

II. Wave Speed

1. Write out the equation to determine wave speed (with regards to wavelength & frequency).

Wave Speed = $v = \frac{\text{wavelength (m)}}{\text{period (s)}}$ $v = \frac{\lambda}{T}$

$v = f \times \lambda$ $v = f \lambda$

2. What determines the speed of a sound wave?

- Medium it travels through (Temp. + Pressure too!)

3. Rate the speed of sound in the following mediums. [1 = fastest; 3 = slowest]

3 - Gases 2 - Liquids 1 - Solids

4. Rate how tightly bound the molecules are in each type of matter. [1 = tightly; 3 = loosely]

3 - Gases 2 - Liquids 1 - Solids

Steel = 15x faster than air
Water = 4x faster than air

5. The speed of light has no upper limit.

Circle One: True False

6. What is the speed of light?

$c = 186,000$ miles / second

III. The Doppler Effect

1. Define the term pitch.

Pitch - how high or low a sound seems (determined by frequency)

Cell Phones
- High Pitch Noise

2. A higher pitch corresponds with a higher frequency.

Circle One: True False \downarrow Pitch = \downarrow Frequency

3. Define the term Doppler effect.

Doppler Effect - observed change in the frequency of a wave when the source or observer is moving

4. For a stationary observer, as a moving sound approaches, the observer will first hear a higher frequency of sound and then a lower frequency as the source moves away.

5. The Doppler effect is a change in sound frequencies caused by movement of :

1. Sound Source 2. Observer 3. Both

6. Besides sound wave applications, how is the Doppler effect used?

1. Radar Guns (clock vehicle speeds) 2. Weather Radar (winds, precipitation, storms)

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Speed of Sound
346 m/s

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YouTube

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TUNING FORK DEMO

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