Quiz 1

Two speakers, A and B, are "in phase" and emit a pure note with a wavelength 2 m. The speakers are side-by-side, 3 m apart. Point C is 4 m directly in front of speaker A.

How many wavelengths are between Speaker A and Point C?

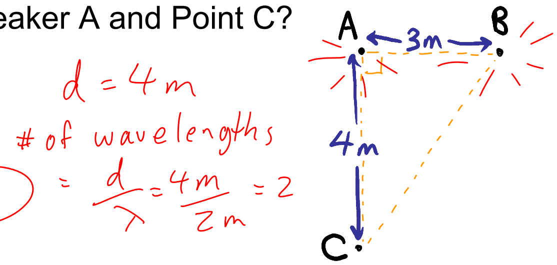
A. 0.5

B. 1.0

C. 1.5

D. 2.0

E. 2.5

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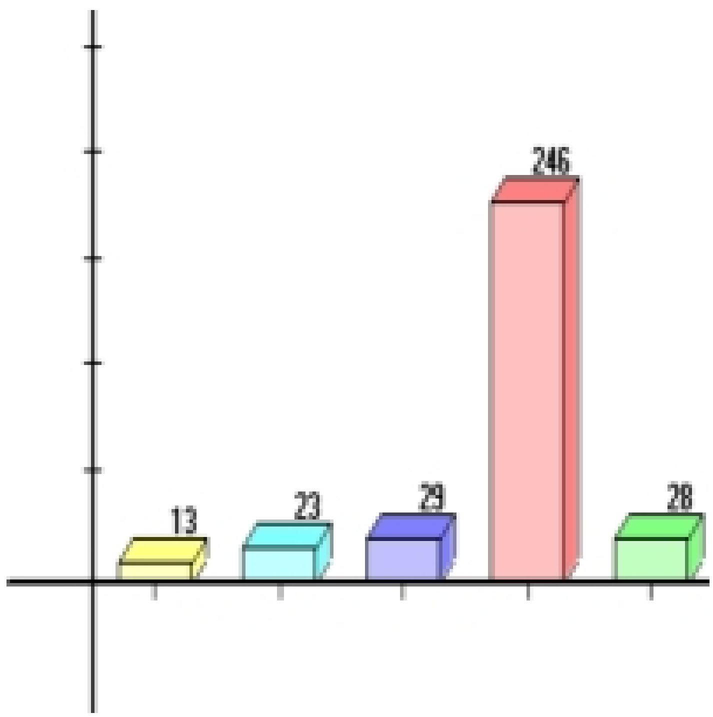


Quiz 2

Two speakers, A and B, are “in phase” and emit a pure note with a wavelength 2 m. The speakers are side-by-side, 3 m apart. Point C is 4 m directly in front of speaker A.

How many wavelengths are between Speaker B and Point C?

A. 0.5

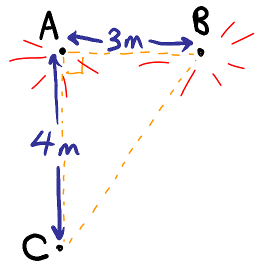
B. 1.0

C. 1.5

D. 2.0

E. 2.5

$\frac{5\,m}{2\,m} = 2.5\ \lambda$'s

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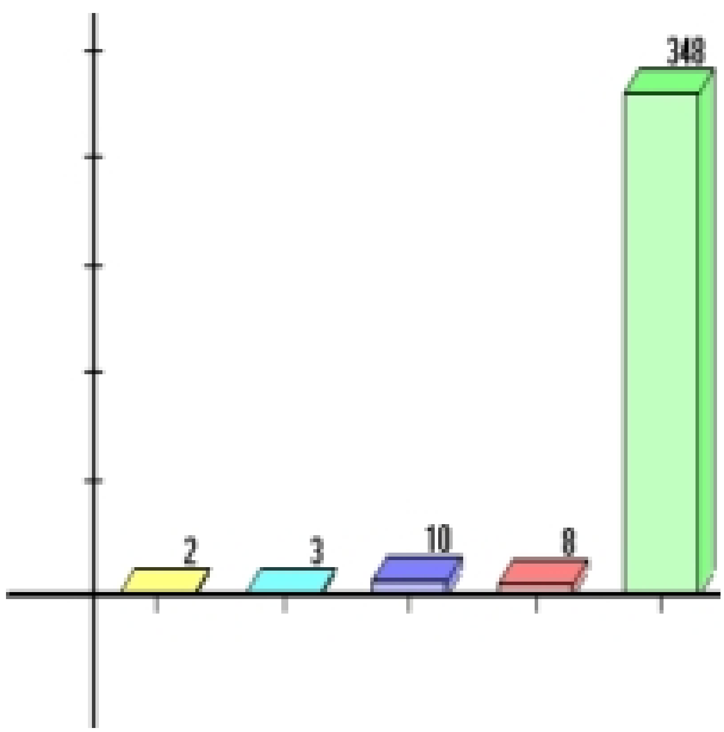


