

Rubber band box guitar

Materials

- Rubber bands of various sizes
- Small rigid box, open on one side, made from plastic, cardboard or wood
- Sticky tape



Instructions

1. Stretch a few rubber bands over the box and space them out evenly.
2. On the base of the box, use sticky tape to hold the rubber bands in place.
3. Pluck the rubber bands to make a sound.
4. Hold the base of the box to your ear, pluck the rubber bands and listen. Does it sound any different?



What happens?

Sounds are caused by vibrations. When a rubber band is plucked, it vibrates (moves back and forth very quickly). The vibrating rubber band makes the air around it vibrate and this creates a sound wave. The sound wave travels through the air to reach our ears and we hear the sound. When the box is held against your ear, the sound waves travel more easily through the solid box and straight into your ear, so it seems that the sound is much louder.

The box in this activity acts as a resonator. When a rubber band is plucked, the rubber band vibrates and it makes the box and the air inside the box vibrate. This makes a louder sound than if the rubber band were plucked on its own.

The 'pitch' of a sound is how high or low it sounds. Higher sounds are made by thin rubber bands and by rubber bands that are stretched very tightly. Lower sounds tend to be made by thicker rubber bands and rubber bands that are not tightly stretched.

Why does it matter?

All sound, including music, is made by vibrations that create sound waves. The different types of sounds in music are created using a range of different materials. In stringed instruments, the pitch (the highness or lowness of a sound) depends on what the strings are made of, how tightly the strings are stretched (tension) and the

length of the strings. A musician playing a stringed instrument like a guitar can change how much of the string is vibrating by pushing the string against the fret board. They effectively make the string shorter or longer to make higher and lower sounds.

Stringed instruments also have resonators that work in a similar way to the air-filled box in this activity. The body of a guitar, violin or double bass plays an important role in making the sound of the strings louder (amplification) and determining the quality of the sound from an instrument (timbre).

Related activities

Try using different sized boxes or replacing the rubber bands with other materials such as string or elastic.

Play with a range of stringed instruments such as ukuleles and guitars.

Invite a musician, such as a parent or other community member, to visit and play a stringed instrument such as a violin or guitar.

'Bucket bass' or 'tea chest bass': Make a stringed instrument using a large bucket or box, a broom handle and some rope. In this instrument, the rope is plucked and different sounds are made by changing how tightly the rope is stretched between the bucket and the broom handle by pulling back on the broom handle.

