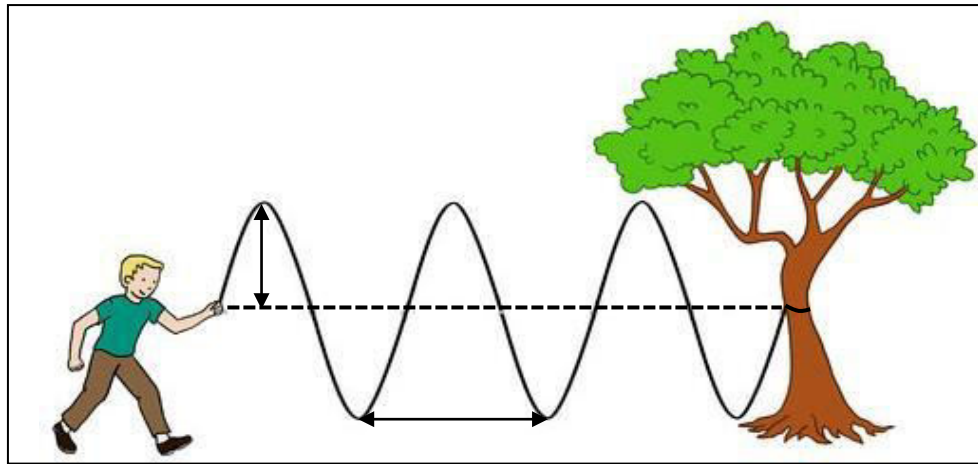


**PENANG SANGAM HIGH SCHOOL**  
**YEAR 11 PHYSICS**  
**WEEK 25- 27**

<b>Strand</b>	WAVES ( revision )
<b>Sub Strand</b>	SOLVE PROBLEMS RELATING TO WAVES
<b>Content Learning Outcome</b>	At the end of the lesson students should be able to demonstrate an understanding of the meaning of the terms transverse and longitudinal pulse, differentiating between them.

## WAVES

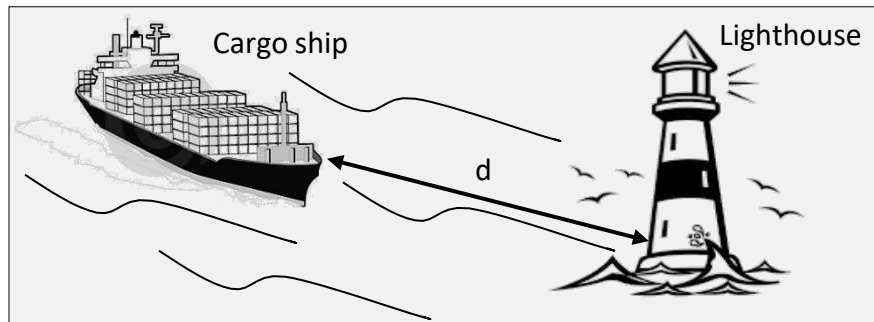
1. Sound wave is an example of a
  - A. microwave.
  - B. transverse wave.
  - C. radio wave.
  - D. longitudinal wave.
2. During a practical class on waves a student tied a rope to a tree and created a pulse as shown in the diagram below.



Source: <https://www.ck12.org>

- (i) Identify the features of a wave represented by **A** and **B**.
- (ii) If the frequency at which the waves are generated is 15 Hz and the wavelength is 1.5 m, calculate the velocity of the waves.

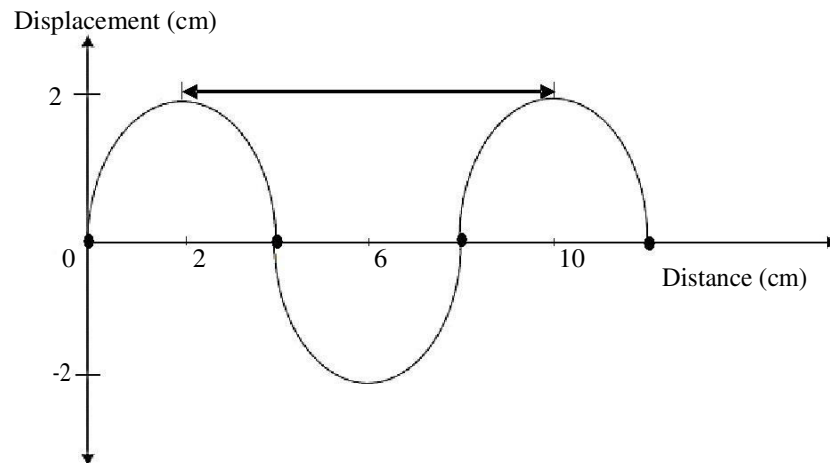
3. A cargo ship is approaching a lighthouse as shown below. The captain can use the delay in time of a reflected sound from its horn to tell the distance of the ship from the lighthouse.



Source: <https://www.google.com>

- (i) Identify the common name of the sound that is reflected from objects like the lighthouse.
- (ii) There was a time difference of 6 s between the sounding of the horn and when the reflected sound was heard by the captain. Calculate the distance,  $d$ , of the cargo ship from the lighthouse if the speed of sound in air is  $340 \text{ ms}^{-1}$ .
- (c) An echo sounder on a fishing boat finds that sound waves return from the ocean floor after 0.3 s.
- (i) While finding the distance of the travelled sound wave using the formula  $d = v \times t$ , why  $d$  is always doubled?
- (ii) If the speed of sound in water is 1450 m/s, find the depth of the ocean floor.
- (d) (i) Give a difference between the **transverse** and **longitudinal** waves.

(ii) Use this diagram to answer the questions that follow.



1. What is the wavelength of the wave?
2. Find the amplitude of the wave.