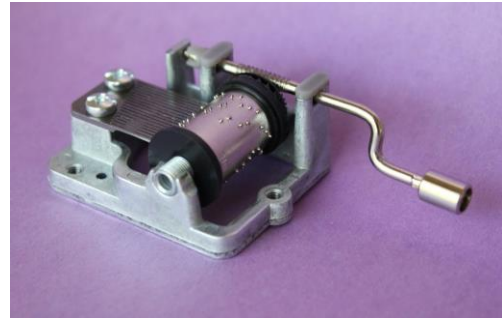


# Music box

## Materials

- Music box
- Table



## Instructions

1. Hold the music box in one hand and wind the handle with the other hand. Listen to the sound of the music.
2. Place base of the music box on the table and push it down onto a table top.
3. Wind the handle (you may need to position the handle off one edge of the table). Listen to the music. Does it sound any different?

## What happens?

When the music box is held in the air, the sound is very quiet. Turning the handle causes parts of the music box to vibrate which in turn makes the air around it vibrate to create a sound, but the vibrations are quite small and the sound is quiet.

When the music box is held on the table, it makes the table top vibrate, which makes lot more air vibrate and you hear a louder sound (amplification).

## Why does it matter?

A wooden box usually acts as the resonator in a music box. The mechanism is attached to the box and when the handle is turned, the mechanism vibrates, the box vibrates, and the air inside and around the box vibrates to make a sound.

## Related activities

Experiment with different resonators: Hold the music box against a range of different materials to find out what makes the loudest sound. If an object is very hard, it may not be wobbly enough to vibrate and make the sound louder. If an object is too soft, it might absorb the vibrations.

Muffling sounds: Test how well a range of materials can absorb sound. Use an electronic device such as a smart phone or a transistor radio to play music. Place the device in a box with a lid and listen to the sound. Now try to make the sound even quieter by adding different materials such as tissues, cotton wool, cushions or fabric. Close the lid to see if the sound is any quieter.

## **Health and safety considerations**

- Choking hazard for young children (music box mechanism contains small parts)