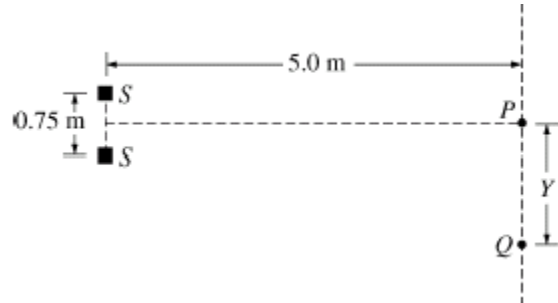


Wave Interference Whiteboard

Two small speakers S are positioned a distance of 0.75 m from each other, as shown in the diagram. The two speakers are each emitting a constant 2500 Hz tone, and the sound waves from the speakers are in phase with each other. A student is standing at point P , which is a distance of 5.0 m from the midpoint between the speakers, and hears a maximum as expected. Assume that reflections from nearby objects are negligible. Use 343 m/s for the speed of sound.



- (a) Calculate the wavelength of these sound waves.
- (b) The student moves a distance Y to point Q and notices that the sound intensity has decreased to a minimum. Calculate the shortest distance the student could have moved to hear this minimum.
- (c) Identify another location on the line that passes through P and Q where the student could stand in order to observe a minimum. Justify your answer.
- i. How would your answer to (b) change if the two speakers were moved closer together? Justify your answer.
- ii. How would your answer to (b) change if the frequency emitted by the two speakers was increased? Justify your answer.