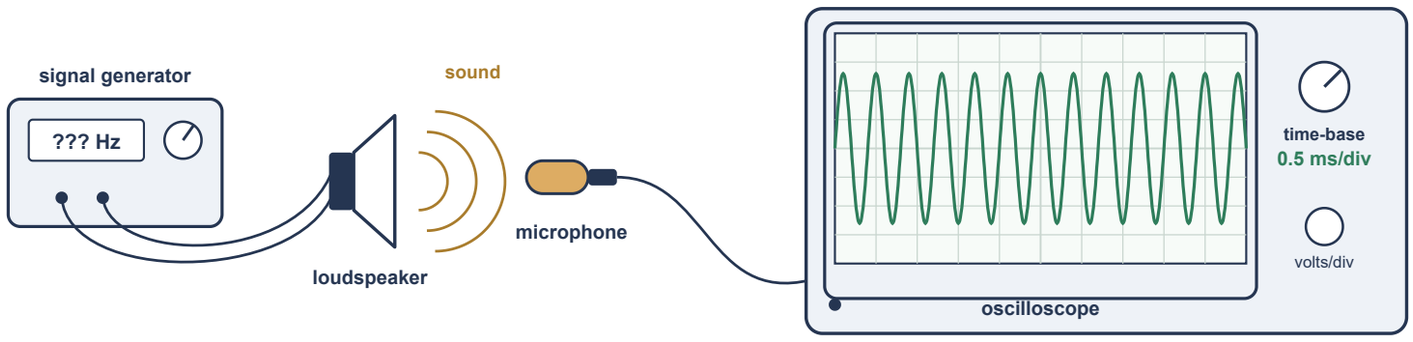
Frequency of Sound with an Oscilloscope *(Triple only)*

Aim: investigate the frequency of a sound wave using a microphone and an oscilloscope.



Method — fill in the gaps

1. Connect the loudspeaker to the _____. Connect the microphone to the _____.

2. Hold the microphone in front of the loudspeaker so the sound shows as a trace.

3. Adjust the _____ until there are at least **10 complete waves** on the screen.

4. Count the number of _____ for 10 complete waves.

5. Time for 10 waves = number of squares × _____. Divide by _____ to get the time period, *T*.

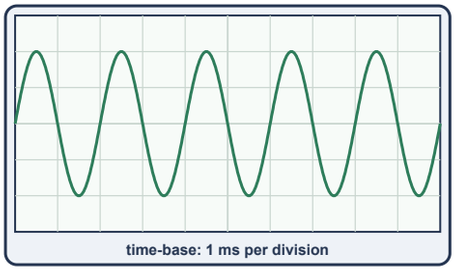
6. Calculate the frequency using $f = 1 \div T$.

Analysis — use the trace above

squares for 10 waves = _____ time for 10 waves = _____ ms T = _____ s f = _____ Hz

Exam-style question

A student connects a microphone to an oscilloscope and plays a note from a loudspeaker. The diagram shows the trace.



(a) State what the microphone does. **(1)**

(b) Use the trace to find the time period of the sound wave. **(2)**

(c) Calculate the frequency of the sound. **(2)**

(d) The note is made louder without changing its pitch. Describe how the trace changes. **(2)**

(e) Explain why the student measures the time for several waves, not just one. **(1)**

(Total for question = 8 marks)