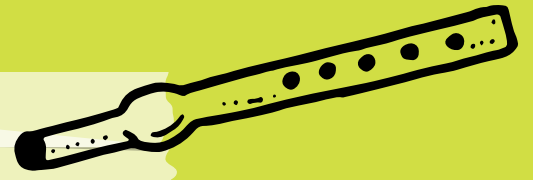


# ACTIVITY 1

Some instruments make sound by plucking, or pulling, on a string. Others make noise with a little help from your voice. Can you guess what kind of instruments we're going to create in our first activity?

## LET'S MAKE



## WHAT YOU'LL NEED

### INCLUDED



**CARDBOARD TUBES**



**RUBBER BANDS**



**WAXED PAPER**



**TRANSPARENT TAPE**

### NOT INCLUDED

**PENCIL**



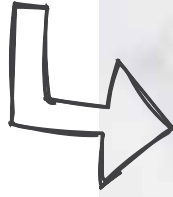
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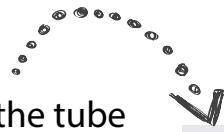
## STEP 1

Take one of the cardboard tubes and cut it in half so you have two tubes that are each 4" long.



## STEP 2

Place a rubber band around the tube so it goes over the openings at the top and the bottom of the tube.



## STEP 3

**Pluck** the rubber band with your index finger and thumb. Notice the sound it makes.



Pluck means to pick up something quickly and move it.



## STEP 4

Tighten the rubber band across the top of the tube. Pluck the rubber band again. Notice the sound it makes. It should sound different than before. If it doesn't, try loosening or tightening the rubber band until you can make different sounds.

**Tip:** To make the band tighter or looser, stretch the band to the length you need it across the top of your tube and use your index finger and thumb of one hand to hold the band in place on the side of the tube. Use the other hand to pluck the band. It might be helpful to have someone hold the band on the tube while you pluck it.

## STEP 5

Try using a different rubber band on the tube. Do they all sound the same? Place a few rubber bands on the tube. How many rubber bands is the right amount for your instrument?



## STEP 6

Put on some of your favorite music and play your instrument along with it.

You've made a string instrument – except your strings are rubber bands! The rubber bands **vibrate** over the hole, and this helps us hear the sound. Guitars, violins, harps, and cellos all work in a similar way.

Vibrate means to shake back and forth quickly.

## STEP 7

Now, grab the other half of the tube you cut, take one piece of waxed paper, and place it over one end of the tube.



## STEP 8

Place a rubber band around the waxed paper covering the tube. Make sure the surface of the waxed paper is tight over the hole!





### STEP 9

Using a sharp pencil or tack, poke a hole in the waxed paper. It doesn't need to be big. An adult might need to help you with this part.



### STEP 10

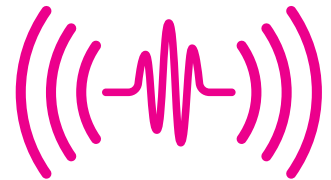
Hold the noncovered end of the tube up to your mouth and talk or sing into the tube. You've made your own kazoo! If you have time, decorate the outside of your kazoo.



### STEP 11

Try singing your favorite song for someone and see if they can guess it! Put some of your favorite music on and sing along with it.

The hole in the waxed paper lets the paper vibrate, or move, when air from your mouth pushes it. This makes the sounds you are hearing.



## THINK ABOUT IT

Look around the room you're in. Are there objects in the room that you could use to make sound? How can you change how high or low the sound is? Can you make it louder or softer?

What is the best way to play this instrument? Explain to someone why you think that.

Engineers are always looking for ways to make something better, or improve it. What can you improve about either (or both) of these instruments?