

Look and Listen

Apparatus

signal generator connected to an oscilloscope and a speaker

Action.

The students watch the display on the oscilloscope screen while adjusting the frequency and amplitude of the output from the signal generator. At the same time they listen to the changes in the sound produced via the speaker.

The Physics

Increasing the frequency shortens the period of the waveform, so the display shows more oscillations on the screen. The students also hear a higher pitch. Increasing the amplitude gives a “taller” waveform, and a louder sound, but does not affect the frequency (or pitch).



A University of Sydney student looking at and listening to waves.

Accompanying sheet

Look and Listen

A signal generator is connected to a loudspeaker and a CRO.

The CRO draws a graph showing variations in amplitude with time.

Describe what happens when you increase and decrease the frequency?

What do you see and hear?

What happens when you adjust the amplitude control?

(Remember that we only hear frequencies of ~ 20 Hz to 20 kHz.)