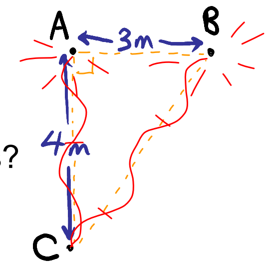
Quiz 3

Two speakers, A and B, are "in phase" and emit a pure note with a wavelength 2 m. The speakers are side-by-side, 3 m apart. Point C is 4 m directly in front of speaker A.

At point C, what is the path difference between the sounds received from speakers A and B, as measured in wavelengths?

A. 0.5 B. 1.0 C. 1.5

D. 2.0 E. 2.5

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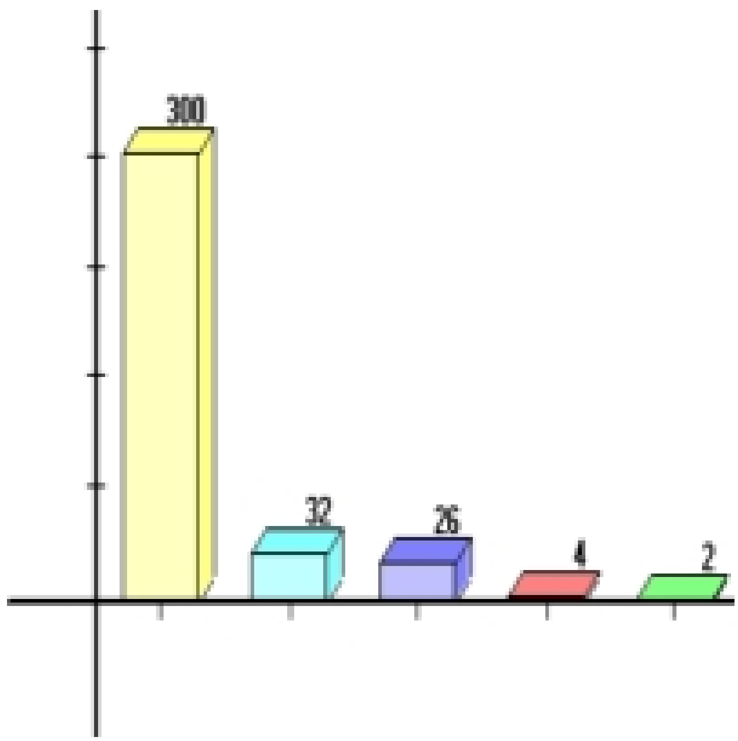
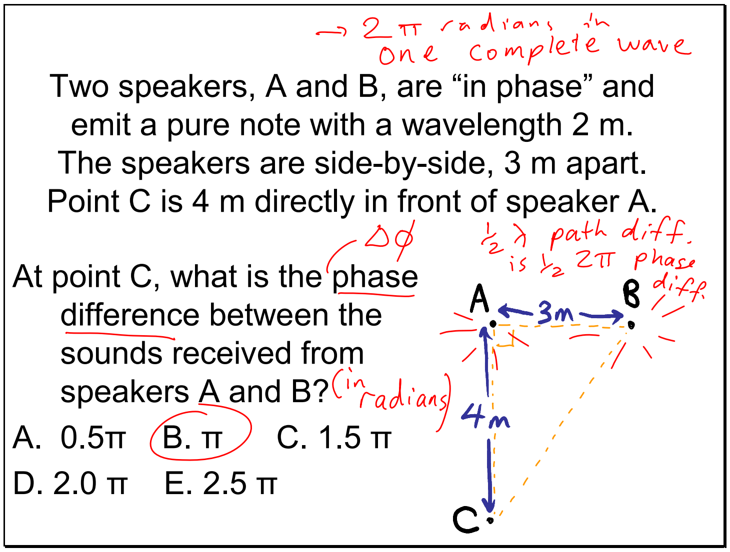


