Properties of Waves Study Guide

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_\_\_\_

Test Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I have studied \_\_\_\_\_\_\_ minutes/hours for this test

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (parent’s signature) am aware that my child has a test schedule and to the best of my knowledge has studied for the test.

Please return this study guide on the date of the test.

1. Draw a picture of a wave that is carrying a great amount of energy
2. When students who are modeling waves by shaking a rope up and down, we know this is a wave because–it has a repeating p\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a specific w\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, f\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and a\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Draw a picture of a wave that has a greatest amount of frequency
4. The waves that carry the most energy are the waves that have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. The distance between two corresponding crest is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. The height of a wave is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. The number of wave cycles that pass a given point in a given time period is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ found as the product of the wavelength and frequency
9. The relationship between amplitude and energy is proportional---which means as the amplitude increases the energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. When wavelength increases, frequency in turn \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. How do wavelength and amplitude differ in simple waves?
    1. Wavelengths are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where as an amplitude refers to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a wave
12. A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a material through which a wave travels.
13. Waves carry \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from place to place
14. The lowest point on a transverse wave is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. The highest point on a transverse wave is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. On a longitudinal wave the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shows the waves coming together
17. One a longitudinal wave the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shows the waves spread apart.
18. Which property of the wave would change if you changed the amount of energy the wave had? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
19. Mechanical waves usually travel fastest through:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
20. The number of waves that pass somewhere in a second is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
21. A wave that can travel through matter and empty space is a: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
22. Which are properties of a mechanical wave? Mark each statement below as either True or False
    1. can be longitudinal or transverse True False
    2. can move through space True False
    3. must have matter to move True False
    4. carries energy True False
23. What are properties of electromagnetic waves? Mark each statement below as either True or False
    1. carry energy True False
    2. can move through space True False
    3. can move through matter True False
24. As a longitudinal wave moves forward, the particles move: Mark each statement below as either True or False
    1. perpendicular to the wave's motion True False
    2. parallel to the wave's motion True False
25. Which of these factors affects how fast a wave moves? Mark each statement below as either True or False
    1. the amplitude of the waves vibration True False
    2. the wavelength of the disturbance in the medium True False
    3. the kind of material it is moving through True False
    4. the type of motion that caused the wave to form True False
26. Transverse waves carry energy \_\_\_\_\_\_\_ to the direction the medium is moving.
27. A longitudinal wave carries energy \_\_\_\_\_\_\_\_\_\_ to the direction the medium is moving.
28. In the Electromagnetic Wave Spectrum which type of light has the lowest energy ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
29. In the Electromagnetic Wave Spectrum which type of light has the highest energy ? **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
30. In the Electromagnetic Wave Spectrum which type of light has the lowest frequency ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
31. In the Electromagnetic Wave Spectrum which type of light has the highest frequency ? **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Use these formula to help solve the problems below

Frequency = speed / wavelength which is measured in \_\_\_\_\_\_\_\_\_\_\_\_

Speed = Frequency \* Wavelength which is measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Wavelength = Speed / Frequency which is measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. A sound wave with a wavelength of 2.5 m travels 330 m/s. Calculate the **frequency** of the wave. You must show the formula, the numbers you used, the final answer and the correct unit label (no naked answers)---

Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show substitutions (what numbers did you place where in the above formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer with correct unit label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If a dolphin is producing a vocalization with frequency of 35 Hz, traveling at 1,470 m/s. What is the **wavelength** of the sound You must show the formula, the numbers you used, the final answer and the correct unit label (no naked answers)---

Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show substitutions (what numbers did you place where in the above formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer with correct unit label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The D string on a violin has a frequency of 293 Hz when it is in tune. Calculate the **period**. (wavelength) You must show the formula, the numbers you used, the final answer and the correct unit label (no naked answers)---

Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show substitutions (what numbers did you place where in the above formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer with correct unit label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_