

POPSICLE STICK CHAIN REACTION EXPERIMENT



SUPPLIES

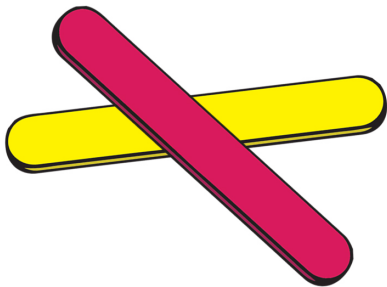
popsicle sticks®
a flat surface

KEY CONCEPTS

POTENTIAL ENERGY
TENSION
COMPRESSION
KINETIC ENERGY

STEP 1

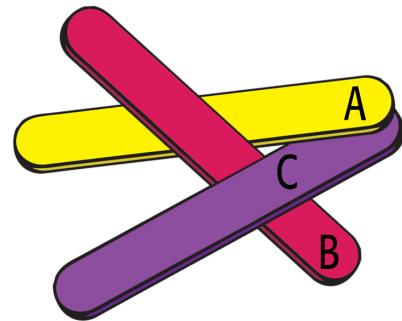
Start with two popsicle sticks; lay them in an "X" on a flat surface.



STEP 2

Place next popsicle stick ('C') under stick 'A' and over stick 'B'.

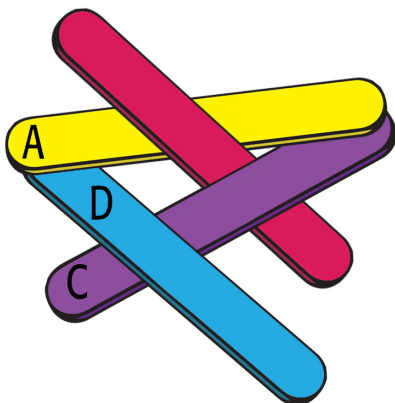
*Make sure you keep pressure on the third stick.



STEP 3

Place next popsicle stick ('D') under stick 'A' and over stick 'C'.

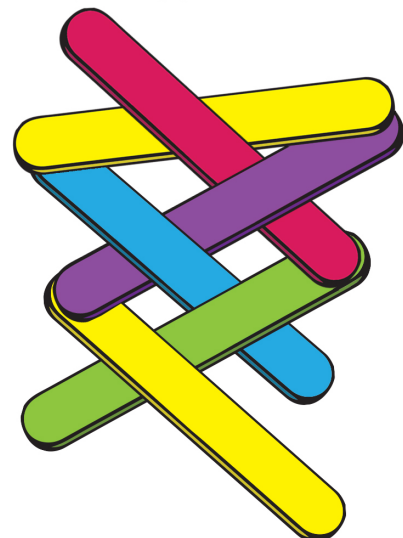
*Make sure you keep pressure on the third stick.



STEP 4

Repeat step 2 & 3 until you reach the desired length or run out of popsicle sticks.

*Make sure you keep pressure on the third stick.



STEP 5

Let go and see what happens!

POPSICLE STICK CHAIN REACTION THE SCIENCE BEHIND



The key to the Popsicle® Stick Chain Reaction is the sudden change from potential energy into kinetic energy. As you weave the Popsicle® sticks together, you are continually building **POTENTIAL ENERGY**. In physics, potential energy is the energy stored in an object because of its position relative to other objects, stresses within itself, or from other causes. For example, the energy that a ball has when perched at the top of a steep hill is an example of gravitational potential energy.

In our experiment, each Popsicle® stick you add is bent over the stick before it and pinned under the stick before that, creating **TENSION** within each stick of wood. Tension is the force used to pull something tight along its length, and because a thin piece of wood is elastic, there is an equal but opposite force called **COMPRESSION** that wants to spring the stick back to its original shape. When you finally have made your chain of sticks the length that you want it to be, you let go and the compression forces take over, releasing all of that tension in a chain reaction of flying sticks!

What happened? As long as you were holding things together, the force you were applying was greater than the compression that was trying to spring the sticks back into shape. When you let go, the compression forces did their thing and the potential energy that was stored in the bent sticks was suddenly changed into **KINETIC ENERGY**, the energy of motion, which sent the sticks flying everywhere.

Any object in motion possesses kinetic energy: a person walking, a thrown basketball, a crumb falling from a table, and an elementary particle moving in a giant accelerator all have kinetic energy.