



Rosary School – Marj Elhamam

Name: _____
Grade: 7 (A,B,C,D,E)

Date: ____ / ____ / 2025

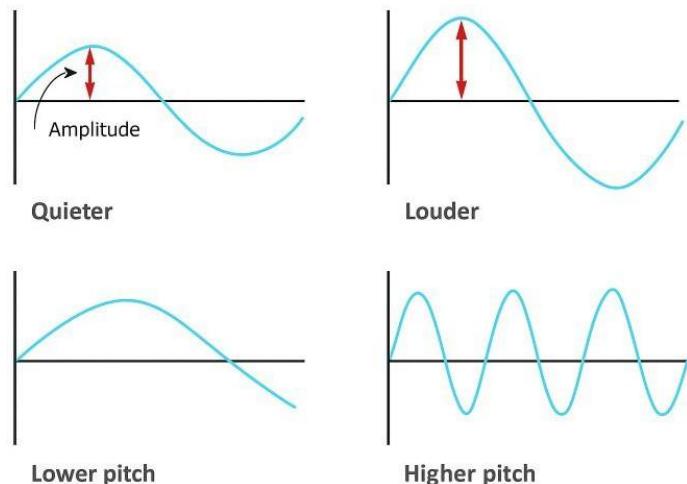
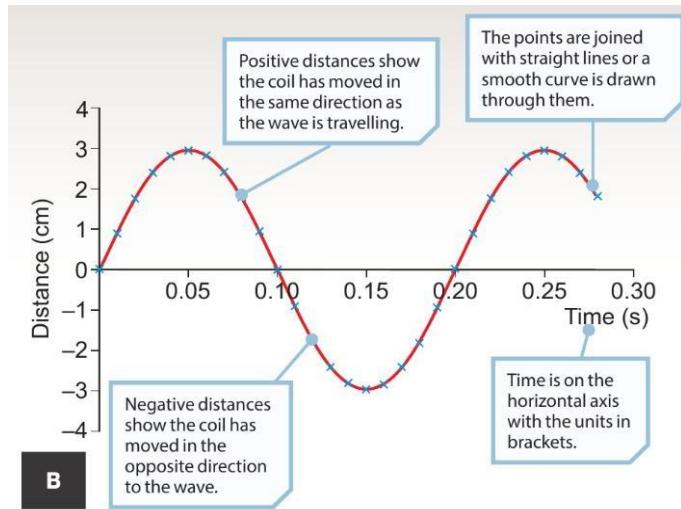
Subject : Phyhsics

Worksheet 2

The Oscilloscope

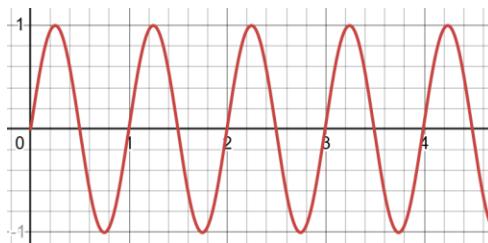
- An **oscilloscope** is an instrument that shows a picture of a sound on screen.
- An **oscilloscope** can be connected to a microphone to show sound waves. The oscilloscope trace is like a line graph.
- The **trace** is the line that appears on the screen that represents the sound wave.
- On a sound wave trace, the **amplitude** is the maximum distance from 0.
- The **frequency** is the number of complete waves (one up and down) that pass a point each second.
- In trace B, one wave takes 0.2 seconds. In each second 5 waves pass and so the frequency is 5 Hz.

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Question 1:

Determine the Amplitude and Frequency of the wave below.



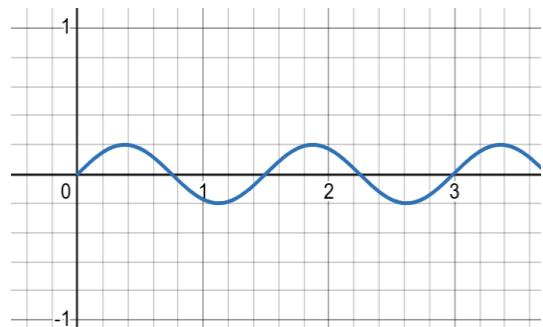
Frequency: 1 Hz

Amplitude: 1 cm

Question 2:

Circle the correct word between the brackets.

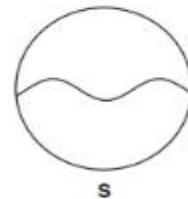
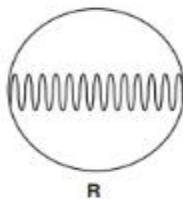
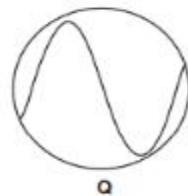
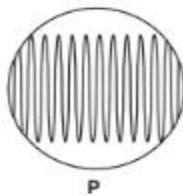
Compared to the wave in Question 1, the wave in the diagram is (Louder/Softer) and has (Higher/Lower) pitch.



