

CT4.13

Which kind of reflection is far and away the most common for light, in ordinary life?

- A) Specular
- B) Diffuse

4.13

I play a bass note facing an indoor climbing wall, the sound is reflected off the surface, what will happen? (the note has a wavelength of about 5 meters)

- a) The sound will largely reflect diffusely because the surface is rough
- b) The sound will largely reflect specularly because the surface is smooth
- c) The sound will all be absorbed because the surface is rough
- d) The sound will diffract because the bumps and holes are small
- e) ??

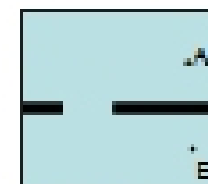
CT4.14

If the bumps and irregularities on the wall are about 30 cm wide (or smaller), which frequencies of sound are most likely to reflect diffusely? (i.e. what's the "cutoff"?)

- A) Frequencies above 10 Hz
- B) Frequencies below 10 Hz
- C) Frequencies above 1000 Hz
- D) Frequencies below 1000 Hz
- E) ???

4.14

How can it be that a sound produced by A reaches B if the wall between them strongly absorbs sound? (Which is the best reason?)



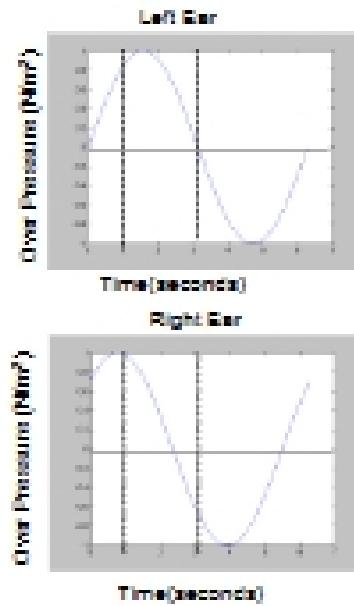
(Assume other walls are smooth)

- a) Because the sound reflects once
- b) Because the sound reflects many times
- c) Because of diffraction through the opening
- d) Some other reason is most important
- e) It wouldn't reach B

4.22

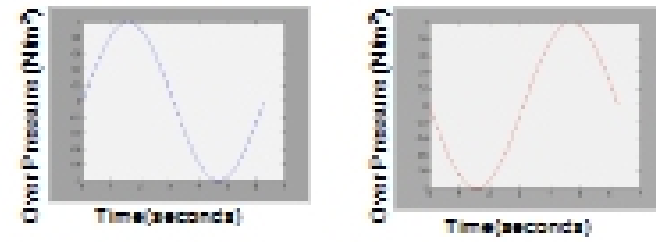
If you hear the following two waves in your left and right ear where would you likely perceive the sound coming from? From...

- a) ... above you
- b) ... below you
- c) ... your right
- d) ... your left
- e) ??

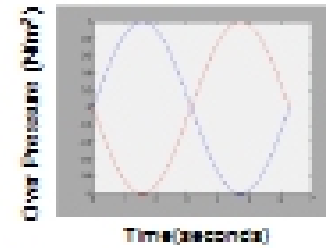


4.23

Looking at the following two waves:

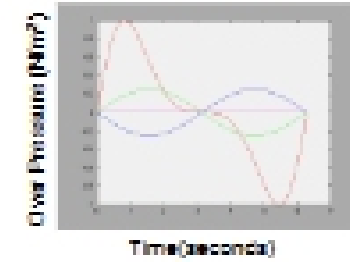


Here they are graphed together:



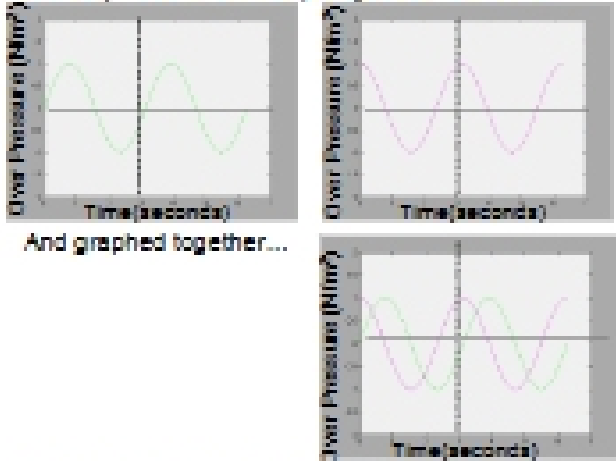
Which of the waveforms shown below represents the sum of the above two?

- a) Pink
- b) Green
- c) Blue
- d) Red
- e) None of these

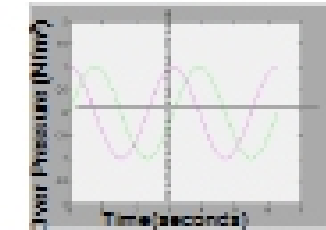


4.24

Same question as before, but just a tad harder...

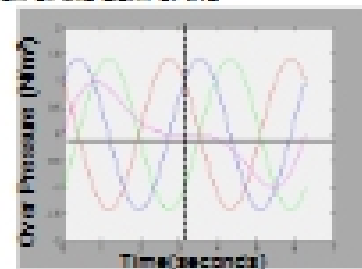


And graphed together...



Which is a representation of the sum of the two waveforms?

- a) Pink
- b) Green
- c) Blue
- d) Red
- e) ??



4.25

Which pairs of tones would have a slow very distinct beat?

- a) 10 Hz and 20 Hz
- b) 100 Hz and 120 Hz
- c) 100 Hz and 102 Hz
- d) None of these
- e) Not enough information

4.3.3

Suppose there are two tones. The first tone is 440 Hz and the second is 442 Hz. What would happen to the beats, if the second tone was lowered to 438 Hz?

- a) The beats would be more frequent.
- b) The beats would be less frequent.
- c) The beats would be a little softer.
- d) The beats would be a little louder.
- e) Nothing.

CT4.5.4x

Suppose the two speakers in the room are playing the same steady frequency, but one is "reverse wired" (so they're exactly out of phase) I'm standing on the "midline". What do I hear?

- A) Steady, loud pitch
- B) Steady pitch, same as either one of the speakers alone
- C) Silence
- D) Beats
- E) Something else/???

CT 4.5.2a

#### Two waves traveling in the same direction

Imagine two traveling sin waves (same frequency, in phase, or "in synch") traveling together (same direction, starting in the same place)

What happens when they "superpose"?

- A) A traveling wave, same as either one individually
- B) A traveling wave, twice the amplitude of either one
- C) A traveling wave that gets bigger and smaller, bigger and smaller, in amplitude (beats)
- D) A standing wave
- E) ?? (something else)

CT 4.5.2b

#### Two waves traveling in opposite directions

Imagine two sin waves (same frequency) traveling towards each other (opposite directions, passing through each other). What happens when they "superpose"?

- A) A traveling wave, same as either one individually
- B) A traveling wave, twice the amplitude of either one
- C) A traveling wave that gets bigger and smaller, bigger and smaller, in amplitude (beats)
- D) A standing wave
- E) ?? (something else)