children's Museum of Indianapolis; Scattered candy corn (above), chandlervid85 / Adobe Stock; Arrow (above), Pixxa / Adobe Stock; Procedure steps (page 3), The Children's Museum of Indianapolis; Light bulb (page 3), mochipet / Adobe Stock; Candy corn jar (page 3), Mitch / Adobe Stock; Boys in *Beyond Spaceship Earth* (page 4), The Children's Museum of Indianapolis; Assorted candy corn (page 4), New Africa / Adobe Stock; Graph (page 4), Nikolai Titov / Adobe Stock

Build the Catapult

INSTRUCTIONS

Safety note: Before testing the catapult, make sure that the area in front of the catapult is clear of people and pets.

- 1** Stack 8 tongue depressors together, and wrap each end of the stack tightly with a rubber band. This will be the catapult base.



- 2** Stack 2 tongue depressors together, and wrap one end of the stack with a rubber band. (Keep the rubber band a little loose this time.) This will be the catapult arm.



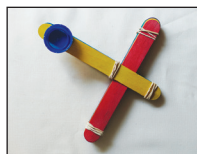
- 3** Slide the stack of 8 tongue depressors (catapult base) between the 2 tongue depressors that make up the catapult arm.



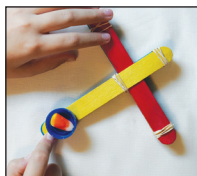
- 4** Wrap a second rubber band tightly around the front end of the catapult arm if desired.



- 5** Add tape or strong glue to the flat side of a bottle cap. Attach the sticky side of the cap to the top of the catapult arm on the side opposite the rubber bands.



- 6** Set the catapult in your family's designated testing area. Make sure the area is clear.



- 7** Set a piece of candy corn into the bottle cap, and pull it down on the tongue depressor (while holding down the base with your other hand) to launch the catapult. How far did your candy corn fly?



FAMILY STEM TIPS



- Host a family candy corn launching contest. Have each member of your family build a catapult, and let each person decide how they would like to launch their catapult. Set a target in your launching area, and see who can launch candy corn the closest to the target.
- Experiment with the catapult design by moving the stack of tongue depressors sticks closer to the end of the catapult. Try the catapult several times, and observe the difference in how high or far the candy corn will fly.
- Test different types of objects in your catapult, and compare how the objects fly. For safety, it's best to use smaller items, and make sure that the testing area is clear before launching the catapult. Launching ideas include cotton balls or marshmallows.



Digging Deeper

Family reading time is a fun way to dig into science. Check out these titles from your local library or bookstore.

- *Rosie Revere, Engineer* by Andrea Beatty
- *The Most Magnificent Thing* by Ashley Spires
- *Wood, Wire, Wings: Emma Lilian Todd Invents an Airplane* by Kirsten W. Larson
- *How Machines Work: Zoo Break!* by David Macauley



INTERESTED IN MORE FAMILY STEM INVESTIGATIONS?

- Visit The Children's Museum website for more at-home STEM investigations.
- Objects in space react differently than they do on the Earth. Visit the *Beyond Spaceship Earth* exhibit to learn how an object might travel in space.
- Visit the STEMLab, located in *ScienceWorks*, for a fun, family STEM experience.

VOCABULARY

- Catapult
- Projectile
- Trajectory
- Potential Energy
- Kinetic Energy



THE CANDY CORN ARC

Children may notice that the candy corn flies up and moves forward. Most of the time, the candy corn won't fly straight up, but its trajectory will be an arc. For older kids, have them test different objects in the catapult to see if the trajectory is an arc, regardless of the object being launched. Projectiles fly in an arc, due to gravity. While the catapult will launch a projectile forward, gravity also pulls the object to the ground, creating an arc.

