

ACTIVITY #1: POPSICLE STICK HARMONICA

OVERVIEW

Make your very own harmonica out of popsicle sticks! Just like brass instruments in an orchestra, this instrument produces sound when air vibrates the mouthpiece, causing the instrument to buzz.

MATERIALS

- Extra-wide popsicle sticks
- Toothpicks
- Rubber bands
- Your favorite art supplies
- Paper (or waterproof snack wrapper for a longer-lasting harmonica!)

BACKGROUND INFO

Brass instruments produce sound when air is blown into them. Musicians use their lips to make a buzzing sound in the instrument's mouthpiece, causing it to vibrate. These vibrations move through the metal tubes of the instrument, getting louder as they go, until they come out through the end, or bell, as a big, brassy sound. Some instruments have more tubes than others; if you stretched out a tuba, it would be sixteen feet long!

Brass instruments play different pitches by changing the length of the tubes that the air moves through. There are two ways to do this: *valves* and *slides*. Valved instruments, like the trumpet, have little buttons, or valves, to change the length of the tubes. Slide instruments, like the trombone, use a little piece of sliding metal to make the tubes longer or shorter.

Think about the musicians you saw in the **Trumpets, Trombones, and Bears, Oh My!** video. How do each of those instruments produce sound?

You can make your own version of a brass instrument with simple materials right at home. This instrument works kind of like brass instruments: as you vibrate it by blowing with your lips, the popsicle sticks amplify the vibrations and create sound. Depending on how you move your lips and how you squeeze the harmonica, the pitch will be higher or lower. Try it out and see how many different pitches you can make!

INSTRUCTIONS

Check out the **Trumpets, Trombones, and Bears, Oh My!** video for a visual tutorial. Or, follow these steps:

1. Cut the paper or waterproof snack wrapper (a granola bar wrapper works great!) into a strip about the same size as a popsicle stick, but a bit shorter. Cut a toothpick into two pieces about the width of the popsicle stick.
2. Place the paper or wrapper strip in between the popsicle sticks so you have a popsicle stick sandwich. Wrap a rubber band snugly around one end, then slide a toothpick piece down inside the sandwich so it's just inside the rubber band.
3. Repeat this on the other side: insert the popsicle stick into the other end of the sandwich, then secure with a rubber band.
4. Feel free to decorate your harmonica however you like!
5. You now have your very own popsicle stick harmonica! To play it, hold it up to your mouth and blow or suck air through it. What sounds do you hear?

EXTENSIONS

- Practice with your harmonica and see what you notice. What is the difference in the sound when you blow air compared to when you suck air? Try pinching the popsicle sticks together on the outside of the rubber bands. Now try pinching on the inside of the rubber bands. What changes do you notice? Does anything happen if we place the toothpicks closer together or further apart?
- Different sized instruments usually have different pitches. How can you create a harmonica with a different pitch? See if you can make one. What materials can you experiment with?