



Curiosity Guide #608

Piano Science

Accompanies Curious Crew, Season 6, Episode 8 (#608)

Rubber Band Tension

Investigation #4

Description

Create your own sound machine!

Materials

- Shoe box
- Rubber bands of different thicknesses

Procedure

- 1) Stretch several rubber bands over an open shoe box.
- 2) Pluck each one and notice the sound.
- 3) What happens when you change the tension of the rubber band and pluck the rubber band again?

My Results

Explanation

On your sound machine, did you notice:

- The tighter or thinner the band, the higher the pitch.
- The looser or thicker the band, the lower the pitch.

The same is true for piano strings, which are also affected by the length of the material. The pitch of each string on a piano is determined by several factors: length of string, tension, diameter, and string material.

Did you know? Pianos are special instruments. Even though the sound comes from strings, pianos are also percussion instruments because the strings get hit with hammers. Another unusual thing is that even though a grand piano has 88 keys, there are 230 strings. This is because 65 of the higher notes have strings that are shorter and thinner, so instead of just one string, the hammer hits three strings at once. The next 12 keys have two strings each and then the last 11 keys have single long and thick strings to produce the low bass sound. Beautiful! Play that song again!

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