Question 3:

The ring tone on a mobile phone can be changed.

The figure shows the sound trace made by four sound waves on an oscilloscope screen.



Explain which sound trace from a ring tone (P, Q, R or S) will have a quietest sound with the lowest pitch.

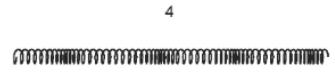
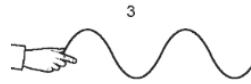
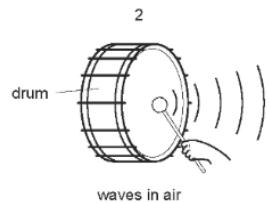
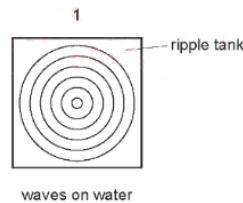
S, because it has the smallest amplitude and the smallest number of waves passing .

Question 4:

The diagrams show examples of wave motion.

Which are longitudinal waves?

2 and 4



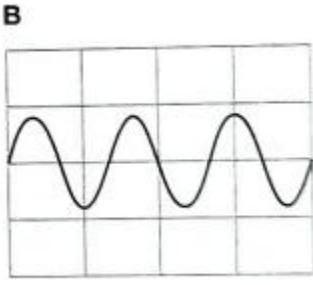
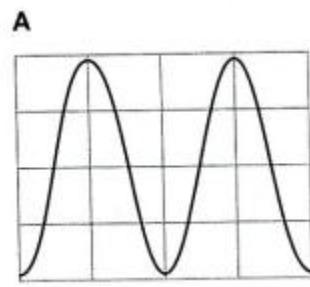
Question 5:

We can use graphs to represent the movement of air particles in a sound wave. The diagram represent two different sound waves.

a) Which graph shows:

(i) Particles moving only a little way as the wave passes. B.

(ii) The wave with the greater number of waves per second. B.



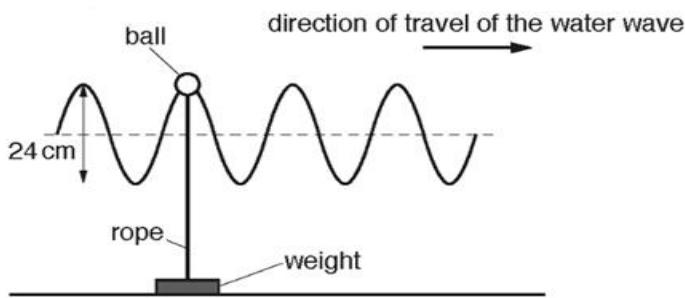
b) Complete the following sentences by crossing out the incorrect word.

Wave A has the (highest/ lowest) frequency. It will make a (higher/ lower) note than wave B.

Wave A has the (largest/ smallest) amplitude. It will be (louder/ quieter) than wave B.

Question 6:

The diagram below shows a plastic ball floating on the surface of a lake and attached by a long rope to a weight on the bottom of the lake. A water wave on the surface of the lake causes the ball to move vertically up and down.



a) Determine the amplitude of the wave.

$$\frac{24\text{ cm}}{2} = 12 \text{ cm.}$$

b) Explain how the motion of the ball shows that the water wave is transverse.

because the ball is moving with the water up and down 90° (at right angle) to the direction of travel.

Question 7:

Ultrasound waves are used to **produce images**.

This is an ultrasound image for a fetus surrounded by fluid.



1) The ultrasound wave is caused by waves bounce off the fetus.

This is an example of waves that are.

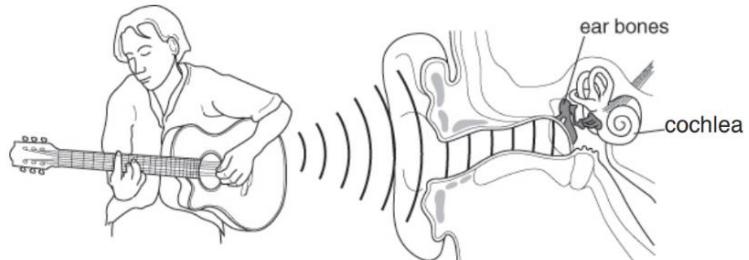
- absorbed
- reflected
- refracted
- transmitted

2) Describe **two other** uses of ultrasounds.

- i) Physiotherapy : when energy transferred by sound gets absorbed and changes into thermal energy
- ii) cleaning jewelry : vacuum bubbles occur they burst and push the dirt away

Question 8:

The diagram shows someone playing a guitar and shows part of an ear. The eardrum vibrates when sound waves reach it.



a. Give the function of:

- (i) the ear bones: Amplify the vibrations and send them to the cochlea.
- (ii) the cochlea: tiny hairs inside detect the vibrations and create impulses

b. What happens to the eardrum if the sound reaching the ear gets louder?

- a. the eardrum vibrates faster
- b. the eardrum vibrates slower
- c. the eardrum vibrates further
- d. the eardrum vibrates less