

# Chain Reaction

From cards to dominoes, the chain reactions resulting from lining them up and knocking one over are amazing displays of energy! Discover how potential energy turns into kinetic energy by using tongue depressors to create your own huge chain reaction!

## TEKS:

SCI 3.6 A: The student is expected to explore different forms of energy, including mechanical, light, sound, and thermal in everyday life.

SCI 5.6 A: The student is expected to explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.

SCI 6.8 A: The student is expected to compare and contrast potential and kinetic energy.

## Materials:

- 10-20 tongue depressors

## How To:

1. Find a hard, flat surface to work on. It would be best to set up at a long table or countertop where you can stand up to work. You will also need a friend or adult to help you hold everything in place as you build.
2. Place two tongue depressors near one end of a long table in the shape of an "X," exactly as shown in the photo below.

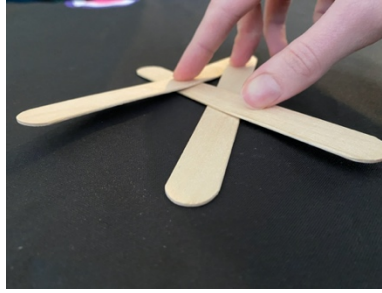


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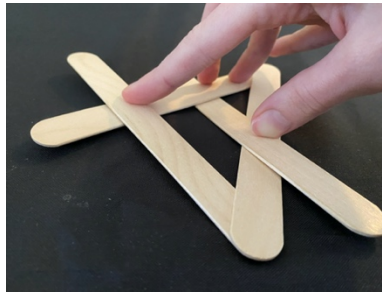
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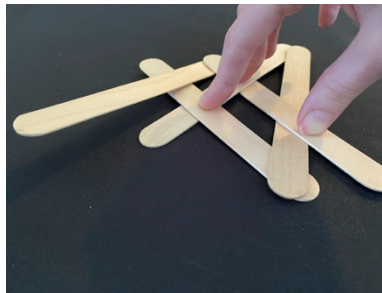
- Place an end of a third tongue depressor under the top right end of the stick on the bottom of the "X." This third tongue depressor then goes over the stick on top of the "X" (see photo below). Have someone hold down the "X" shape as you do this and for the following steps! If you let go of the "X", the chain reaction will start too early and you'll have to start over.



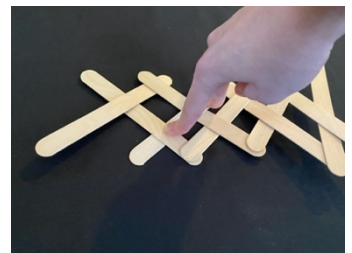
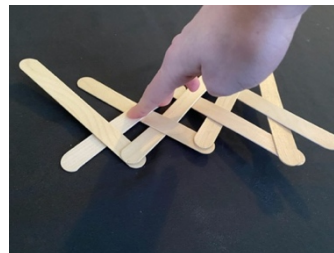
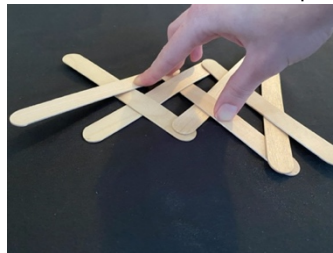
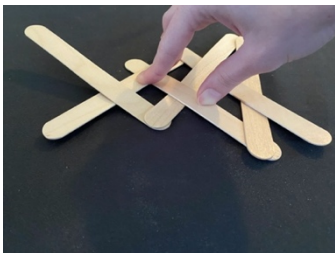
- Repeat step 3 with a fourth tongue depressor, but this time, place it under the open end of the bottom stick and over the third stick. The second and the fourth tongue depressor are now parallel to each other. You may already be able to feel the potential energy building, so be sure to keep that pressure on.



- Repeat with a fifth tongue depressor. At this point, you need to change which "X" shape you're holding down. Move your hand to the "X" you made in Step 3. As you continue to build, keep moving your hand to hold down the newer "X" shapes.



- Continue adding tongue depressors in this way until you have either run out of tongue depressors or have reached the length you want. Use the photos below for guidance.



- Let go of the tongue depressors and observe what happens!

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## STEM Explanation:

You just witnessed a chain reaction! As you weave the tongue depressors together and slightly bend each one, you are creating potential, or stored, energy. Because this is not a normal position for the wood fibers and they want to return to their normal position, you are creating more and more potential energy as you weave the tongue depressors together. When you let go of the "X," the tongue depressors are able to go back to their normal position and the potential energy is converted to kinetic energy creating the chain reaction!

Now that you have mastered how to weave the tongue depressors together to build potential energy and release it in a burst of kinetic energy, it is time to see just how long of a chain you can build. Keep practicing this experiment. Try building on the floor! Can you build a chain that spans the entire length of your kitchen?

## Career Connection:

*Physicists* study the natural world, from the tiniest subatomic particles to the largest galaxies. They do experiments to discover the laws of nature. They study what things are made of (matter) and how things behave. They also learn about energy, studying how it changes from one form to another.

## Resources:

<https://www.kiwico.com/diy/Science-Projects-for-Kids/3/project/Craft-Stick-Chain-Reaction/2965>

<https://www.stevespanglerscience.com/lab/experiments/popsicle-stick-chain-reaction/>

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