

Handout - Variables of Sound Graphic Organizer (Teacher's Guide)

Variable	Definition	Musical Term	Unit of Measurement	Measurement Tool	Formula	Notes
Amplitude	Volume - how far air molecules are displaced in a sound wave	Dynamics	Decibels	Level Meter	$dB = 10 \log (S/S_0)$	Represented by crests and troughs on a wave graph
Envelope	How a sound's amplitude changes over time	Articulation	Decibels across time	Seen visually in waveform	<p>Peak amplitude: Highest point of amplitude in sound.</p> <p>Average amplitude: Amplitude in db/# of amplitude readings taken for a given sound</p>	

MATH AND MUSIC

Algebra Featuring Mickey Hart



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Frequency	How low or high a sound is	Pitch	Hertz	Oscilloscope	$f = v / \lambda$ f = frequency (Hertz) v = wave speed (in meters per second) λ = the length of the wave (in meters)	Human hearing is around 20-20,000 hz
Spectrum	The multiple frequencies created by a single instrument or object	Overtone series	Decibels of frequencies	Spectrogram		Divided into: Sub-Bass (16-60 Hz) Bass (60-250 Hz) Low Mids (250-2000 Hz) High Mids (2000-4000 Hz) Presence (4000-6000 Hz) and Brilliance (6000-16000 Hz)