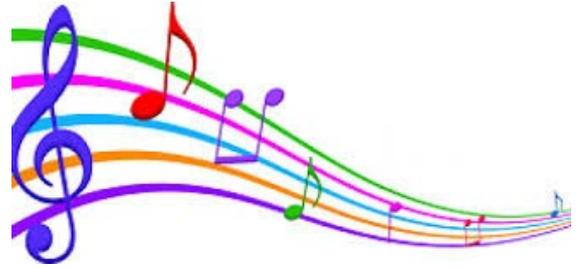


Make some music



Feeling musical? Here's how to make a simple harmonica.

You will need



- Two craft sticks (or lollipop sticks)
- One large elastic band (needs to be able to go around one of the craft sticks lengthwise)
- Two small elastic bands (loom bands are ideal if you have them)
- A drinking straw
- Scissors

1 Take the large rubber band and wrap it lengthwise around one of the craft sticks.



2 Using scissors cut two short lengths from the drinking straw. They need to be a bit longer than the width of the craft sticks.

3 Slide the two pieces of straw under the rubber band, one at each end of the stick.



4 Now place the second stick directly on top of the first stick so that it is like a sandwich with the rubber band and the straw pieces in the middle.

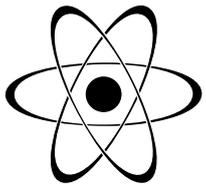
5 Carefully wrap one of the small rubber bands around one end of the two sticks.



6 Then wrap the second small rubber band around the other end of the two sticks.



Now blow between the two sticks like you would play an harmonica. Just right for some folk or blues music!



Explore some more

7 Try blowing harder on your harmonica. Does this change the sound? You should find that the harder you blow the higher the pitch of the sound. The softer you blow the lower the pitch.

8 Move one of the straws so that it is about a third of the way in from the end of the stick.



Now try blow in between the two straws. Is the sound different? And then try blowing between the straw you moved and the end of the stick. You should find the pitch changes - the shorter the space the higher the pitch.



Essential Science

Where does the sound come from?

- The sound made by your harmonica is actually the sound made by the large rubber band vibrating as you blow between the two sticks. This is like plucking the strings on a guitar. When we speak the vocal chords in our throat vibrate and make sounds. When you ring a bell it vibrates. When a car engine is running it vibrates and the sound it makes changes depending on how fast the engine runs.
- When something vibrates it makes the surrounding molecules in the air move (molecules are very tiny particles that are much too small for you to see but they are there!). These molecules then bump into other nearby molecules and this keeps happening so that a sound wave travels through the air. This is like the ripples you see when you drop a stone into a pond.
- All the sounds we hear are sound waves travelling through the air and reaching our ears.

Pitch and Frequency of Sounds

- Musicians talk about the speed that something vibrates at as the Pitch of the sound (the faster the speed the higher the pitch).
- Scientists talk about the speed that something vibrates at as the Frequency of the sound (the faster the speed the higher the frequency).
- So pitch and frequency are pretty much the same thing!
- If something vibrates quickly we hear a high-pitched sound and if an object vibrates slowly we hear a low-pitched sound.
- The harder you blow into your harmonica the faster the rubber band vibrates and the higher the pitch of the sound. If you blow gently the band vibrates more slowly and so the pitch of the sound is lower.