Name _____ Date _____

Introduction to Waves

Section 1 The Nature of Waves

CHAPTER 9 DRW

Predict *Read the title of Section 1. List three things that might be discussed in this section.*

1. _____
2. _____
3. _____

Review Vocabulary

Define matter to show its scientific meaning.

matter _____

New Vocabulary

Use your book or a dictionary to define the following key terms.

wave _____

medium _____

mechanical wave _____

transverse wave _____

longitudinal wave _____

Academic Vocabulary

Use a dictionary to define transfer.

transfer _____

Name _____ Date _____

Section 1 The Nature of Waves (continued)

Main Idea | **Details**

Waves and Energy

I found this information on page _____.

Model energy transfer *in waves.*

- Draw a sketch of a pebble being dropped in the water and creating waves.
- Draw arrows to show the direction of the energy that is being transferred in the waves.

I found this information on page _____.

Analyze *what happens when waves come into contact with a boat. Explain why they do not move the boat to a different position.*

_____

_____

_____

_____

How do water waves move?, How are ocean waves formed?

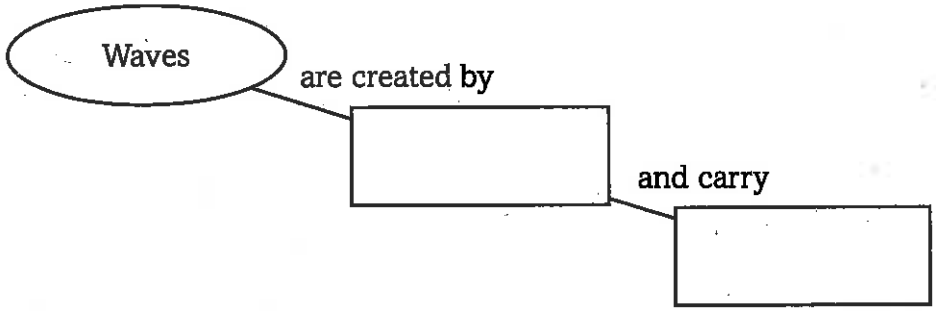
I found this information on page _____.

Distinguish *one way in which ocean waves and waves from earthquakes are different.*

_____

_____

Complete *the graphic organizer about waves.*



Name _____ Date _____

Main Idea

Mechanical Waves

I found this information on page _____.

Details

Classify *each type of* wave, mechanical wave *or not, and describe the type of medium it moves through (water, air, or none).*

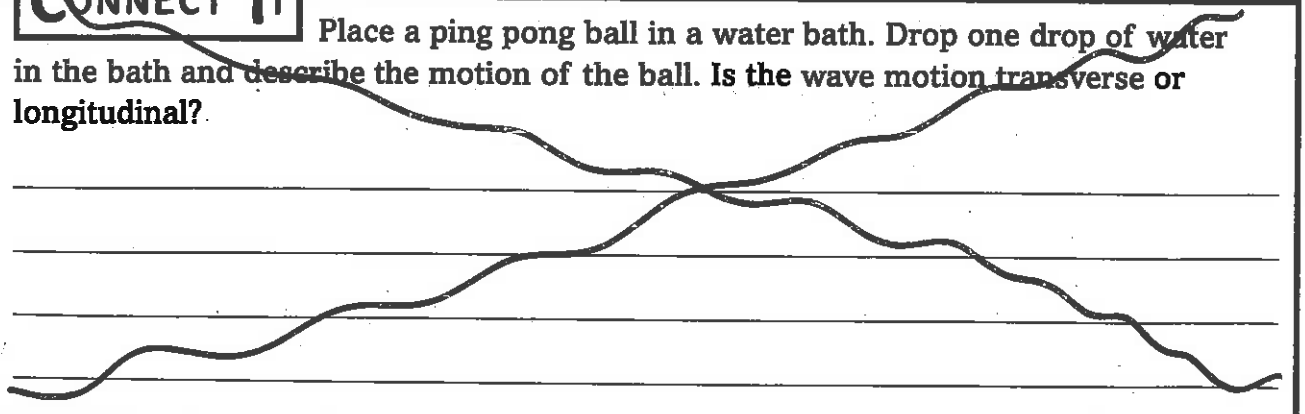
Type of Wave	Medium	Is it a mechanical wave?
ocean wave		
sound wave		
radio wave		
light wave		

Compare and contrast *the 2 types of* mechanical waves.

- Draw a cross section of the ocean.
- Use arrows to show how transverse and longitudinal waves each move the water.

CONNECT IT

Place a ping pong ball in a water bath. Drop one drop of water in the bath and describe the motion of the ball. Is the wave motion transverse or longitudinal?



Name _____ Date _____

Introduction to Waves

Section 2 Wave Properties

Skim *Section 2 of your book. Write three questions that come to mind from reading the headings and the illustration captions.*

1. _____
2. _____
3. _____

Review Vocabulary

Define property *to show its scientific meaning.*

vibration _____

New Vocabulary

Read the definitions below. Then write the key term on the blank in the left column.

