

DO-IT-YOURSELF CRYSTALLOPHONE

Make a simple musical instrument out of ordinary glass containers

What you'll need:

- Empty glass containers, such as drinking glasses, vases, jars and bottles (you'll need five to eight of them)
- A pencil, pen, wooden spoon or chopstick to tap the glass as a mallet
- Pitcher or measuring cup filled with water
- Towel to mop up spills

How to play:

- Put your glass containers in a row.
- Pick up your chosen item to tap the glass—but don't tap too hard! Do some make higher or lower sounds than others? That's their pitch.
- Why do you think some containers make sounds that are higher or lower? Is it their shape? Size? Thickness of the glass?
- Why does tapping make a noise? Are the sounds made by some containers louder than others?
- Rearrange your row of containers from lowest to highest pitch. Fill some containers with water. What happens to their pitch? Why do you think it happens?
- Tune your row of containers to create a musical scale. See if you can manage Do-Re-Mi-Fa-So-La-Ti. You can use the water to adjust the pitch of some of your containers and to tune your scale.
- Play a tune! How about *Hot Cross Buns*? Or *Mary Had A Little Lamb*? Or the theme song from your favourite movie!
- Look at the material of your chosen mallet. Does changing the mallet's material change the sound?
- Can you get a container to make a sound without tapping it with a mallet?

How does it work?

When a mallet strikes a glass container, it causes the glass to shake, which shakes the air inside it and around it, which then shakes your eardrum and you hear a noise. The shape, size and composition of the glass determines how quickly or slowly the glass will shake (the thinner the glass, for instance, the faster it can vibrate). The speed of the vibrations, which we call sound waves, determines the pitch you hear. Faster sound waves create higher pitches and slower sound waves create lower pitches. Adding water makes the container heavier and harder to vibrate, so the pitch gets lower.

Crystallophone is the name for a musical instrument that uses glass to make sound. The crystallophone in this project is a percussion instrument, like a xylophone. Other types of crystallophones include glass harps and glass harmonicas.

