Strand	WAVES (revision)
Sub Strand	SOLVE PROBLEMS RELATING TO WAVES
Content Learning Outcome	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.   C.   radio wave.

B.   transverse 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
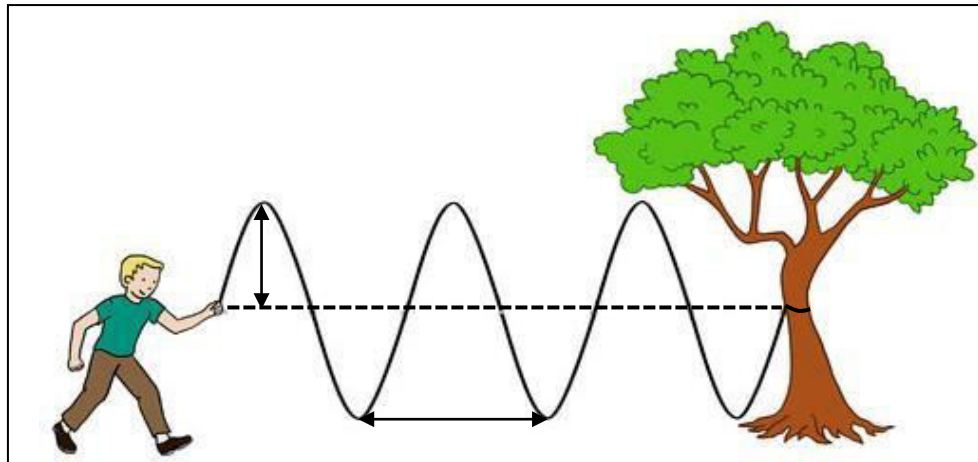
(i)   Identify the features of a wave represented by **A** and **B**.

(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
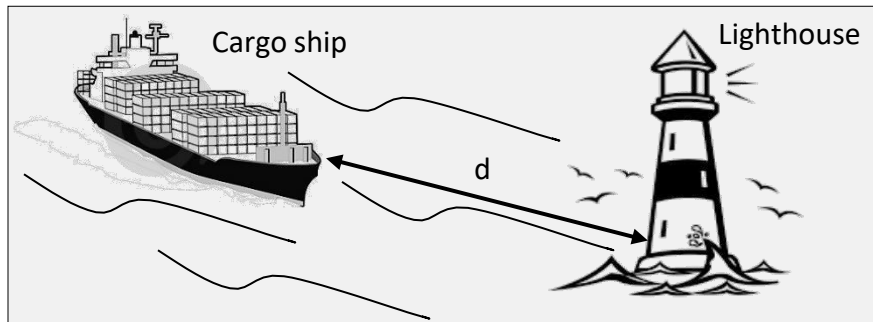
(i)   Identify the common name of the sound that is reflected from objects like the lighthouse.

(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 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.
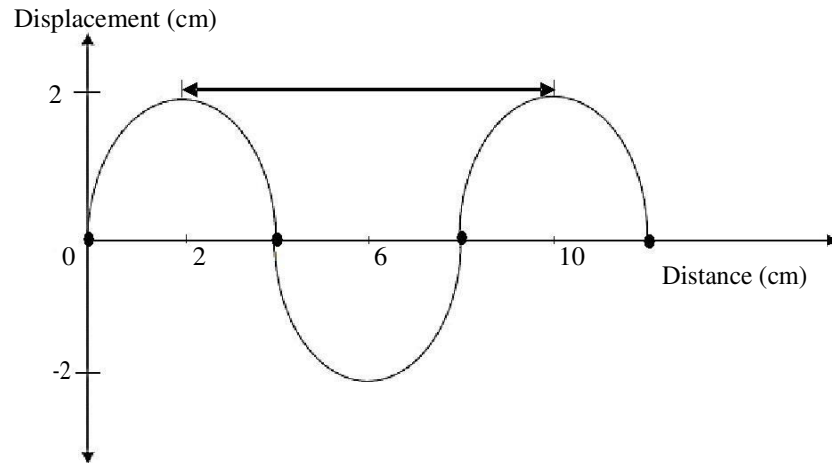
1.   What is the wavelength of the wave?

2.   Find the amplitude of the wave.