_____ the high point of a transverse wave

_____ the low point of a transverse wave

_____ the more dense region of a longitudinal wave

_____ the area of a longitudinal wave where the medium is more spread out

_____ the distance between one point on a wave and the nearest point just like it

_____ the number of wavelengths that pass a fixed point each second

_____ the amount of time it takes one wavelength to pass a point

_____ a measure of the energy that a wave carries

Academic Vocabulary

Use a dictionary to define **impact.**

impact _____

Name _____ Date _____

Section 2 Wave Properties (continued)

Main Idea

Details

The Parts of a Wave, Wavelength

I found this information on page _____.

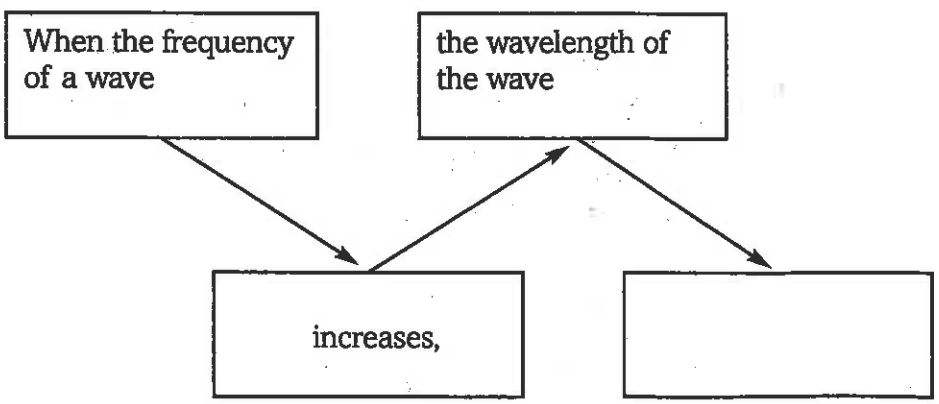
Model *two* transverse waves. *Make the wavelength of one three times as long as the other. Identify a* crest, trough *and* wavelength *for each wave.*

Model *two* longitudinal waves, *one with a wavelength twice as long as the other. Identify a* rarefaction *and* compression *in each wave. Label the wavelength.*

Frequency and Period

I found this information on page _____.

Complete *the flow chart to help you understand the relationship between* frequency *and* wavelength.



Name _____ Date _____

Section 2 Wave Properties (continued)

Main Idea	Details
Wave Speed *I found this information on page _____.*	**Evaluate** *the speed of an ocean wave that has a wavelength of 4.0 m and a frequency of 400 Hz.* $f =$ _____ $\lambda =$ _____ $v = f \times \lambda$ $v =$ _____ × _____ $v =$ _____ m/s
Amplitude and Energy *I found this information on page _____.*	**Compare** *two* longitudinal waves *by drawing them. One wave should have more energy than the other. Label the energy of each wave.*
I found this information on page _____.	**Identify** *how the amplitude of a* transverse wave *is measured. Make a sketch to show your answer.*

CONNECT IT Contrast the amplitude and energy of the sound waves you make when you shout across a room with the sound waves you make when you speak softly.

Name _____ Date _____

Introduction to Waves

Section 3 The Behavior of Waves

Scan *Write three facts you discovered about the behavior of waves as you scanned the headings and illustrations.*

1. _____
2. _____
3. _____

Review Vocabulary **Define** perpendicular *to show its scientific meaning.*

perpendicular _____

New Vocabulary *Use your book to define the following terms.*

refraction _____

diffraction _____

interference _____

standing wave _____

node _____

resonance _____

Name _____ Date _____

Section 3 The Behavior of Waves (continued)

Main Idea	Details
Reflection *I found this information on page _____.*	**Summarize** *the* law **of reflection** *by completing the sentence below.* The angle of _____ is equal to _____. **Create** *a diagram showing a flashlight shining on a mirror. Label your diagram with the terms given.* • angle of incidence • angle of reflection • incident beam • reflected beam • the normal
Refraction *I found this information on page _____.*	**Summarize** *why a spoon placed in a clear glass of water appears to be crooked. Make a sketch to help you explain.*
Diffraction *I found this information on page _____.*	**Evaluate** *one similarity and one difference between* refraction *and* diffraction.

Similarity	Difference

Name _____ Date _____

Section 3 The Behavior of Waves (continued)

Main Idea | **Details**

Interference

I found this information on page _____.

Complete *the table describing the 2 types of interference.*

Interference	Interference
Cause:	Cause:
Result:	Result:

Standing waves

I found this information on page _____.

Summarize *what causes a* standing wave *to form.*

_____

_____

Resonance

I found this information on page _____.

Analyze *why an opera singer singing a high note into a microphone can cause a nearby glass of water to shatter.*

_____

_____

_____

_____

_____

_____

SYNTHESIZE IT

Suppose you have sunlight shining on two clear containers of water on a table. Light waves refract through one of the containers but diffract around the other container. Describe how the two containers are different.

_____

_____

_____