

NAME \_\_\_\_\_

Write out your fundamental relationships.

The wave function

Wave number versus wavelength

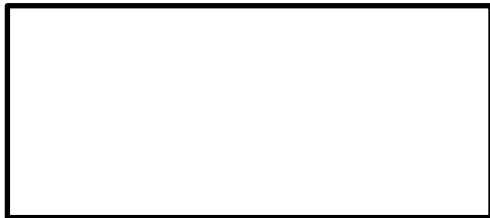
Period versus wavelength

Wave speed

Interference Phase Picture

Destructive Interference

Constructive Interference



General Phase between waves

Resonance – stretched string picture

String length versus lambda



Resonance – Pipe with one closed end

Pipe length versus lambda



**Write out your fundamental relationships.**

The wave function

$$y(x, t) = A \sin(kx - \omega t + \varphi)$$

Wave number versus wavelength

$$k = \frac{2\pi}{\lambda}$$

Period versus wavelength

$$T = \frac{2\pi}{\lambda}$$

Wave speed

$$v = f\lambda$$

Destructive Interference

$$\varphi = (2n + 1)\pi$$

Constructive Interference

$$\varphi = 2n\pi$$

Phase Sources

$$\varphi = k\Delta x + \omega\Delta t + m\pi$$

String length versus lambda

$$L = n \frac{\lambda}{2}$$

Pipe length versus lambda

$$L = n \frac{\lambda}{4}, n = \text{odd}$$

Trig IDs

$$\sin a + \sin b = 2 \cos\left(\frac{a-b}{2}\right) \sin\left(\frac{a+b}{2}\right)$$

$$\sin a - \sin b = 2 \cos\left(\frac{a+b}{2}\right) \sin\left(\frac{a-b}{2}\right)$$