Properties of Sound Waves

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

http://www.physicsclassroom.com/Class/sound/u11l2a.html
http://www.physicsclassroom.com/Class/sound/u11l2b.html
http://www.physicsclassroom.com/Class/sound/u11l2c.html

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

1. How fast the wave moves through the medium.
2. How long the wave is.
3. How often the particles vibrate about their fixed position.
4. How much time it takes the particles to complete a vibrational cycle.
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 _____ cm.

7. The pitch of a sound is directly related to the ______ of the sound wave.
   a. frequency  b. wavelength  c. speed  d. amplitude

8. High pitched sounds have relatively large ______ and small ______.
   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 ______ and the period ______.
   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 ______.
    a. frequency  b. period  c. speed  d. wavelength

11. The speed of a sound wave depends upon the ______.
    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 ______.
    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 ______.
    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