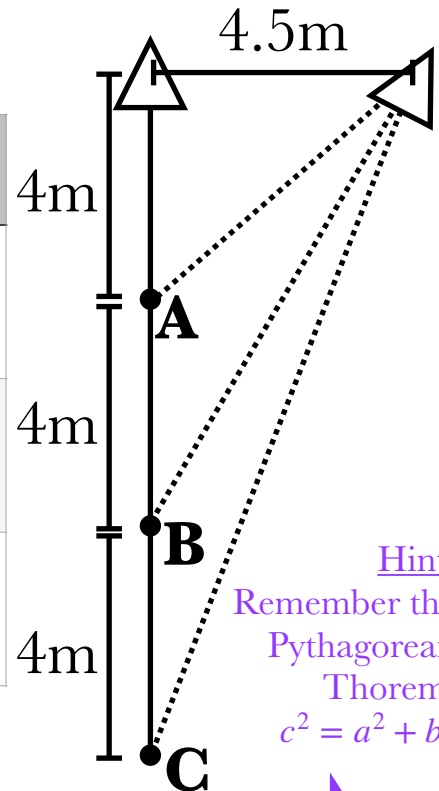


Physics 102 Homework #3

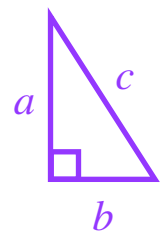
first draft due Wednesday, February 8th
final draft due Sunday, February 12th

1. Two speakers are 4.5 meters apart, in phase, and produce a single sound wave with wavelength $\lambda = 0.8\text{m}$. Three points labelled A, B, and C are 4.0m, 8.0m, and 12.0m below the speaker on the left, as shown. Fill in the table with the required information, and indicate whether the point sees **C**onstructive or **D**estructive interference. (Hint: remember the Pythagorean theorem!)

	L_1	L_2	$\Delta L = L_1 - L_2 $	$\frac{\Delta L}{\lambda}$	C/D
A					
B					
C					

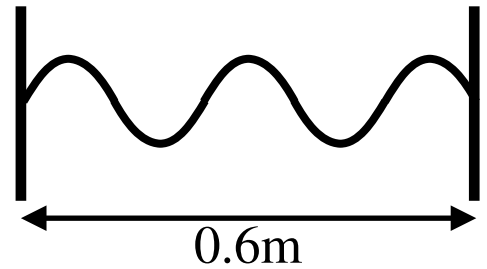


Hint:
Remember the
Pythagorean
Theorem:
 $c^2 = a^2 + b^2$



2. The figure shows a standing wave that is 0.6m long. The frequency of this standing wave is 400Hz.

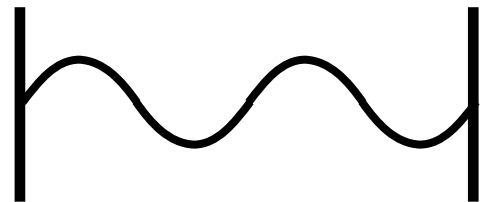
a. What is the wavelength of this wave?



b. What is the fundamental frequency f_1 of this string?

c. How fast would a wave travel on this string?

3. This standing wave has a frequency of 150Hz. The waves on this spring travels at 90m/s. What is the wavelength of this wave?



4. A car is driving away at 30m/s from a speaker that is generating a 550Hz sound. What frequency does the driver of the car hear? The speed of sound in air is 343m/s.

550Hz

