STEM at HOME

SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH

PRESENTED BY: girlstart

Mayan Ball Game

Engineer a device to launch a ping pong ball through a hoop, and explore mechanisms of catapults! Learn about the Mesoamerican Ball Game and its importance to Mayan sports and religion.

TEKS:

SCI 4.6 D: The student is expected to design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.
SCI 5.6 D: The student is expected to design a simple experimental investigation that tests the effect of force on an object.
SCI 6.8: Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy.
SCI 6.8 A: The student is expected to compare and contrast potential and kinetic energy.

Materials:

- Duct or masking tape
- Hula hoop, embroidery hoop, or pool noodle
- 2 paint stirrers, tongue depressors, or craft sticks
- Painter's tape or rope
- Ping pong ball
- Small paper or plastic cup
- Spool or pencil

How To:

Part 1: Construct a catapult.

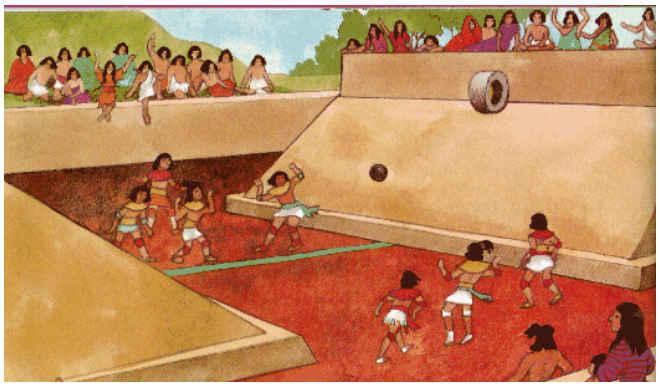
1. Design a catapult using the following materials: 2 paint stirrers, tongue depressors, or craft sticks, 1 spool or pencil, and duct or masking tape. If you need an idea of how to create this catapult, check out the photos below.
2. Use tape to attach a small paper or plastic cup to your catapult where you plan to place the ping pong ball before its launch.
3. Test your catapult and see if you can make the ball soar!

Part 2: Play a game!

1. Grab a hula hoop or use tape to create a hoop shape out of a pool noodle.
2. Use painter's tape or rope to carefully hang this hoop somewhere in your home, backyard, or a local park.
3. Use your catapult to try and launch a ping pong ball through the hoop. Challenge your family or friends to see who can make the ball through the hoop the most times!

STEM Explanation:

The objective of the Mesoamerican Ball Game was to get a ball to go through a hoop without using your hands or feet. The balls used in their game could weigh up to ten pounds! This game was played in a court that was shaped like the capital letter "I" with the end zones being the top and bottom part of the "I." The middle, straight part of the "I" was the playing alley with steep stone walls on either side. When ancient Mesoamerican ball players played the Ball Game, they typically wore animal skins, feathered headdresses, and jewelry. The team that made the ball through the hoop the most times won!



A catapult is a device that uses a lever to launch an object. A lever is an important type of simple machine, and levers make moving objects easier. Levers are all around us! Examples include tweezers, see-saws, shovels, and even our own arms. All levers contain a long, sturdy beam that rests on a support called a fulcrum. When effort, or force, is placed on one side of the fulcrum then released, that end of the beam is launched upward. When you pull back on the catapult lever, you create a lot of potential, or stored, energy. Then, when the lever is released, that potential energy is converted into kinetic energy, causing the ball to move through the air! The lever that you created makes launching the ping pong ball much easier and faster than simply throwing it.

Career Connection:

Mechanical engineers use mechanics and energy principles to design machines such as engines and motors. Many work in the areas of air-conditioning and refrigeration, automotives, manufacturing, welding, and robotics.

Resources:

http://tryengineering.com/lessons/trebuchettoss.pdf
http://interactiveknowledge.com/ballgame/main.php?section=5
https://www.ancient.eu/Maya_Civilization/
https://mesoamerica-westhigh.weebly.com/ballgame.html

