Sound waves

Driving Question:
What is sound and
what are sound properties?

Thinking about the question

There are sounds around you all the time. Sounds can be soft or loud, high or low, pleasant or unpleasant. Do you know what is sound and how is it made?

Hit the tuning fork with a rubber hammer. You can hear the sound. Touch the ends of fork lightly with your fingers. What do you feel?

Now hit the tuning fork once more and put the ends of the fork into a glass with water. What happens to the water? Explain it.

How do you think sound of the turning fork is made?

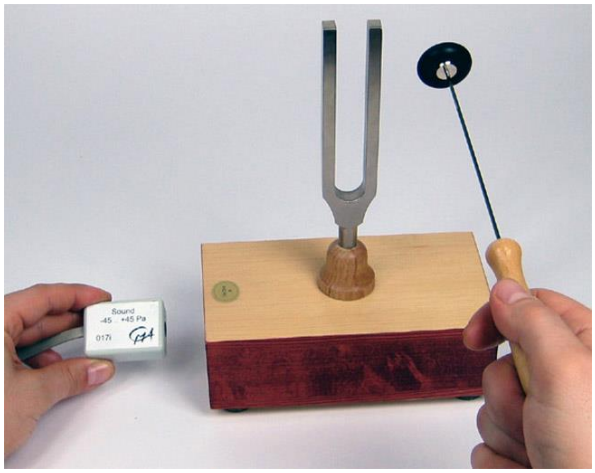
In this activity you will use the sound sensor and will record the sound made by tuning forks and explore the resulting graphs.

Materials

In your investigations you will use:

- Data-logger e.g. CMA €Lab,
- Sound sensor,
- Tuning forks of different frequencies.

Investigations



1. Connect the sound sensor to input 1 of your data-logger.
2. Open Coach Activity ‘Sound waves’.
3. Place a tuning fork near the sound sensor.
4. Strike the fork with the rubber hammer, start a measurement and record the sound.
5. Look for a pattern in the graph that repeats and describe the pattern.
6. To understand how the sound is produced read the ‘Science background’ provided for this activity.
7. Determine the amplitude of the recorded sound waveform:
   ……..
8. Determine the period of the sound waveform: ……...
9. Calculate the frequency of the recorded sound. Describe the method you use.
10. Hit the tuning fork softly and record the sound waveform. Then hit the fork harder and record the sound again. What feature in the graph shows you how loud the sound is?
11. Take a tuning fork with another tone (pitch). Hit the fork, try to keep the same loudness, and record the sound again. What feature in the graph shows the different pitch of the sound?
12. Compare the frequencies for each pitch.
    For higher-pitched sounds the frequency is ……..

Resources:

Coach 6 Activity: Sound waves.cma7