

300

What is the angle of reflection? \_\_\_\_\_30\_\_\_\_\_\_\_ This is an example of \_refraction\_\_\_\_\_

 Below is an example of a \_\_standing\_ wave



antinodes

nodes

This is an example of \_\_diffraction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw and label the new waves below

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sound & Light – chapter 1 Study Guide

1. Measure of a wave from the rest position to the crest or trough - **amplitude**

2. Where the particles are spread out on a longitudinal wave - **rarefaction**

3. The highest part of a transverse wave -  **crest**

4. When two waves combine to make a wave with a larger amplitude -  **constructive interference**

5. The bending of a wave around a barrier - **diffraction**

6. A wave that is a combination of a transverse wave and a longitudinal wave is a -  **surface wave**

7. Two waves combine to make a wave that is smaller or has zero amplitude -  **destructive interference**

8. The number of complete waves that pass a given point in a certain amount of time -  **frequency (Hz)**

9. A wave that requires a medium through which to travel -  **mechanical wave**

10. Another word for “to be at right angles” -  **perpendicular**

11. Where the particles are crowded together on a longitudinal wave -  **compression**

12. The bouncing back of a wave when it hits a surface it can’t pass through -  **reflection**

13. The bending of waves as they enter a new medium -  **refraction**

14. A repeated back and forth and up and down motion -  **vibration**

15. The interaction between waves that meet -  **interference**

16. The distance from any point on a wave to an identical point on the next wave -  **wavelength**

17. An example of a medium through which a mechanical wave could travel – (you pick two to write down)

**Rope, air, water, wooden snake, slinky**

18. Material through which a wave travels -  **medium**

19. The lowest point of a transverse wave -  **trough**

20. A disturbance that transfers energy from place to place -  **wave**

21. How far the wave travels in a given amount of time -  **speed**

22. Speed, frequency and wavelength are related by a **mathematical formula**.

 **Fill in the triangle and then write out the three formulas below.**

 S = W x F W = S F = S

 F W

23. If a wave travels at 336 cm/s and has a frequency of 32Hz, it wavelength would be?

 1. 3.

 10.5

 W = S 32 336.0

 W 32

 160

 -160

 0

 2. W = 336cm/s 4. W = 10.5 cm

 32 Hz

24. If the wavelength of a wave is 40 cm and its speed is 500 cm/s, what is its frequency?

 12.5

1. F = S 3. 40 500.0

 W 40

 100

 80

 200

 200

 0

1. F = 500cm/s

 40cm 4. F = 12.5 Hz

25. A wave on a lake has a wavelength of 1.45 m and a frequency of 7 Hz. What is the speed of the wave?

1. S= W x F 3. 1.45

 X 7

 10.15

1. S = 1.45m x 7 HZ 4. S = 10.15 m/s

26. The speed of a wave on a rope is 510 cm/s and the wavelength is 60cm. What is the frequency?

 8.5

1. F = S 3. 60 510.0

 W 480

 300

 300

 0

1. F = 510cm/s

 60cm 4. F = 8.5 Hz

27. The speed of a wave on a guitar string is 630 m/s and the frequency is 9000Hz. What is the wavelength of the wave?

 .07

1. W = S 3 . 9000 630.00

 F 63000 0

 0

 2. W = 630 m/s 4. W = .07 m

 9,000Hz

28. A wave on a guitar has a frequency of 28Hz and a wavelength of 16m. What it its speed?

1. S= W x F 3. 28

 X 16

 168

 28

 448

1. S = 28m x 16 HZ 4. S = 448 m/s

29. When finding **frequency** the **unit** will always be - **Hz**

30. Give me three examples of the **unit** answers when finding **speed**. – **m/s, cm/s, km/s, mm/s**

31. Give me three examples of the **unit** answer when finding **wavelength** - **m, cm, km, mm**

32. When you decrease the frequency of a wave the wavelength will (**increase** or decrease) Circle one

 Draw two waves below and increase the frequency of one wave to help you figure out the answer

33. In the video we watched on Galloping Gertie, what was it that the wind matched that caused the bridge to start swaying (vibrating) and fall apart? **The bridges natural frequency (resonance)**

34. Look at the pictures below and tell what type of interference is shown (destructive or constructive), then draw and label the new amplitude of the wave

5

3



1

5

2

3

**Destructive** Interference **Destructive**  Interference **Constructive** Interference

35. Name and label the parts of the waves pictured below.

 1. \_\_\_\_\_\_\_**Transverse wave** \_\_\_\_\_\_\_\_ 7. \_\_\_\_\_\_Longitudinal wave \_\_\_\_\_\_\_\_\_\_\_\_\_

8.

5.

3.

 

10.

9.

6.

4.

2.

2. \_\_\_\_\_rest position \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 8. \_\_\_\_\_\_compression \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_crest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9. \_\_\_\_\_\_rarefaction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_ trough \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10. \_\_\_\_\_wavelength \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_wavelength \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_amplitude \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the numbers on the waves below, write the amplitude and wavelength of each wave – (don’t forget the units)

18 cm

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9 cm

 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 cm

60 cm

20 cm

40 cm

80 cm

Amplitude \_\_\_\_\_\_\_9 cm \_\_\_\_\_\_\_\_\_\_\_\_\_

 Wavelength \_\_\_\_\_20 cm\_\_\_\_\_\_\_\_\_\_\_\_\_

45 cm

31 cm

38 cm

52 cm

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

35 cm

28 cm

 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21 cm

Amplitude \_\_\_\_\_\_\_7 cm\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Wavelength \_\_\_\_\_7 cm\_\_\_\_\_\_\_\_\_\_\_\_\_\_