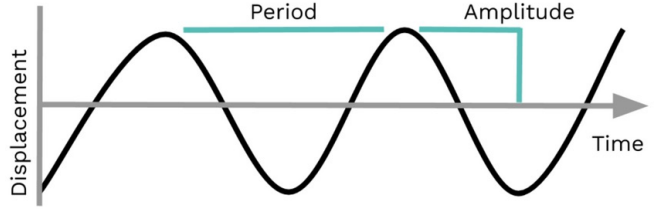
Numeracy - Knowledge Organiser

GLOSSARY	
Amplitude	The volume of a sound, measured in Decibels (dB)
Frequency	The pitch of a sound, measured in Hertz (Hz)
Waveform	A visual representation of a sound wave
Period	The time it takes for a wave to complete one cycle/oscillation
Peak Programme Meter (PPM)	Used to measure the peak levels in a track
RMS (Root Mean Squared) Meter	Used to measure the average loudness of a track
VU (Volume Units) Meter	An analogue meter that uses a needle to measure the volume of a track

WAVEFORM GRAPHS

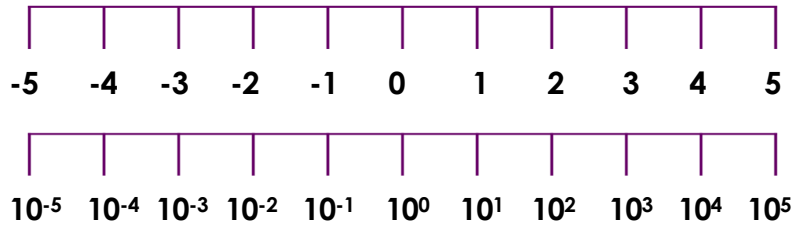
- Represents the displacement (amplitude) of a sound wave over time



- Period (T) and Frequency (F) are inversely correlated:
  - $T = \frac{1}{F}$
  - $F = \frac{1}{T}$

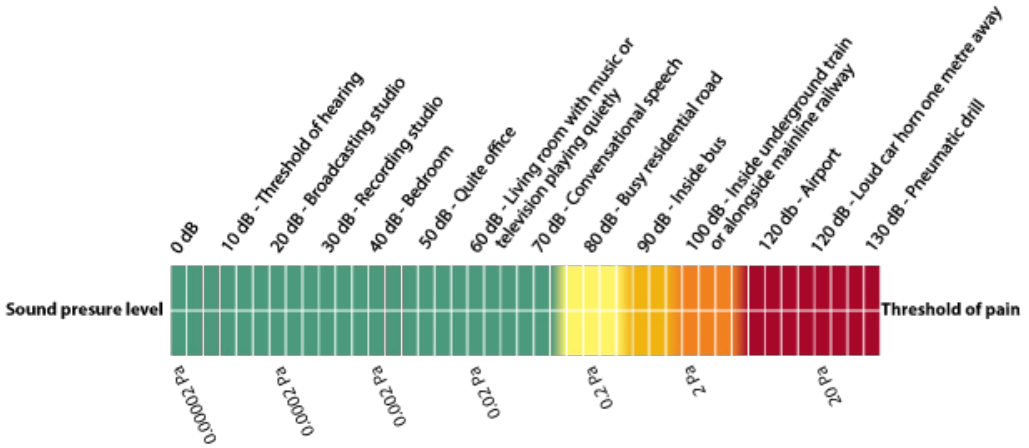
LOGARITHMIC SCALES

- Used to represent orders of magnitude as a linear change



- The scale increases exponentially
- Examples of use include VU (dB) meters and EQ filters

DECIBEL SCALES



Peak Meters	RMS Meters	VU Meters
• Give a temporary measurement of the highest volume of the signal • Used to help avoid distortion/clipping	• Give an average measurement of the volume by considering both the amplitude and duration of the peaks	• Measures the average volume of a track over time using a needle

FREQUENCY AND MUSICAL INTERVALS

Interval	Frequency
Octave Higher	$\boldsymbol{f = n \times 2}$
Octave lower	$\boldsymbol{f = n \div 2}$
Perfect 5th Higher	$\boldsymbol{f = n \times 1.5}$
Perfect 5th Lower	$\boldsymbol{f = n \div 1.5}$
Perfect 4th Higher	$\boldsymbol{f = n \div 0.75}$
Perfect 4th Lower	$\boldsymbol{f = n \times 0.75}$

THE HARMONIC SERIES

- Acoustic resonators such as wind and string instruments can produce different frequencies using the harmonic series
- Each note (harmonic) is a multiple of the fundamental frequency

$$f_h = f_f \times n$$

Where:

- F_h = The frequency of the harmonic
- F_f = The fundamental frequency
- n = The order of the harmonic