Engineering Design Challenge

Build the catapult that will launch a projectile the furthest.

What's a catapult?

- You have 15 minutes to find the answer with your team.

- What does a catapult do?
- What is a projectile?
- How does a catapult work?
- What type of simple machine is it? (inclined plane, lever, pulley, screw, wedge, or wheel and axle.) How do you know?

Research Catapult Designs

- Try online research
- Hint: Google *How to make a catapult for kids*.
- Decide what materials your team wants to build your catapult.

- You will be able to choose 10 craft sticks, 6 rubber bands, 1 spoon, 1 ruler and any up to 3 things you have on your desk right now.
- You have 20 minutes

Design Your Catapult

- You have 30 minutes to build, test and modify your catapult.
- The projectile you will use is….

Valentine Candy!

As you design, remember…

- What is your design goal?
- How much force will your design require for a successful launch?
- What angle launches the object the furthest?
- Which projectile launches the furthest?
- Have you tested a different way?
- What improvements can you make?
- You may test every projectile, but you may only use one in the final launch.
- NEVER aim your projectile toward a person.

Let's Try the Catapults Out!

- Each team will get two launches with one projectile of their choice.
- One team member will determine the distance their projectile flew.
- Everyone will chart data for every team.

Valentine Candy Catapult Time!

STEM Challenge-Remix

- Now take what you know and redesign your catapult for accuracy instead of distance.
- You will try to hit a target that is 36 inches away from your catapult.
- You have 15 minutes to redesign, test and modify your catapult.

What We Learned???

- What type of energy did your catapult use?
- What makes the projectile go the furthest?
- What projectile goes the furthest?
- What makes the catapult more accurate?
- Does mass affect the results?
- How do objects move?
- How did the catapult set the candy in motion?
- Which challenge did your catapult meet best, accuracy or distance?
- What happens when the arm of a lever is shortened or the load is moved?
- What happens to the force needed to make the load move?
- What happens when you move the fulcrum?
- What is the relationship between force and distance?
- What happens when you adjust the launch angle?