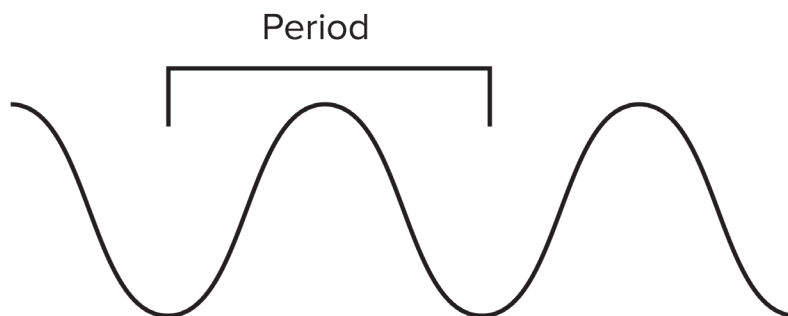
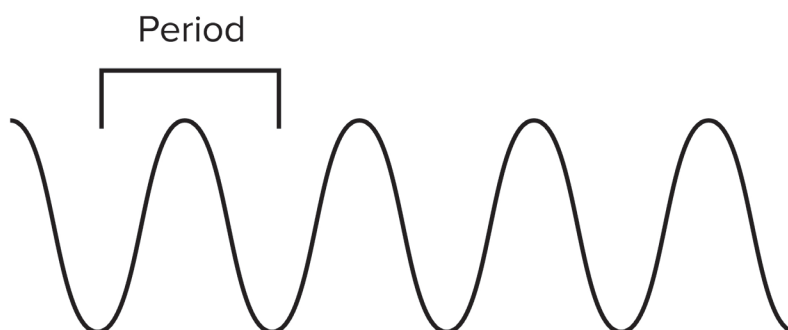


Handout - Frequency

Lower Frequency



Higher Frequency



Frequency measures the “highness” or “lowness” of a sound. In musical terminology, this is known as pitch. The tool often used to display frequency is called an **oscilloscope**.

Frequency is calculated in **hertz**, which measures how many cycles occur in one second. A cycle, or period, is the time it takes for air molecules to cycle between compression and rarefaction. 1 hertz equals 1 cycle per second. Generally, humans are capable of hearing sounds between 20 and 20,000 hertz, though other animals can perceive a greater range of frequencies. A dolphin, for instance, can hear between 75 and 150,000 hertz.

The equation to determine a sound’s frequency is $f = V / \lambda$, where f = frequency (in Hertz), V = the velocity or speed the wave moves (in meters per second), and λ = the length of the wave (in meters).

Algebra Featuring Mickey Hart

Activity

Using the formula $f = V / \lambda$, fill out the chart below. Note that in a normal environment in room temperature, sound always moves at a speed (V) of 343 meters/second.

Instrument	Frequency in Hertz (f)	Wave Length in meters (λ)
Cymbals	2868	
Piano	1760	
Saxophone	155	
Bass Guitar	80	

Workspace: