



Grade 7 - Quarter 3_Week 4

Name: _____ Grade & Section: _____

Teacher: _____ Score: _____

Activity Sheet No. 3: Waves



START UP

At the end of this worksheet, the learners will be able to:

1. Define wave.
2. Differentiate transverse from longitudinal waves and mechanical from electromagnetic waves.
3. Demonstrate how waves carry energy.



CAPTURE

- Wave is a disturbance or oscillation that travels through space-time, accompanied by a transfer of energy. Wave motion transfers energy from one point to another, often with no permanent displacement of the particles of the medium – that is, with little or no associated mass transport.
- The motion of water molecules on the surface of deep water in which a wave is propagating is a combination of transverse and longitudinal displacements, with the result that molecules at the surface move in nearly circular paths. Each molecule is displaced both horizontally and vertically from its normal position.
- While energy is transported by virtue of the moving pattern, it is important to remember that there is no net transport of matter in wave motion. The particles vibrate about a normal position and do not undergo a net motion.
- Transverse waves occur when the individual particles or segments of a medium vibrate from side to side perpendicular to the direction in which the waves travel.
- Longitudinal waves occur when the individual particles of a medium vibrate back and forth in the direction in which the waves travel.
- In mechanical waves, some physical medium is being disturbed for the wave to propagate. A wave traveling on a string would not exist without the string. Sound waves could not travel through air if there were no air molecules. With mechanical waves, what we interpret as a wave corresponds to the propagation of a disturbance through a medium.
- Electromagnetic waves do not require a medium to propagate; some examples of electromagnetic waves are visible light, radio waves, television signals, and x-rays.

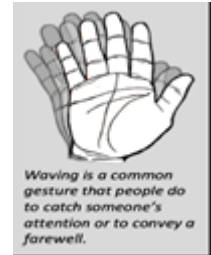


INTEGRATE

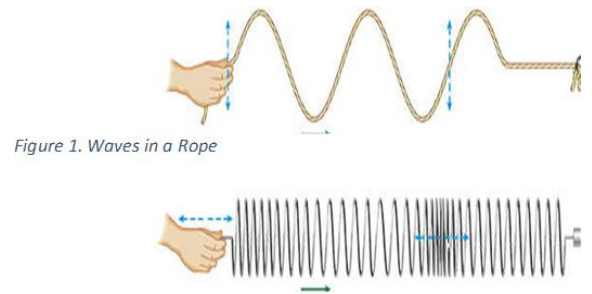
TASK 1: What are waves?

Try to wave and observe the motion of your hand. Do you make a side-to-side motion with the palm of your hand? Do you do an up-and-down motion with your hand?

1. How can you describe your personal hand wave?



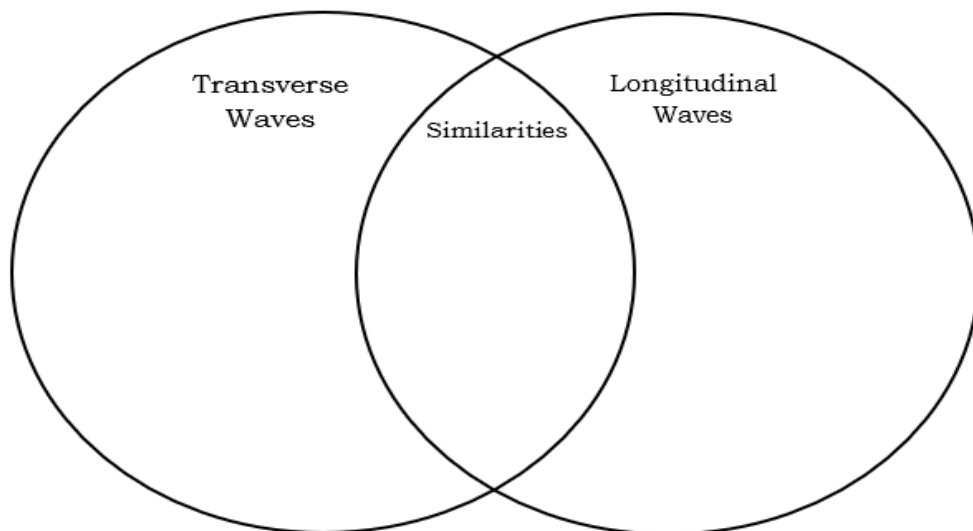
2. Get a rope and place it above a long table. Hold one end of the rope and vibrate it up and down. You would be able to observe a pulse. Describe the motion of your hand as you create the pulse and the motion of the pulse with respect to the source. See figure 1.



