Name _____ Date _____ Class _____

Chapter Review

Introduction to Waves

Part A. Vocabulary Review

Directions: *Choose the correct term from the list below and write it in the space beside each definition.*

amplitude	compression	diffraction	longitudinal wave
crest	frequency	interference	
law of reflection	medium	rarefaction	reflection
refraction	resonance	standing wave	
transverse wave	trough	wavelength	waves

reflection 1. when a wave strikes an object and bounces off

waves 2. repeating disturbances that transfer energy through matter or space

crest 3. highest point of a transverse wave

Compression 4. region where the medium is crowded and dense in a longitudinal wave

transverse 5. wave that makes matter in the medium move back and forth at right angles to the direction the wave travels

interference 6. ability of two or more waves to combine and form a new wave

trough 7. lowest point of a transverse wave

medium 8. material through which a wave transfers energy

diffraction 9. the bending of waves around a barrier

rarefaction 10. less dense region of a longitudinal wave

resonance 11. ability of an object to vibrate by absorbing energy at its natural frequency

longitudinal Compression 12. wave in which matter in the medium moves back and forth in the same direction the wave travels

wavelength 13. distance between one point in a wave and the nearest point just like it

frequency 14. measure of how many wavelengths pass a fixed point each second

Law of reflection 15. the angle of incidence is equal to the angle of reflection

amplitude 16. measure of the energy in a wave

Standing wave 17. a special type of wave pattern that forms when waves of equal wavelength and amplitude traveling in opposite directions continuously interfere with each other

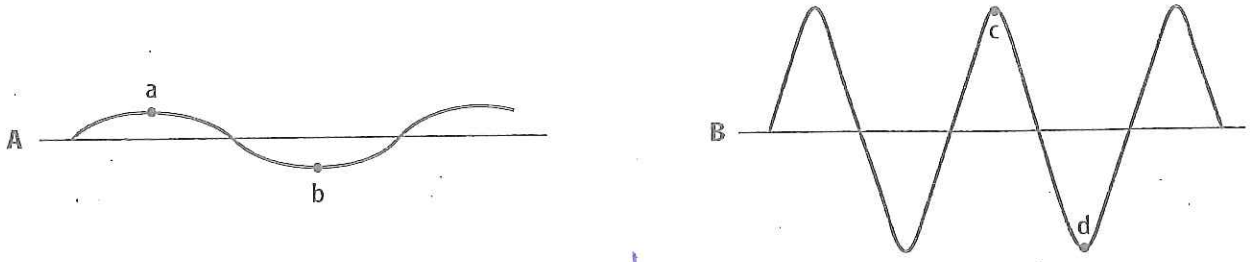
refraction 18. the bending of a wave caused by a change in its speed as it moves from one medium to another

Name Date Class

Chapter Review (continued)

Part B. Concept Review

Directions: *Use the diagram below to answer questions 1–5.*



1. What type of wave is wave A? transverse
2. Which wave carries more energy? B
3. What do points a and c represent? crests
4. What do points b and d represent? troughs
5. How does the frequency of wave B compare with that of wave A?
   2 x as great

Directions: *Using the equation* $v = \lambda \times f$, *find the missing values.*

6. What is the velocity of a wave with a frequency of 760 Hz and a wavelength of 0.45 m?
   $v = \lambda \times f = 0.45\text{m} \times 760\text{Hz} = 320\text{m/s}$
7. A wave with a wavelength of 15 m travels at 330 m/s. Calculate its frequency.
   $f = v/\lambda = 330\text{m/s} \div 15\text{m} = 22\text{ Hz}$

Directions: *Answer the following questions on the lines provided.*

8. How do scientists know that seismic waves can be either compressional or transverse?
   Rock piles are moved in the same direction as a seismic wave, or can move at 90° angles.
9. Why do surfers like water waves with high amplitudes?
   The higher a water ~~waves~~ wave the more energy it carries. Surfer gets faster, longer ride.
10. Will loud sounds from traffic near a school break glass objects inside the school? Explain.
    Glass objects resonate w/ sound at the same freq. of glass. Glass may shatter Traffic noise can be loud but not likely the same freq as glass.