Quiz 4

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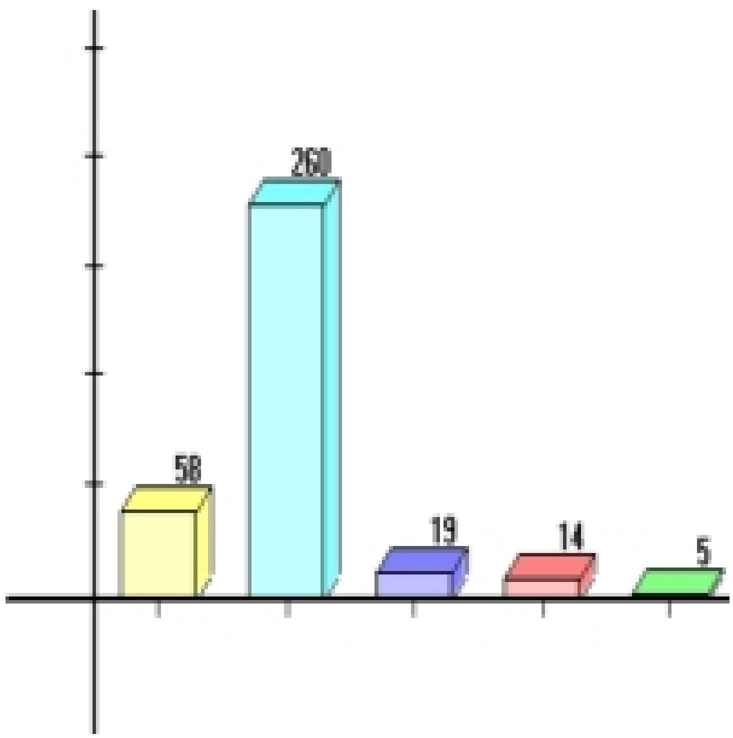



Keep in mind, the actual path difference was 5 m – 4 m = 1 m. The wavelength is 2 m, so this distance is half a full cycle, or pi radians.

Quiz 5

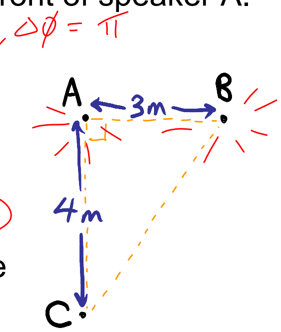
Two speakers, A and B, are "in phase" and emit a pure note with a wavelength 2 m. The speakers are side-by-side, 3 m apart. Point C is 4 m directly in front of speaker A.

At point C, there will be

A. Perfect constructive interference ($A_C$=2A)

B. Perfect destructive interference ($A_C$=zero)

C. Intermediate interference ($0 < A_C < 2A$)

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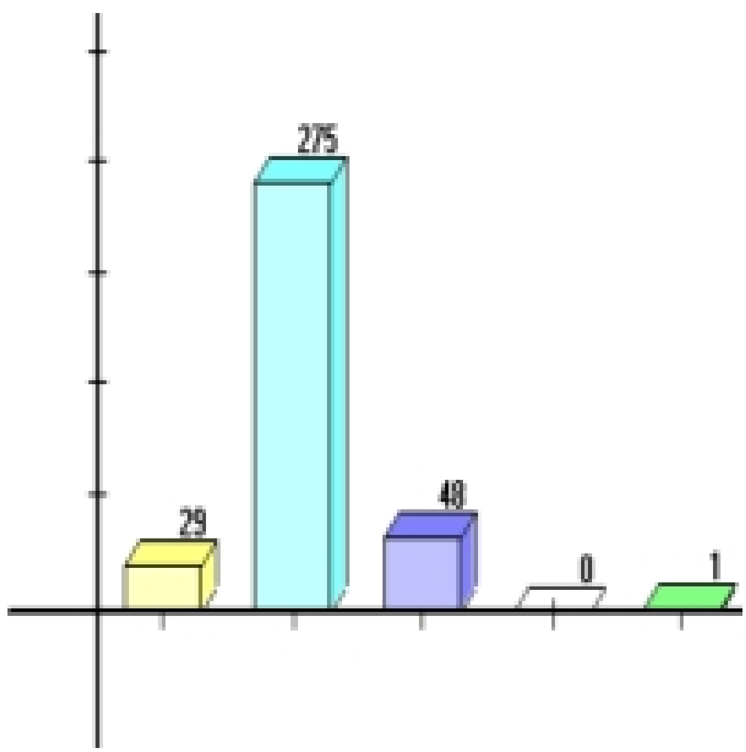



Pi radians phase difference corresponds to perfect destructive interference.

