Name: _____ Date: _____ Period: _____

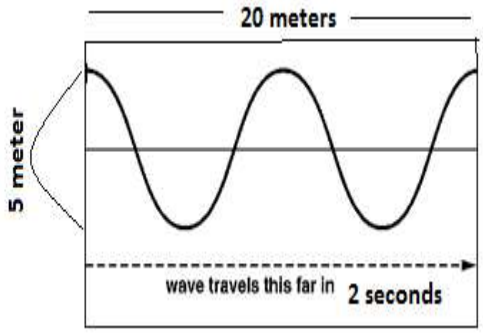
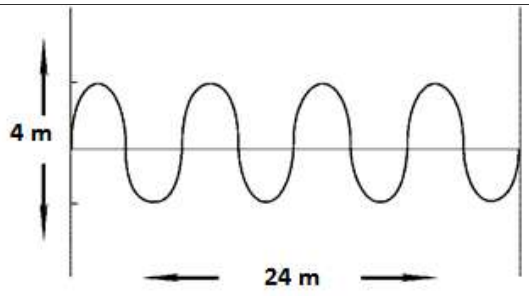
Unit 5 Waves (Chapter 17 & 18) Review Answer Key

1. What do all waves transfer? **Energy**
2. What is a mechanical wave? **A wave that requires a medium.**
3. Give two examples of mechanical waves: **sound waves & ocean waves**
4. What is a longitudinal wave? **A wave in which the particles of the medium travel parallel to the direction of the wave.**
5. Describe the motion of longitudinal waves to the motion of the medium. **Particles of the medium travel parallel to the direction of the wave.**
6. What is a transverse wave? **A wave in which particles of the medium travel perpendicular to the direction of the wave.**
7. Describe the motion of transverse waves to the motion of the medium. **particles of the medium travel perpendicular to the direction of the wave.**
8. When you squeeze together the coils of a spring and then release them what kind of wave are you creating? **Longitudinal (Compressional)**
9. When you swing a jump rope up and down what kind of wave are you creating? **Transverse wave**
10. What is the electromagnetic spectrum? **An arrangement (model) of electromagnetic waves in order of their wavelengths and frequencies.**
11. Give two examples of electromagnetic waves: **Visible light & Ultraviolet**
12. What type of wave MUST have a medium to move through? **Mechanical wave**
13. What type of wave can travel in outer space? **Electromagnetic wave**
14. What is it called when two waves combine in the same space? **Interference**
15. What is destructive interference? **When two or more waves combine so that the resulting wave is smaller than the largest of the original wave.**
16. What is constructive interference? **When two or more waves combine so that the resulting wave is bigger than the largest of the original wave.**
17. What is the Doppler Effect? **The change in the observed frequency of a wave resulting from the motion of the source or observer.**
18. What is reflection? **The bouncing back of a wave as it meets a surface of boundary.**
19. What is refraction? **The bending of waves as they pass from one medium to another.**
20. What is diffraction? **When waves bend around an obstacle or go through a narrow opening.**
21. Sound travels fastest in what medium? **Solid**
22. Sound travels slowest in what medium? **Gas**
23. Electromagnetic waves (light) travel fastest in what medium? **Do NOT need a medium; fastest in a Gas**
24. Electromagnetic waves (light) travel slowest in what medium? **Do NOT need a medium; slowest in a Solid**
25. What is amplitude? **The greatest distance that particles in a medium move from their normal (rest) position when a wave passes. The amplitude describes the energy a wave carries.**

26. How do you measure wavelength? **Wavelength is measured from crest to crest OR trough to trough**.
27. What is the UNIT of wavelength? **Meter (m)**
28. What is frequency? **The number of vibrations that occur in a 1-second time interval.**
29. What is the UNIT of frequency? **Hertz (Hz)**
30. What is period? **The time required for one full wavelength to pass a certain point.**
31. What is the UNIT of period? **Seconds (s)**
32. How are wavelength and energy related? **The shorter the wavelength, the more energy (inversely related).**
33. How are amplitude and energy related? **More energy = larger amplitude (directly related).**
34. How are frequency and wavelength related? **Higher Frequency = shorter wavelength (inversely related).**
35. Name the different waves in the electromagnetic spectrum in order from LOW energy to HIGH energy.

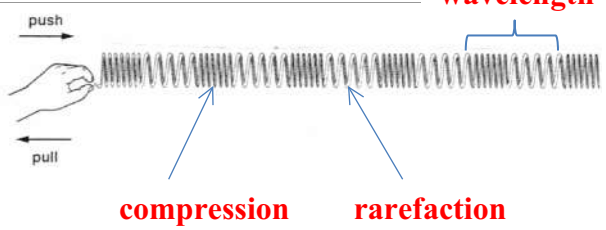
    Radio, Microwave, Infrared, Visible, Ultraviolet, X-ray, Gamma

    (Rabbits Mate In Very Unusual Xciting Gardens)
36. Name the different colors of the VISIBLE LIGHT spectrum in order from LOWEST energy to HIGHEST energy. **Red, Orange, Yellow, Green, Blue, Indigo, Violet (ROY G. BIV)**
37. In the wave shown below what is the:

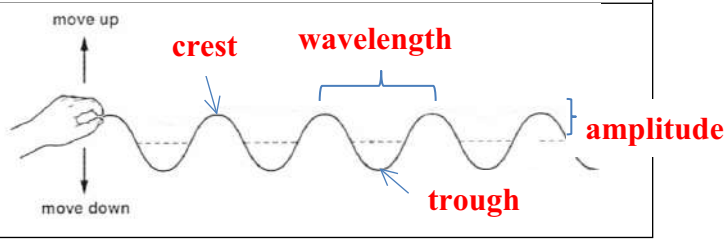
		 Wave travels this far in 4 seconds
a. Length of one wave	**10 m**	**6 m**
b. The amplitude	**Distance from crest to rest: 2.5m**	**2 m**
c. The period	**2 seconds**	**4 seconds**
d. Frequency	**2Hz**	**4 Hz**

38. Label each image as a transverse wave or a longitudinal wave.

Wave A – **Longitudinal Wave**



Wave B – **Transverse Wave**



39. For Wave A label the following: compression, rarefaction, wavelength **see picture above**
40. For Wave B label the following: crest, trough, amplitude, wavelength **see picture above**
41. You are creating a wave on a spring. If you start shaking the spring more slowly, the wavelength of the resulting wave will **increase** / decrease / stay the same.

42. If you are lying on a raft, and you notice that the number of waves that go past the raft increases, you also find that the distance between each crest increases / **decreases** / stays the same.
43. A person is standing still and listening to a siren sounding an alarm. The frequency of the sound is 500 Hz. The person begins running toward the sound at a rate of 20 m/s. The frequency of the sound the person hears will **increase** / decrease / stay the same.
44. The bouncing back of a wave as it meets a surface or boundary is called **reflection.**
45. The bending of a wave as it passes an edge or an opening is called **diffraction.**
46. The bending of waves as they pass from one medium to another is called **refraction.**
47. In **destructive interference**, waves combine so that the resulting wave is smaller than the largest of the original waves.
48. In **constructive interference**, waves combine so that the resulting wave is bigger than the largest of the original waves.
49. Explain the difference between mechanical waves and electromagnetic waves. **Mechanical waves require a medium and electromagnetic waves do not.**
50. An ocean wave has a frequency of 2.0 Hz with a wavelength of 10 m. What is the velocity of the wave? (show your work).

    $V = f \times \lambda$

    $V = 2.0\ Hz \times 10m$

    $V = 20\ m/s$