Name _____ Date _____ Class _____

Chapter Test A

Introduction to Waves

I. Testing Concepts

Directions: *In the blank at the left, write the letter of the term that best completes each statement.*

D 1. A _____ is a repeating disturbance or movement that transfers energy through matter or space.
a. medium b. fluid c. material d. wave

A 2. The matter through which mechanical waves travel is called a _____.
a. medium b. substrate c. region d. domain

A 3. The high point on a wave is called its _____.
a. crest b. trough c. rest position d. none of these

B 4. The low point on a wave is called its _____.
a. crest b. trough c. rest position d. none of these

B 5. The less-dense region of a longitudinal wave is called a _____.
a. compression b. rarefaction c. rest position d. none of these

A 6. A _____ is the distance between one point on a wave and the nearest point just like it.
a. wavelength b. frequency c. crest d. trough

B 7. The _____ of a wave is the number of wavelengths that pass a fixed point each second.
a. volume b. frequency c. crest d. trough

A 8. The _____ of a wave is the amount of time it takes one wavelength to pass a point.
a. period b. frequency c. crest d. trough

A 9. The greater a wave's amplitude, the _____ energy the wave carries.
a. more b. less c. both a and b d. none of these

A 10. _____ is the bending of a wave caused by a change in its speed as it moves from one medium to another.
a. Refraction b. Reflection c. Rarefaction d. Fusion

D 11. _____ occurs when an object causes a wave to change direction and bend around it.
a. Refraction b. Reflection c. Correction d. Diffraction

C 12. When two or more waves overlap and combine to form a new wave, the process is called _____.
a. refraction b. reflection c. interference d. diffraction

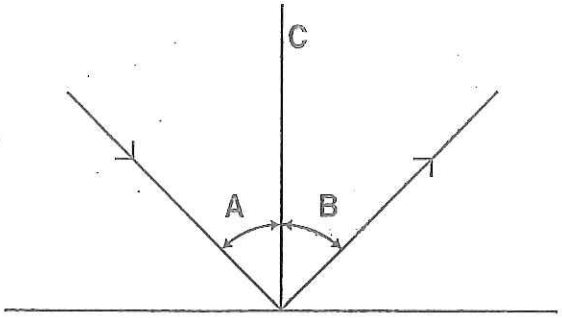
Name Date Class

Chapter Test A (continued)

II. Understanding Concepts

Skill: Interpreting Scientific Illustrations

Directions: *Use the diagram to answer question 1.*



1. In the diagram, identify each part by filling in the blanks below.
   a. ∠ of incidence
   b. ∠ of reflection
   c. normal

Directions: *Label each item on the left as a* **compressional wave, transverse wave,** *or* **both.**

2. ocean wave both or transverse
3. sound of someone laughing compressional
4. sunshine transverse
5. a ripple on a pond transverse
6. a seismic wave both

Skill: Making Generalizations

7. "When an earthquake hits, it causes terrible damage," a friend says. "That depends," another friend answers. On what does it depend, and why?

   Depends on the amplitude of seismic wave. Big Quake large amplitude, lot of destruction

Chapter Test A (continued)

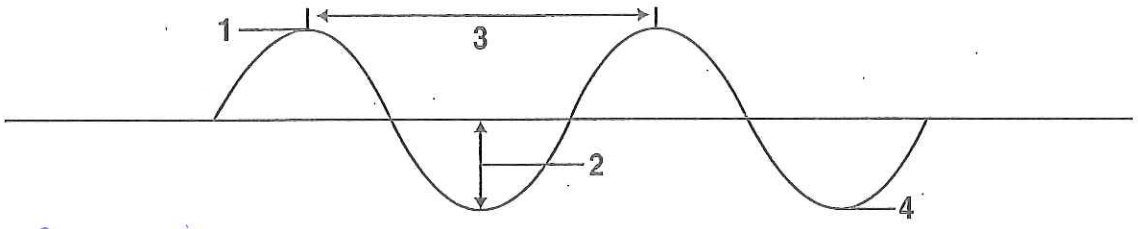
8. Can the medium through which a mechanical wave travels be a solid? A liquid? A gas?

Yes any of these, or combination of these, can serve as medium for mechanical wave.

III. Applying Concepts

Writing Skills

Directions: *For questions 1 through 4, identify the parts of a transverse wave indicated.*



1. crest
2. amplitude
3. wavelength
4. trough

Directions: *Write a multiparagraph essay in answer to the following question. Use additional sheets of paper if necessary. Use the terms* **longitudinal, transverse,** *and* **electromagnetic.**

5. **Imagine** yourself one morning looking in the bathroom mirror while washing your hands in the sink and also listening to the radio. How many waves are you interacting with? Explain.

Water in sink is forming transverse waves.

Radio is forming longitudinal or sound waves, traveling through air to ear.

light waves from sun or lightbulb reflecting on you and mirror.