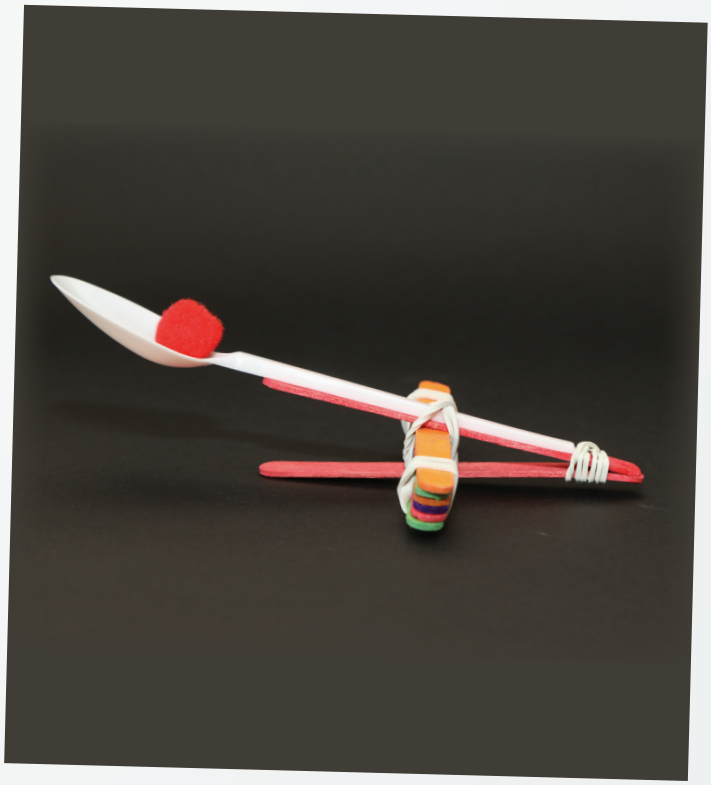
Can be done inside

Can be done individually

4. CATAPULT CHALLENGE

How can we create a catapult that launches a projectile a long way?



You will need

- Lolly sticks x8
- Rubber bands (lots)
- A plastic spoon
- Soft items to launch as projectiles (e.g. marshmallows or pompoms)
- A measuring tape

Investigate

Research how catapults have been used in the past by ancient and medieval militaries.

What are we learning?

A catapult is a launching device used to fire a projectile (an object) across a distance. Historically they have been used in warfare. When we prepare to fire our catapult, potential energy is stored in the stretched rubber bands. When we release the arm this is converted into kinetic (movement) energy in the spoon which is transferred into the fired projectile, as well as some heat energy in the rubber band.

How to do it

1. Tightly secure six lolly sticks together with a rubber band at each end.
2. Take two additional lolly sticks. These will form the arm and the base of your catapult. Secure them together at one end using a rubber band. Position the lolly stick stack horizontally on the surface in front of you. Then sandwich the stack between the arm and the base, facing vertically. Attach a rubber band around the join in a criss-cross shape.
3. Finally, attach a plastic spoon along the arm of your catapult using more rubber bands.
4. Holding the arm and base's join securely in place, place your projectile on the spoon and bend the arm down with your finger. Release and measure how far the projectile travels!
5. How could you improve your catapult to make your projectile travel further? What's the best launch angle?

Optional: Now adapt your catapult to see how high you can fire your projectile. You could measure height by firing it at a wall and seeing where it hits.

Physicist

Mechanical engineer