Quiz 6

Two pure notes are played simultaneously. One is A, with a frequency of 440 Hz, the other is C, with a frequency of 520 Hz. What is the beat frequency when these two notes are played together?

A. 40 Hz

B. 80 Hz

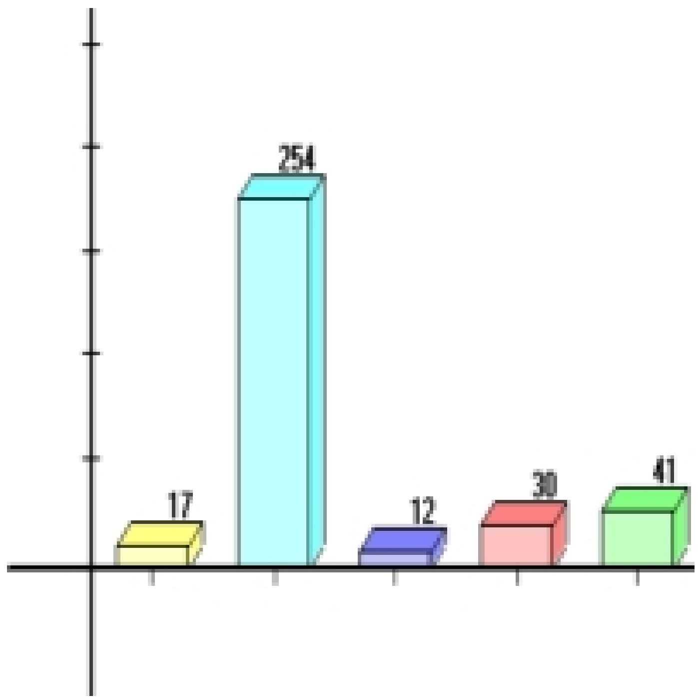
C. 160 Hz

D. 480 Hz

E. No beats can be heard.

Maximum beat freq is ~15 Hz.

Class Vote:




**Congratulations to the 41 people who got this correct! The answer is E!!!**

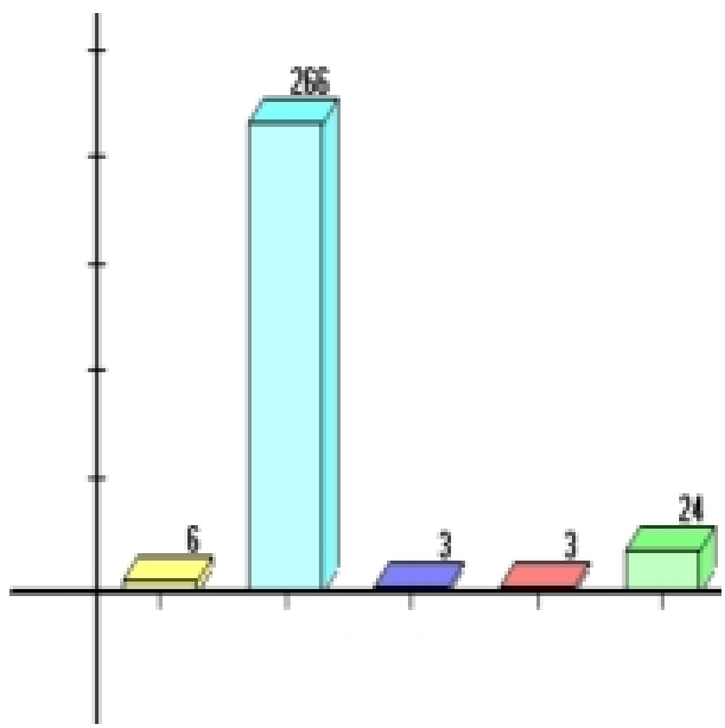
Beats are loud sounds separated by soft sounds. If you blindly trust the equation for beat frequency, you will get 80 Hz. But you need to *think* about this answer. Does it make sense? Do you expect to count 80 loud sounds separated by soft sounds every second? This does not make sense! Beats only occur when the two waves are close to the same frequency.

Quiz 7

Two pure notes are played simultaneously. One is A, with a frequency of 440 Hz, the other is an out of tune A, with a frequency of 439 Hz. What is the beat frequency when these two notes are played together?

A. 0.5 Hz
B. 1 Hz
C. 2 Hz
D. 439.5 Hz
E. No beats can be heard.

Class Vote:




Good. This is correct – you will hear one beat per second.