**Physics of Sound Worksheet**

**Useful equations**

$f=\frac{v}{λ}$ $f=\frac{1}{T}$ $β\left(dB\right)=10log⁡\left(\frac{I}{I\_{0}}\right)$

$f=$ frequency $λ=wavelength$ $T=period$

$v=$ wave velocity $β\left(dB\right)=sound intensity$

$I\_{0}=10^{-12}\frac{watts}{m^{2}}$ I0, reference intensity, is the standard threshold of hearing intensity

1. **How does sound move through different media?**
2. **Calculate the wave velocity of the given wave.**

$$λ=4mm$$



x-axis (time in seconds)

1. **A soundwave hits a wall at a rate of 32.2 Hz.**
	1. **What is the period of the wave?**
	2. **Calculate the speed of the wave if the distance between wave crests is 12 meters.**
2. **The speed of sound at room temperature is 346 m/s.**
	1. **What is the frequency of a wave with a wavelength of 2.5 mm?**
	2. **What is the period?**
3. **A quiet library has a sound intensity of 1x10-8 W/m2**
4. **Calculate the sound intensity in dB.**
5. **What is the threshold of pain?**