



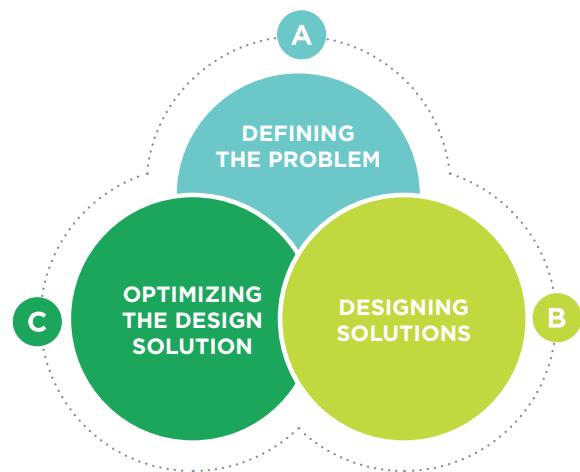
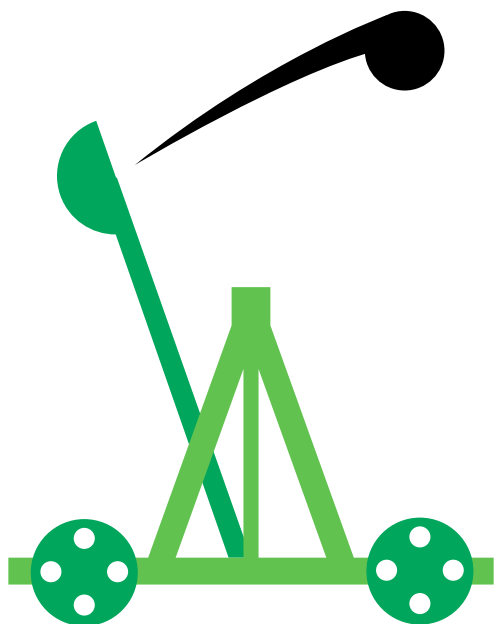
CATAPULT CREATION

OVERVIEW

Marshmallow catapults are not only fun to play with, but also provide an educational demonstration on energy. Potential energy is the stored energy in an object at rest. Kinetic energy is exerted by an object in motion. Catapults use stored energy to launch objects.

When a catapult is in the loading position, it holds potential energy. As the arm of the catapult releases, it exerts kinetic energy.

Your challenge is to build a swinging-arm catapult that will launch a marshmallow six feet. Good luck!



If your catapult doesn't perform as expected, don't worry! Utilize the engineering design process to identify the problem, brainstorm potential solutions, and implement those solutions.

RELATED PROJECT AREAS

- Science/Engineering/Technology
- Industrial Arts
- Recreation and Leisure Education

LIFE SKILLS

Planning/Organizing, Critical Thinking, Communication, and Learning to Learn

STEM ABILITIES

Build/Construct, Design Solutions, Develop Solutions, Invent/Implement Solutions, and Measure



#OK4HSTEM

MATERIALS

- Paper Clips
- Binder Clips
- Rubber Bands
- Hole Punch
- Popsicle Sticks
- Round Craft Sticks
- Styrofoam Cups
- Masking Tape
- Marshmallows

*Note: This is not a complete list. Marshmallow catapults can be made from a variety of household items. Be creative!

STEPS

1. Working alone or in groups, plan a design for a swinging arm catapult.
2. Using household materials, begin constructing catapults.
3. Record distance of marshmallow launch.
4. Evaluate and redesign catapults if needed.

CRITICAL THINKING

- What designs worked well? Which designs did not hold up to the challenge?
- What are some other ways catapults can be made?

ADDITIONAL ACTIVITIES

Share with Others

Have youth or teams share their design process with others.

Competition

Set up a competition with other 4-H'ers and see whose catapults launch the farthest.

Target Practice

Set up wall targets varying in size and height for an extra challenge.

Weight Practice

Experiment launching various items ranging in weight. How does the increase in weight effect the distance?

Catapult Research

Research the history of and different types of catapults.

RESOURCES

4-H junk drawer robotics: Give robots a hand. National 4-H curriculum. Product number 08431. Purchase at: <https://shop4-h.org/products/junk-drawer-robotics-curriculum-1-give-robotics-a-hand>

Engineering design process model. 4-h.org