

# Sound waves – every sound is made up of waveforms



Waveforms create the timbre of the sound – composers pick the wave form in the same way they would pick an instrument – the right timbre for the right job



Simple waveforms use one type of wave – like those produced in early game music by 8bit chips and programmable sound generators.



Electronic music uses these to synthesize real world sounds or to create new ones



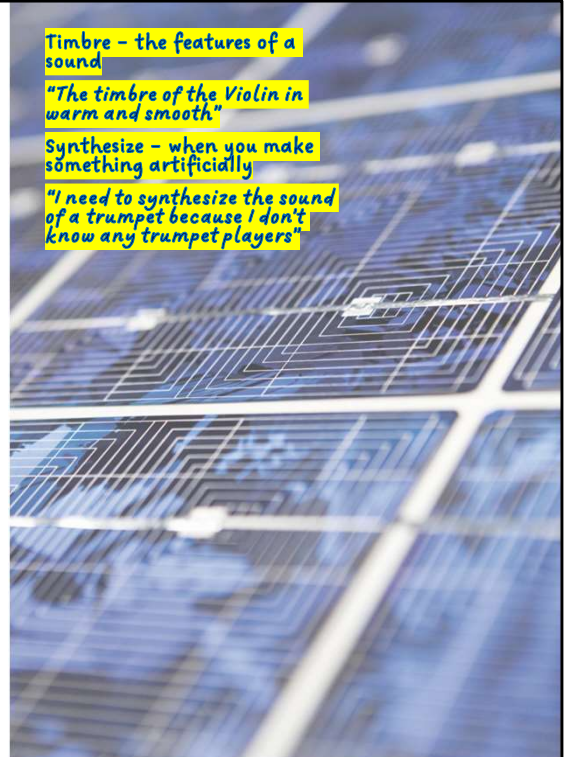
Complex waveforms use many types of wave to create more complex sounds and even synthesize the sound of 'real' instruments. Later electronic devices called FM Synths (frequency modulation synthesis)

Timbre – the features of a sound

*"The timbre of the Violin is warm and smooth"*

Synthesize – when you make something artificially

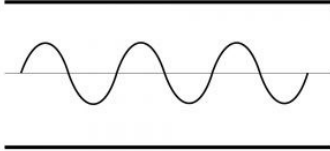
*"I need to synthesize the sound of a trumpet because I don't know any trumpet players"*



# Waveforms

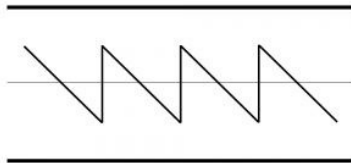
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SINE WAVE



The most basic and simple waveform, a sine wave has a simple hollow sound. **It does not exist in nature**, but is the simplest sound to reproduce with electronics, which is why **you may recognize it from warning tones and beeps.**

SAWTOOTH WAVE

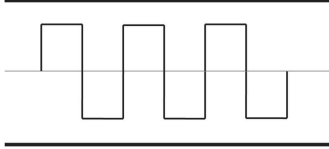


The sawtooth produces **a full buzzing sound**. Notice how the wave looks like the teeth of a saw, hence the name.

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SQUARE WAVE



Notice how the waves seem to form a square shape which gives the square wave a little more bite to the sound. **It kind of has a buzzing sound**, but is not as intense as the sawtooth.