deSTEMber

SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH

PRESENTED BY: girlstart

Crazy Catapults

Levers, levers, everywhere! Look around and count how many you can see. Are there more than you thought? All you need are two tongue depressors, rubber band, and pencil to design a lever to launch your gummy bear across the room.

TEKS:

6.8B Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.

Materials:

- 1 wooden pencil
- 2 heavy duty rubber bands
- 2 tongue depressors
- 10 gummy bears
- 3” strip of duct tape
- Flat surface
- Paper to record results
- Tape measure or ruler

How To

1. Pass out the supplies to each group, or create the catapult on your own at home.
2. Place the tongue depressors on top of each other and wrap them together with a rubber band on one end, about an inch from the end.
3. Wrap a second rubber band around the first to ensure it is secure.
4. Slide the pencil between the two tongue depressors near the rubber band.
5. Use the strip of duct tape to tape the bottom tongue depressor to the flat surface.
6. Now you are ready for launch! Place the gummy bears one at a time at the elevated end of the top tongue depressor and use your pointer finger to pull the depressor toward the flat surface. Then let go!
7. Measure the distance each gummy bear travels using the end of the depressors with the rubber band as your start point.
8. Find the average distance all ten gummy bears traveled.
9. As an option: Give the pairs/groups the supplies and allow them to design their own catapult to test. Add a few materials to the list: 1 plastic spoon, 2 more rubber bands, and an extra strip of duct tape.

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Why Does it Work?

Levers make work easier by converting a small amount of effort into a lot of force (like a hammer) or by converting a little movement into a large movement (like a broom or golf club). And who doesn't want to get more done with less effort? Hundreds of years ago, soldiers hurled heavy stones using catapults, which use a lever system to send the rocks flying. Baseball players use a lever every time they are up at bat. When you swing a bat, you move the part you're holding just a little bit. But the other end of the bat moves a lot! The same with the flippers on pinball machines—a little flick sends the ball flying. A see-saw is a big lever, though you'd need a great deal of force to send someone flying!

Career Connection:

Manufacturing Engineers create and make things. They design, direct and coordinate the processes and systems for making almost any kind of product – from beginning to end. Manufacturing engineers apply scientific principles in designing and producing quality products. This includes finding ways to improve what they make and packaging planning.

Resources: http://www.brunswick.k12.me.us/pgroves/files/2013/05/AP-Stats-Gummy-Bear-Project.pdf

