

PLEASE DO NOT WRITE ON THE TEST. PLACE ALL MULTIPLE CHOICE ANSWERS ON THE SCANTRON. (THANK YOU FOR SAVING A TREE.)

Sound Waves Test -- each multiple choice question is worth 3 points.

1. Sound waves are made up of chains of vibrating
 - a. molecules
 - b. dense
 - c. rarefaction
 - d. longitudinal
2. A(n) _____ is a high-pressure area of tightly packed molecules.
 - a. molecules
 - b. compression
 - c. rarefaction
 - d. longitudinal
3. A(n) _____ is a low-pressure area of loosely-packed molecules.
 - a. molecules
 - b. compression
 - c. rarefaction
 - d. longitudinal
4. What do seismic waves and sound waves have in common?
 - a. they are mechanical waves
 - b. they are electromagnetic waves
 - c. they are phonetic waves
 - d. they are permanent waves
5. What does it mean when a wave's amplitude increases?
 - a. its frequency also increases
 - b. it's moving through a denser medium
 - c. its wavelength gets longer
 - d. it is carrying more energy
6. What do waves carry from place to place?
 - a. energy, but not matter
 - b. energy and matter
 - c. matter, but not energy
 - d. neither energy nor matter
7. How are ocean waves different from sound waves?
 - a. ocean waves are longitudinal waves, sound waves are transverse waves
 - b. ocean waves are electromagnetic waves, sound waves are mechanical waves
 - c. ocean waves are mechanical waves, sound waves are electromagnetic waves
 - d. ocean waves are transverse waves, sound waves are longitudinal waves
8. How are sound waves like ripples in a pond?
 - a. they are both types of electromagnetic radiation
 - b. they travel faster in water than they do in the air
 - c. they radiate outward from a central point
 - d. they have the same wavelengths

9. How is your eardrum like a real drum?
 - a. it produces sound
 - b. it vibrates
 - c. it is frequently struck by the bones in your middle ear
 - d. it is hollow

10. What is unique about the hammer, stirrup, and anvil?
 - a. they are the smallest bones in your body and are in your ear
 - b. they are the only bones in your body that move
 - c. they are the only bones located in your head
 - d. they are the only bones that cannot be broken

11. What are sound waves in the range above 20,000 hertz?
 - a. decibel
 - b. ultrasound
 - c. rarefaction
 - d. intensity

12. What instruments use echolocation to locate objects?
 - a. vacuum
 - b. Doppler effect
 - c. sonar
 - d. acoustics

13. The unit used to measure the frequency of sound is?
 - a. decibel
 - b. ultrasound
 - c. rarefaction
 - d. hertz

14. When a sound can be heard it is called?
 - a. decibel
 - b. ultrasound
 - c. audible
 - d. rarefaction

15. What do sound waves have in common with other mechanical waves?
 - a. decibel
 - b. ultrasound
 - c. rarefaction
 - d. they transfer energy

16. Which two factors affect the speed of sound?
 - a. material and density
 - b. material and temperature of the medium
 - c. temperature of the medium and density
 - d. none of the above

17. How is frequency related to pitch?
- the higher the frequency of the sound wave, the higher pitched the sound
 - the higher the frequency of the sound wave, the lower pitched the sound
 - the lower the frequency of the sound wave, the higher pitched the sound
 - there is no relationship between frequency and pitch
18. The strengthening of a sound wave when it combines with an object's natural vibration is?
- decibel
 - resonance
 - rarefaction
 - sonar
19. A sound wave is a
- transverse wave caused by the compression of particles
 - transverse wave that passes through a vacuum
 - longitudinal wave produced by the motion of water
 - longitudinal wave caused by the vibration of a medium
20. Your vocal cords produce sound in much the same manner as a
- wind instrument
 - stringed instrument
 - percussion instrument
 - electronic instrument
21. A sound wave transfers kinetic energy by
- moving air particles across great distances
 - creating high and low pressure areas that push and pull the air around them
 - creating a vacuum between areas of air particles
 - filling the space left when a vibrating object moves in a direction opposite to the wave's motion
22. Two notes have the same pitch but different timbres. This is because each is made up of sound waves with different
- amplitudes
 - frequencies
 - intensities
 - speeds
23. To increase the loudness of a sound, you should
- decrease the amount of energy in it
 - decrease its wavelength
 - increase its intensity
 - increase its speed
24. When you speak to a friend on the telephone, the vibrations caused by your voice are
- recorded as small pits on the surface of a plastic disc
 - transmitted directly as sound waves to the other person
 - transmitted by the vibrations of the telephone wire
 - converted into electrical signals and sent through wires

25. How are earthquakes, sound, and light waves alike?
- they transmit energy
 - they carry matter
 - they travel in space
 - they can be seen
26. Which **best** explains the relationship between the speed of sound and the medium through which it passes?
- sound travels faster in solids because of the increased distance between solid particles
 - sound travels faster in air because of the decreased distance between air particles
 - sound travels slower in air because of the increased distance between air particles
 - sound travels slower in solids because of the decreased distance between solid particles
27. Josephine adds thicker strings to her guitar. What does that do?
- it prevents the guitar from using air particles to transfer the sound
 - it changes the number of strings on the guitar
 - it changes the vibrations made by the guitar
 - it prevents the guitar from making sounds

Review:

28. Which is composed of matter?
- electricity
 - an atom
 - light
 - heat
29. How are the atoms in an object affected when the temperature of the object increases?
- they join together
 - they vibrate faster
 - they vibrate slower
 - they split apart
30. In which situation would the atoms in an object begin to move closer together during a phase change?
- heat is removed as a gas turns into a liquid
 - heat is removed as a liquid turns into a gas
 - heat is added as a solid turns into a gas
 - heat is added as a liquid turns into a solid
31. How does 250mL of water compare to 50 mL of water?
- they have the same melting point but different boiling points
 - they have the same boiling point but different melting points
 - they have the same volume but different densities
 - they have the same density but different volumes

Name: _____ Period _____

Short answer/constructed response questions. Please answer each question below.

32. Other than communication, what are three uses of sound? (Warm-Up#10; pC58) (3 points)

Sequence chart:

Write the events in the correct sequence below (put them in order of occurrence). (4 points)

- A. Sound waves race out from the wind chime
- B. Gradually the chime sound weakens
- C. A breeze makes a wind chime vibrate
- D. A person nearby hears the wind chime

1. _____ → 2. _____ → 3. _____ → 4. _____

Bonus questions:

Critical thinking – evaluate. (5 points)

Suppose an audience watching a science fiction movie hears a loud roar as a spaceship explodes in outer space. Why is this scene unrealistic?

Critical thinking – model. (5 points)

Draw a simple diagram to show how telephone communication works. Begin your diagram with the mouthpiece and end with the earpiece.

Lab – apply. (5 points)

Based on your experience from the Chapter Investigation “Build a Stringed Instrument”, how would you explain the difference between music and noise?