

Properties of Sound Waves

Read from **Lesson 2** of the **Sound and Music** chapter at **The Physics Classroom**:

<http://www.physicsclassroom.com/Class/sound/u1112a.cfm>

<http://www.physicsclassroom.com/Class/sound/u1112b.cfm>

<http://www.physicsclassroom.com/Class/sound/u1112c.cfm>

MOP Connection: Sound and Music: sublevel 2

Review:

Match the following wave quantities to the *mini-definition*. Place the letter in the blank.

A. Frequency B. Period C. Speed D. Wavelength E. Amplitude

- C 1. **How fast** the wave moves through the medium.
- D 2. **How long** the wave is.
- A 3. **How often** the particles vibrate about their fixed position.
- B 4. **How much time** it takes the particles to complete a vibrational cycle.
- E 5. **How far** the particles vibrate away from their resting position.
6. A sound wave with its characteristic pattern of compressions and rarefactions is shown below. A centimeter ruler is included below the pattern. The wavelength of this sound wave is ~1.7 cm.



7. The pitch of a sound is directly related to the frequency of the sound wave.
 a. frequency b. wavelength c. speed d. amplitude
8. High pitched sounds have relatively large frequency and small wavelength .
 a. period, wavelength b. speed, period
 c. frequency, wavelength d. period, frequency
 e. amplitude, wavelength f. amplitude, speed
9. As the frequency of a sound increases, the wavelength decreases and the period decreases .
 a. increases, decreases b. decreases, increases
 c. increases, increases d. decreases, decreases
10. A sound wave is described as being 384 waves/s. This quantity describes the wave's frequency .
 a. frequency b. period c. speed d. wavelength
11. The speed of a sound wave depends upon the _____. **Answer: D**
 a. frequency of the wave b. wavelength of the wave
 c. amplitude of the wave d. properties of the medium through which it moves
12. If a person yells (as opposed to whispering), then it will cause _____. **Answer: C**
 a. air molecules to vibrate more frequently
 b. the sound wave to travel faster
 c. air molecules to vibrate with greater amplitude
13. If a person yells (as opposed to whispering), then it will cause _____. **Answer: C**
 a. the pitch of the sound to be higher
 b. the speed of the sound to be faster
 c. the loudness of the sound to be louder