

Mock Waves Test

1. Basic Waves

A. What is the period of a wave with a frequency of 250 Hz? (0.0040 s)

B. What is the wavelength of a sound wave with a frequency of 440 Hz traveling at 343 m/s? (0.780 m)

C. What is the frequency of a radio wave that is 50.0 m long? ($v = c = 3.00 \times 10^8$ m/s) (6.00×10^6 Hz or 6.00 MHz)

2. Standing Waves:

A. Calculate the **wavelengths** below. The length given is the length of the waveform (The picture)



$$L = 445 \text{ cm}$$

(356 cm)



$$L = 0.64 \text{ m}$$

(1.28 m)



$$L = 1.48 \text{ m}$$

(1.48 m)

B. If this wavelength is 24 cm long, how long is this standing wave?



(18 cm)

C. A guitar has strings that are 0.65 m long, and there is a wave speed of 245 m/s along its strings. What is the frequency of the third harmonic? (The third possible mode of resonance) (565.4 Hz)

3. Doppler (use 343 m/s as the speed of sound)

A. You fly 185 m/s toward a stationary tuba playing a frequency of 62.0 Hz. What frequency do you hear?

(95.4 Hz)

B. An ice cream truck with a frequency of 986 Hz is driving 21.0 m/s away from you. What frequency do you hear? (929 Hz)

C. A violinist rides a Segway toward you at 14.70 m/s. You hear a frequency of 1120. Hz, what frequency are they really playing? (1072 Hz)