

You will need: Two balloons, a balloon pump, a smooth round object such as a marble or bead, and an object with corners such as a hexagonal nut.

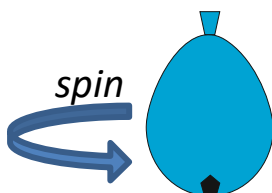
Latex balloons take several months to biodegrade, and are hazardous to wildlife in the environment. **Please dispose of your balloons responsibly in your household waste**

Work safely:

- Adult supervision is required.
- Because of the use of small objects and balloons, this activity is not suitable for children under 5 years old.
- Balloons are made from latex. Do not try this experiment if you have a latex allergy.
- Use a balloon pump to inflate balloons containing objects – inflating them by mouth presents a choking hazard. If you don't have a balloon pump, ask an adult to inflate the balloon before adding the object. This is tricky, but possible to do with an extra pair of hands!

What to do:

1. Place each object in a different balloon and inflate both balloons with the pump
2. Now try swirling each balloon in a fast circular motion so that the object inside moves in circles
3. What can you hear?
4. Now try swirling the balloon containing the nut quickly and then stop. What happens to the sound as the movement of the nut slows down?



Sounds occur when a vibrating object causes the stuff around it, such as air particles, to vibrate. The vibrations travel because the vibrating particles cause the ones next to them to vibrate, and so on.

When the vibrations reach our ears they make our eardrums and the tiny bones connected to them vibrate. Our auditory nerve carries information about the vibration to our brain, which interprets the signal as sound.

The smooth object is able to roll around inside the balloon without causing it to vibrate much, so not much noise is generated. The edges and corners of the nut cause it bounce off the inner surface of the balloon, making the balloon vibrate strongly, generating the whirring sound.

The pitch of a sound depends on the frequency of the vibrations (how many vibrations occur every second). A high frequency vibration causes a high pitched sound, and a low frequency vibration causes a low pitched sound. As the nut slows, the vibrations drop in frequency, and the sound drops in pitch.