

NEWTON'S CRADLE ACTIVITY

Introduction

Have you ever seen Newton's Cradle? This has to do with different laws of physics! When you open a physics textbook, it can be hard to imagine what these different concepts and laws look like. But with a Newton's Cradle, we are able to see how the law of motion actually works!

Before we start, let's learn about the law of motion! Newton's law of motion is actually one concept made up of three laws! The first law is called the "Law of Inertia." This states that if you are at rest, or if you are moving in a straight line at a constant speed, then you will either stay at rest or keep moving in a straight line at a constant speed until some other force changes this!

The second law is actually an equation! The equation looks like this: Force is equal to the mass of an object multiplied by the acceleration of an object! Mass is kind of like the weight of an object, and acceleration is like speed. This means a couple of different things — for example, this law tells us that the more mass an object has, the more force it will need to speed up!

The third law is called the "Law of Action and Reaction." This law essentially means that for every action, there is an equal and opposite reaction.

Learning Objectives

1. Understand how the law of motion applies to Newton's Cradle.
2. Test engineering skills while building.

Materials

1. Popsicle/Craft Sticks
2. 6 Marbles
3. Hot Glue
4. Tape
5. Scissors
6. String
7. Pencil

Step-by-Step

1. Take 2 craft sticks.
2. Take the pencil and write six different marks, each $\frac{1}{2}$ inch apart on the edge of one craft stick. Repeat on the edge of the other craft stick.
3. Cut the string into 6 even pieces that are each 8 inches long.
4. Use the hot glue to attach a marble to the center of each string.
5. Use the tape to attach ends of the strings along the marks on the popsicle sticks.
6. Using 12 craft sticks and hot glue, assemble a cube shape. The top part of your cube should have 2 parallel sticks lying flat across the top.
7. Take the 2 craft sticks with the marbles attached and use hot glue to secure them along the 2 craft sticks on the top of the cube. The marbles and string should fall naturally into the middle of your cube, forming your Newton's Cradle!

