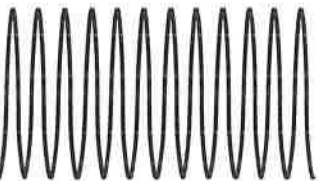


**Waves: Sound & Light Unit
Study Guide**

- Waves transfer.
- Which of the following types of waves requires a medium: microwave, visible light, sound waves or x-rays?
- If a wave is traveling at a certain speed and its frequency is doubled, what happens to the wavelength of that wave? It is _____.
- A wave can make a leaf bob up and down on the water, but it cannot move the leaf toward the shore. This is because waves only transfer _____.
- Which of these waves do NOT require a medium? Sound, ocean, radio, or seismic.
- Which of the following is NOT a property of a wave? Amplitude, frequency, wavelength, refraction.
- An echo is the result of a _____ sound wave.
- A section of a longitudinal wave where the particles are crowded together is called a _____.
- When the crests of one wave overlap the crests of another wave or waves, this occurs: _____.
- Part of a longitudinal wave where the particles are spread apart is called is called a _____.
- Which of the following waves is an example of a mechanical wave: light, x-ray, radio or ocean wave?
- What unit is used to describe the frequency of a wave? _____.
- Why do sound waves travel around corners better than light waves? Sound waves _____.
- A substance through which a wave can travel is a _____.

- When white light is refracted, the amount that the light bends depends on what? The light's _____.
- What kind of waves are used in radar for detecting the speed of a car? _____.
- What kind of waves can be used to treat some cancerous tumors? _____.
- When you increase the frequency of a sound wave...
 - the period will also increase.
 - the period will decrease.
 - pitch will decrease.
 - loudness will increase.
- Mechanical waves can NOT transport...
 - energy
 - material
 - matter
 - answers b and c are correct
- Compared to the speed of light, sound travels...
 - faster.
 - at about the same speed.
 - slower.

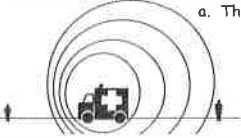
Answer questions 35 - 37 based on the wave-form below. The wave was produced when a student sings a tune for 0.03 seconds. Assume the speed of sound in air is 320 m/s.



- How many full waves are there?
 - 11
 - 12
 - 13
 - 6
- What is the waves frequency?
 - 400 hz
 - 366 hz
 - 120 hz
 - 40 hz
- What is its wavelength?
 - 0.8 m
 - 12 m
 - 8 m
 - 80 m

- Sound travels faster in water than...
 - steel.
 - air.
 - aluminum
 - space

- Which observer would hear the louder sound?
 - The lady
 - The man
 - They both do



- The amplitude of a sound's waves determines the sound's _____.
- The motion of either the listener or the source of a sound causes the _____.
- The frequency of a sound wave determines the _____ of the sound.
- The medium through which sound waves travel affects the _____ of the sound.
- Which person will experience what happens to sounds due to the Doppler effect? Two friends riding bicycles side-by-side and talking; a father pushing a laughing toddler on a swing; a boy sitting and watching television; a girl running and listening to her radio through earphones. _____.
- Which sound has the highest pitch? 156 Hz (hertz); 258 Hz; 14 dB (decibels); 563 dB
- Electromagnetic waves are produced by the vibration of an _____ field and a _____ field.
- The electromagnetic spectrum is divided into regions by _____.
- What wave interaction occurs when waves combine and the resulting wave has a greater amplitude than the individual waves had? _____.
- What wave interaction occurs when waves combine and the resulting wave has a smaller amplitude than the individual waves had? _____.
- Whether an object is transparent, translucent, or opaque is determined by its ability to _____ light.
- What are the primary colors of light? _____.
- What are the primary colors of pigments? _____.
- How does the result of mixing the primary colors of light compare to the result of mixing the primary colors of pigment? _____.
- A singer shattering crystal glass with her voice is a demonstration of...
 - resonance.
 - sound refraction.
 - an echo.
 - interference.
- The three primary colors of light for additive color mixing are...
 - red, green, and blue.
 - yellow, green, and blue.
 - red yellow, and blue
 - red, yellow, and green
- When red and blue light shine on a white sheet, the resulting color is...
 - yellow.
 - blue.
 - cyan.
 - green.
 - magenta.
- When red and green light shine on a white sheet, the resulting color is...
 - blue.
 - green.
 - yellow.
 - magenta.
 - cyan.
- The cyan color of ocean water is evidence that the water absorbs...
 - yellow.
 - green.
 - orange.
 - blue.
 - red.
- Compared to its speed in air, the speed of light in water is...
 - slower.
 - the same.
 - faster.
- Refraction is caused by...
 - waves encountering a gap.
 - more than one reflection.
 - displaced images.
 - changing waves speeds at a boundary.
- Refraction...
 - can occur when a wave changes speed.
 - cannot occur at a boundary
 - only occurs with mechanical waves
 - only occurs with light waves
- A penny lies in the bottom of a tea cup filled with water. As you look down on the penny, compared to its actual depth, it looks...
 - closer.
 - farther away.
 - at the same depth.
- The image produced by a plane mirror is...
 - real
 - virtual
 - magnified
 - inverted

Waves and Light Study Guide

1. Define Waves:

2. What are the two types of waves? Draw a diagram of each wave and label the parts to the waves.

3. The higher the amplitude the greater the _____ and _____

4. The shorter the wavelength, the higher the _____

5. The higher the frequency the higher the _____

6. Define electromagnetic waves.

7. List the electromagnetic waves in order from shorter wavelength (higher frequency) to longer wavelength (lower frequency).

8. The shorter the wavelength, the _____ the frequency. Also the longer the wavelength the _____ the frequency.

9. Define Visible Spectrum:

10. List the colors of ROYGBIV

11. As you move from left to right on the spectrum, does the wavelength increase or decrease?

12. Which value has the longer wavelength (shorter frequency)?

- A. Radio waves or gamma rays?
- B. Infrared or visible light?
- C. X-rays or ultraviolet?

13. What is the "Law of Reflection"?

14. What is Snell's Law (Law of Refraction)?

15. Why does the sky look blue?

16. Seeing black means that all colors are _____ no color is reflected.

17. Seeing white means that no colors are _____ all colors are _____

18. Why should people wear white or light colors on hot sunny days?

19. Define refraction.

24. Sound and light travel at different speeds through different states of matter. List the order from slowest to fastest for sound waves and light waves.