Physics 11 OKM

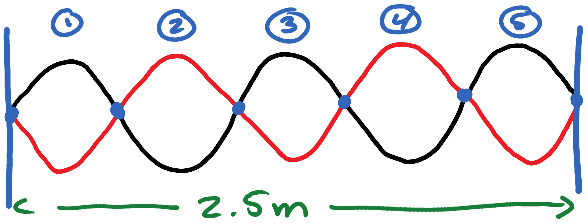
Name_____ Date: _____

Block: ____

Chapter 11 – Vibrations and Waves

1) A string of length 2.5 m is fixed at both ends. When the string vibrates at a frequency of 85 Hz, a standing wave with five antinodes is formed.

Draw the standing wave. Draw two vertical lines at each end of your wave to show the ends of the string.



(a) Determine the distance between two adjacent nodes.

$$d = \frac{2.5\,m}{5} = 0.50\,m$$

Distance = 0.50m

(b) Determine the wavelength of the waves that travel on the string.

$$\lambda = 2(0.50\,m) = 1.0\,m$$

λ = 1.0 m

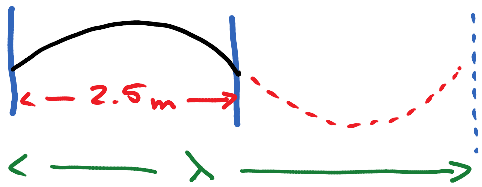
(c) Determine the velocity of waves.

$$v = \lambda f$$

$$= (1.0\,m)(85\,Hz) = 85\,m/s$$

v = 85 m/s

(d) Determine the fundamental frequency of this string.



$\lambda = 2(2.5\,m) = 5.0\,m$

$v = \lambda f \rightarrow f = \frac{v}{\lambda}$

$f = \frac{85\,m/s}{5.0\,m} = 17\,Hz$

f = 17 Hz

Lachapelle