

## Wave Types

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### Lesson Overview

In this lesson, students will read and analyze informational text to describe differences between the types of waves electromagnetic vs mechanical and compressional vs transverse. They will summarize their understanding of waves using a concept map.

### Standards Addressed

SC 2005      8-6.2 Distinguish between mechanical and electromagnetic waves.

SC 2014      8.P.3A.1 Construct explanations of the relationship between matter and energy based on the characteristics of mechanical and light waves.

### Disciplinary Literacy Best Practices

Concept Map

### Lesson Plan

**Time Required:** Two 50-minute Class Periods

**Disciplinary Vocabulary:** wave, electromagnetic wave, mechanical wave, compressional wave, medium, transverse wave

### Materials Needed:

- Guiding Questions for Reading (Notes Sheet)
- Science Textbook
- Slinky for demonstration of waves

### Assessment:

Completed Concept Maps

**Engage:**

- Prior to this lesson, students will participate in exploratory lab activities such as
  - (1) observing plastic cups covered with coffee filters held by rubber bands with salt sprinkled on top. Students will talk to the cup at different levels (high, low, loud, soft) and observe what happens to the salt at each level. They will record notes of their observations in their science notebooks.
  - (2) Students will view the light sources in the room through various diffraction gratings. Students will record their observations in their science notebooks.

**Explore:**

- On the first day of the lesson, students will read the information on waves from their science book and use their reading to complete the Reading Guide. For the lesson in the video, students read pages 502—507 in the 8<sup>th</sup> Grade Glencoe Science textbook. A comparable text may be substituted.
- On the second day of the lesson, the teacher will explain to students that they will be completing a concept map as their closure (ticket to leave) today. The teacher will model concept mapping with content previously studied by the students (the seasons). The teacher will draw the main idea and then list a few ideas about seasons before having students give other ideas to the concept map.

**Explain:**

- The class will use the completed Reading Guide to discuss the types of waves and how each of these waves moved and what they can travel through.
- The teacher will use a slinky toy to model the different types of waves by showing how each type of wave moved.
- During the class discussion, students will correct the answers recorded during the reading on the Reading Guide.
- After the class discussion, students will use the information gathered through the labs, the reading, and the class discussion to create concept maps to summarize the information about waves.

**Teacher Reflections and Biographical Information:** The next time I complete this lesson, I will make sure to give students more time to complete their concept maps and give students a chance to present how they set up their concept maps in a class discussion.

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

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

### Waves Reading Guide

#### What are waves?

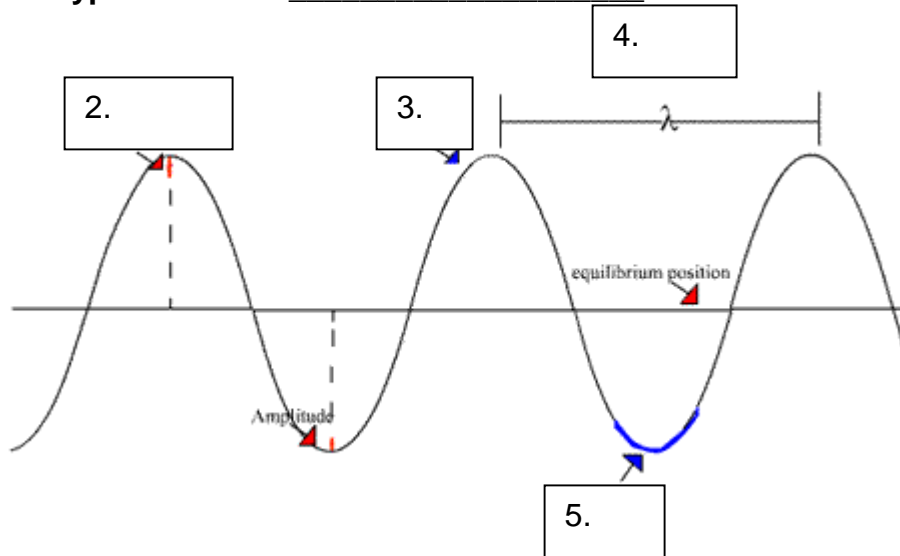
1. What are waves?
2. Waves only carry \_\_\_\_\_ from place to place but do NOT move \_\_\_\_\_ with them.
3. Waves can travel through a medium. Three examples of a medium are \_\_\_\_\_
4. What causes waves to happen?

#### Types of waves:

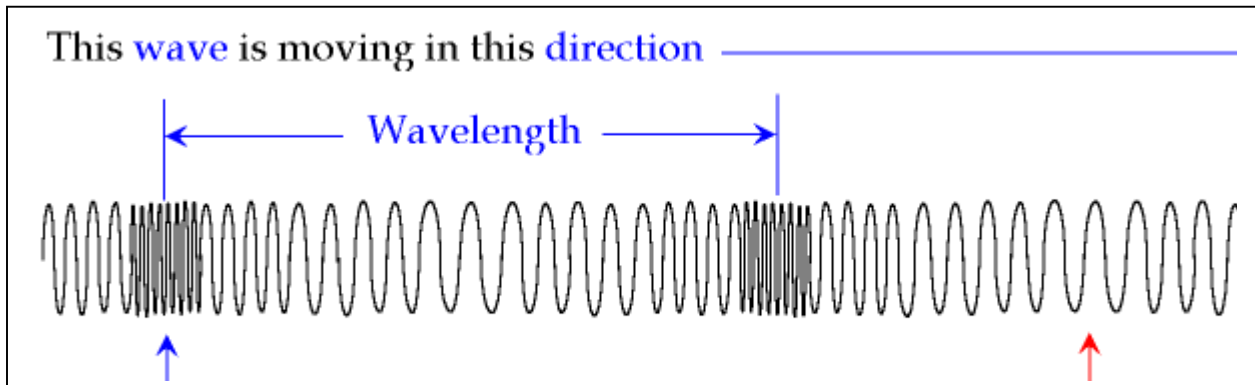
5. Some waves such as \_\_\_\_\_ waves can travel only through matter.
6. Other waves known as \_\_\_\_\_ waves can travel through matter or through empty space.
7. What are the two types of waves? **For each type give the definition and a picture.**
  - a.
  - b.

**Label the properties of the waves.**

1. Type of wave = \_\_\_\_\_



6. Type of wave = \_\_\_\_\_



7. \_\_\_\_\_

8. \_\_\_\_\_

**Waves can change direction**

9. Define frequency.

10. What does reflect mean?