Build a Catapult

Estimated Time: 30 minutes

SUMMARY
This activity tests your physics skills! A catapult is a simple machine used by many different groups of people throughout history. It relies on Newton's laws of motion. When you pull down on the lever arm, potential energy is stored up. Release the arm, and this potential energy is converted to kinetic energy. Gravity also pulls your projectile (a pom pom) back to the ground.

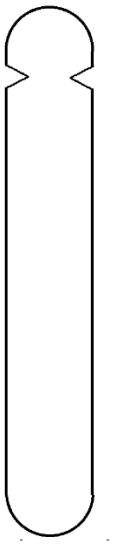
WHAT YOU'LL LEARN

- Conversion of energy from potential to kinetic
- Manipulation of fulcrum in a lever

Materials Used	Resources Used
• Small cup or cap from a bottle of water • Rubber bands • 10 jumbo popsicle sticks • Glue • Pom poms or small paper balls • Strong scissors • Paper and markers to make a target and to track distance	• http://www.siuestemcenter.org/wp-content/uploads/2020/05/Simple-Machines-final.pdf

WHAT TO DO

1. Use scissors to make a v-shaped notch on either side of two jumbo popsicle sticks. Make the notches in the same place for both sticks, close to the top (like the drawing to the right) and then set aside.
2. Take the remaining 8 jumbo popsicle sticks and stack them on top of each other. Wind a rubber band tightly around each end of the stack.
3. Carefully push one of the notched sticks halfway through just underneath the top stick in your bundle.
4. Turn the bundle over so the stick you just pushed through is on the bottom
5. Place the other notched stick on top of the pile and rubber band it to the other notched stick (the notches keep the rubber band in place).
6. Use glue to stick the cup on the top stick.
7. Use the pom poms and see your catapult work! You can design a target with paper and markers. You can also use your paper to mark where your pom pom lands.
8. Change the placement of the bundle of sticks – how does it affect the ability to fire the catapult?



9. Change the number of popsicle sticks in the base –how does this affect your catapult's performance?

TIPS

- Some safety considerations – do not aim your catapult at people.
- When notching the sticks, younger children will need an adult's help.
- You can substitute regular popsicle sticks for jumbo ones. Doing so actually is an opportunity to compare what effect the popsicle stick size has on performance.
- Setting up creative targets (like pirate ships or dragons) can turn this fun activity into a longer game as students continue to modify their catapults while trying to hit targets.