



## Let's Investigate Vibrations

Sound is a type of energy we can hear with our ears. Sounds are made by vibrations travelling through the air in waves. We can't see the vibrations, but some experiments can help us visualise how they travel.



Tuning forks are designed to make a sound at a certain pitch, which can then be used to tune instruments.

When a tuning fork is hit against an object, such as the bottom of a shoe, the fork vibrates and produces a sound. When it stops vibrating (either over time or because a person's hand is holding it still), the sound stops too.

The effect of the vibrations can be hard to see on the fork alone. But if you put a vibrating tuning fork into water, it will cause the water to ripple slightly and create some splashes. This shows how the vibrations are travelling.



Tuning fork in water

Have a go yourself  
and see  
what happens!



## Ping Pong Vibration Investigation

This ping pong vibration investigation aims to help you understand further how sound is made by vibrations and how sound waves travels. Before you start your investigation, observe how the tuning fork vibrates when hit on the bottom of your shoe. Put it to your ear – can you hear any sound?

Begin by reading through the method. Next, predict what you think your results will show.

### Prediction:

I predict that .....

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### Equipment:

- A tuning fork
- A ping pong ball
- Sellotape
- Cotton thread
- Scissors



### Method:

1. Cut a piece of thread around 50 cm long. Use a piece of sellotape to secure the ping pong ball to the end of the thread.
2. Get a partner to hold the string at arms length and remain as still as possible.
3. Strike the tuning fork on the sole of your shoe.
4. Hold the vibrating tuning fork 10 cm away from the ping pong ball and record on your results table what happens to the ball.
5. Repeat, but this time hold the tuning fork 5 cm away from the ping pong ball and record your observations.
6. Repeat again putting the vibrating tuning fork as close to the ping pong ball as possible, without touching it. Record your observations.
7. Now make sure the ping pong ball is still and repeat again, but allow the vibrating tuning fork to touch the ball. Record what happens to the ball.



## Results:

Distance between the ping pong ball and the vibrating tuning fork	Observation of ping pong ball
10 cm away	
5 cm away	
As close as you can get without touching	
Touching	

### Conclusion:

My results show that .....

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What questions do you have about sound vibrations and how sound travels?

How could you investigate this further? .....

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