3. Think of still water in a basin. How would you generate water waves on the basin?

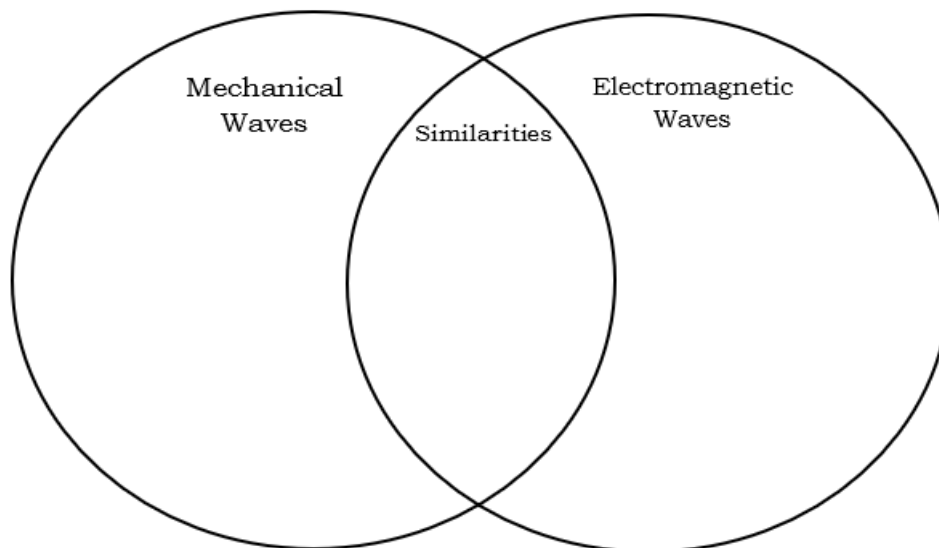
TASK 2: Make a Venn diagram

A. Transverse and Longitudinal Waves





B. Mechanical and Electromagnetic Waves



ENRICH

Written Works No. 2

DIRECTION: Choose the correct answer. Write it on the space provided before each number.

- ____ 1. How vibrations transfer energy from place to place?
A. Through sound
B. Through waves
C. Through energy
D. Through light
- ____ 2. Which statement is TRUE about Electromagnetic waves?
A. Can travel through a vacuum
B. Always travels at the same speed
C. Need a medium to travel through
D. Cannot travel through the vacuum of outer space.
- ____ 3. Which of the following does not belong to the group?
A. Longitudinal Wave
B. Radio Wave
C. Surface Wave
D. Transverse Wave
- ____ 4. Emiel attaches a length of nylon fishing line to a fence post. He stretches it out and shakes the end of the rope in her hand back and forth to produce waves on the line. How would he increase the wavelength?
A. Increase the tension and shake the end more times per second
B. Increase the tension and shake the end fewer times per second
C. Decrease the tension and shake the end more times per second
D. Decrease the tension and shake the end fewer times per second
- ____ 5. Which of the following is NOT correct about waves?
A. Waves carry energy from place to place but the particles do not move with the waves.
B. Waves can be classified as either electromagnetic or mechanical.
C. Waves have the capacity to transmit messages.
D. Waves transfer particles (matter) and energy.



- ____ 14. Which of the following electromagnetic waves are commonly used in medical filed?
- | | |
|--------------|---------------|
| A. Gamma Ray | C. Radio Wave |
| B. Microwave | D. X-Ray |
- ____ 15. Which of the following is **NOT** an example of electromagnetic waves?
- | | |
|--------------|----------------------|
| A. Gamma Ray | C. Ultraviolet Waves |
| B. Microwave | D. Surface Wave |

References:

Asuncion, A. et al, *Science 7 Learner's Material*, pp 187-203

<https://courses.lumenlearning.com/boundless-physics/chapter/waves/#:~:text=In%20physics%20a%20wave%20can,or%20no%20associated%20mass%20transport.>