

Make a harmonica

Discover the science of sound with this homemade musical instrument.

TOP TIP

Squeezing hard on the two ends of the craft sticks makes the sound louder.



What you need

- Two 15cm craft sticks
- One large elastic band
- One straw
- Ruler
- Pen
- Scissors
- Two small elastic bands

How does it work?

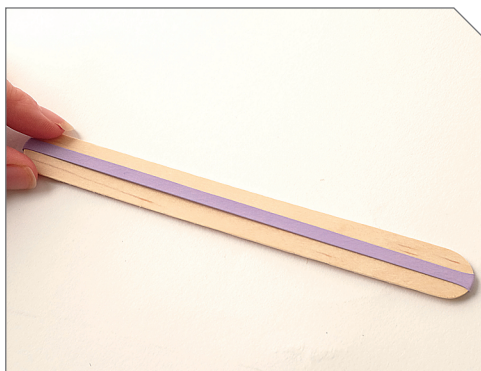
You hear sounds when waves of energy travel through the air to your ears. Sound waves are created from vibrating objects. For example, when you speak, the vocal cords move quickly back and forth, moving the air in your throat and sending sound waves out through the air. When you blow through your homemade harmonica, the elastic band vibrates against the wooden sticks, moving the air to produce sound waves. The straw pieces make the elastic band tighter, increasing the pitch – highness or lowness of a sound. Try moving the straw pieces to change the pitch of the sound. Which direction makes the pitch go higher and which makes it go lower? You should find that moving the two centre straws closer together makes the sound higher.

SCIENCE FACT OR SCIENCE FICTION?



There's no sound in space

Fiction! You may have heard that space is a vacuum – a place entirely devoid of matter. However, that's not entirely true. Between stars, there are clouds of gas and dust. Some of these clouds are dense enough for sound waves to travel. However, humans just can't hear them without help. Astrophysicists say that supermassive black holes produce a really deep humming.



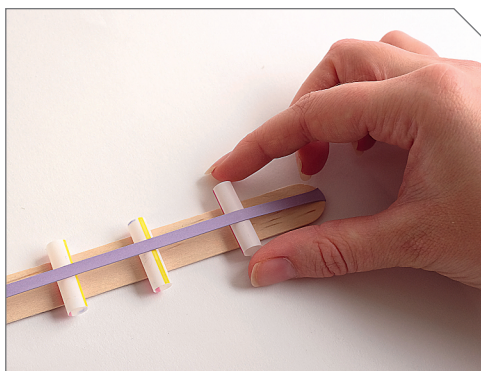
1 Take one of the large, 15-centimetre-long craft sticks and stretch the large elastic band around it lengthways.



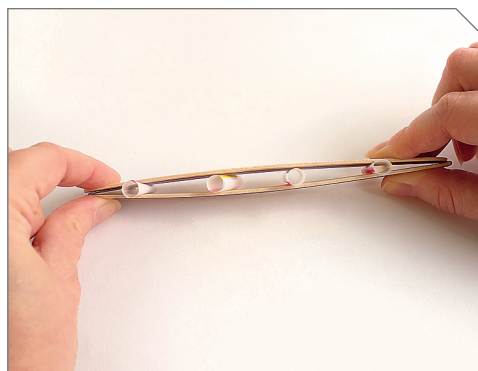
2 Next, take the straw and mark out four 2.5-centimetre-long sections along its length using a ruler and a pen.



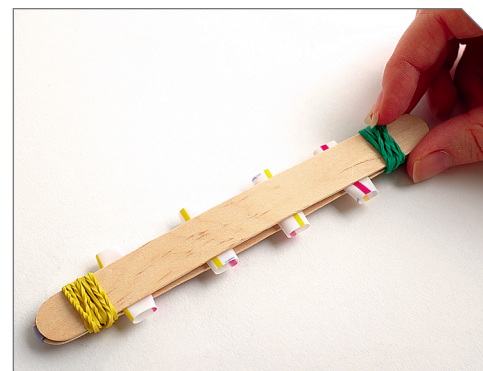
3 Carefully cut out the 2.5-centimetre sections of straw so you have four pieces of straw that are all the same size.



4 Take the four pieces of straw and push them under the large elastic band that is attached to the craft stick. Make sure they are evenly spaced.



5 Now put the other craft stick on top of the straws so that the straws and the elastic band are sandwiched in between the two craft sticks.



6 Wrap one small elastic band around each end of the craft sticks to hold them together. Blow hard between the straws to play your harmonica.