Speed of Sound versus Speed of Light

Mastery

If thunder is heard 5 seconds after lightening is seen, how far has the sound traveled?

Use 331[m/s] for the speed of sound and distance = v*t.

There is another saying that sound travels a mile in 5 seconds. Is this true?

Using the fact that 1600 [m] = 1 [mi.]

How many miles does light travel in a second? Use $c = 3.00 \times 10^8$ [m/s]

Interpersonal

In the Sounds of Summer video, we saw the delay for sound to travel to the top of Yankee Stadium.

Describe an experiment you can devise to observe the speed of sound and light together in this setting.

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Understanding

A. A Sound travels at about 331 [m/s].
B. The fastest humans can sprint at approximately 11 [m/s].
C. Highway speeds are about 30 [m/s].
D. Light travels through air at a speed of about 300,000,000 [m/s].

If distance = v*t, how long in seconds will it take to travel 1000 [m]?

A._____ B._____

C._____ D._____

Compare your results below:

_____
_____
_____

Self-Expressive

Humans can observe a detectable time delay between the thunder and lightning during a storm. The arrival of the light wave from the location of the lightning strike occurs in so little time that it is essentially negligible. Yet the arrival of the sound wave from the location of the lightning strike occurs much later.

Explain how this is possible:

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