

FREE WEBSITES

1. ONLINE WEBSITES THAT DO NOT NEED ANYTHING DOWNLOADING

These should work on any device, including mobile phones.

How do they work? The website contains a program written in the computer language: Javascript; this runs on your device.

1. Audio Waveform Display Program

<https://compadre.org/osp/pwa/soundanalyzer>

As used in Miss Burrow's science lesson

It may ask for permission to use the microphone.

Displays:

frequency spectrum in top pane.

This shows where the sine waves are!

audio waveform in bottom pane,

Axis control (if required) is via the "About and Help" tab, at the top.

You need to click the ">" field (bottom centre) for it to run

2. Sound Generation Programs

<https://onlinetonegenerator.com>

As used in Miss Burrow's science lesson

Choose from four wave shapes: sine, square, sawtooth, triangle. Choose the frequency of your choice.

440Hz is displayed at the start and is the frequency of the musical note "A" that is above the musical note "middle C". This is the international standard so that musical instruments all play in tune!

Listen carefully when playing the square or sawtooth or triangle wave – you can still hear a sine wave buried in there!

<https://meettechniek.info/additional/additive-synthesis.html>

Build up a wave shape from sine waves. 440Hz is displayed at the start (again!).

This has vertical sliders for harmonics. Harmonics are integer multiples of the frequency that you select and are also sine waves. You can also choose square, trapezium, triangle, sawtooth, violin waves and see what sine wave harmonics are used to make the shape; the very same harmonics that your ear would separate out when hearing the waves and determining the sound! The volume is controlled in the box just to the right of those sliders and is "off" initially.

<https://musiclab.chromeexperiments.com/spectrogram>

It's a shame that there are no axes (plural of axis!) but a pretty and colourful demonstration. Choose the sound source from the circular buttons at the bottom, including from your microphone. The choices are, microphone, flute, harp, whistling, trombone, drum machine, birds, modem (ask!), a wine glass – by rubbing the top round and round.

<https://www.szynalski.com/tone-generator/>

440Hz is display at the start (again!). This includes the ability to select a frequency by musical note (A to G) - look for the note symbol, with the initial value "A4", meaning musical note A in octave number 4.

Notice how, for example, note "A" doubles in frequency as the octaves go up. The human ear is "non linear" in both amplitude and frequency (musicians say volume and pitch) – a subject for a future science lesson.

<https://midi.city/>

A music synthesiser

<https://nicroto.github.io/viktor/>

A music synthesiser – nice