



## Rosary School – Marj Elhamam

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

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

Date: \_\_\_\_ / \_\_\_\_ / 2025

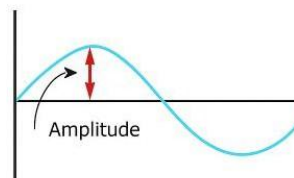
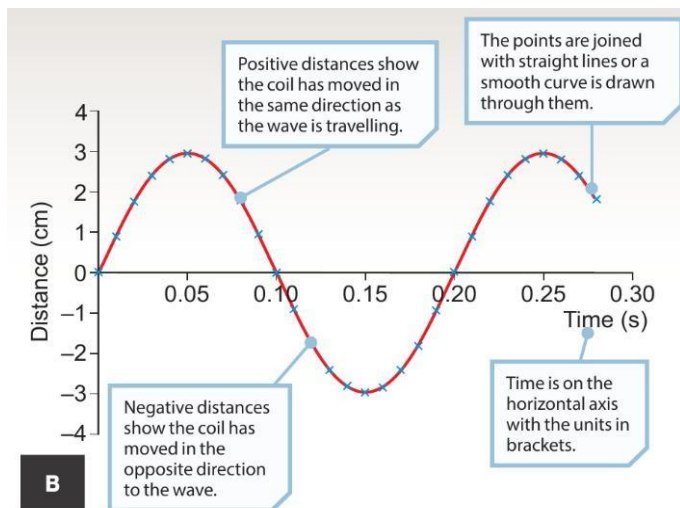
Subject : Physics

### Worksheet 2

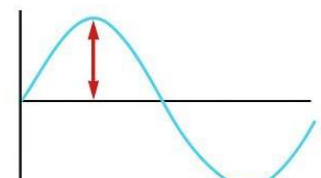
#### The Oscilloscope

- 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.

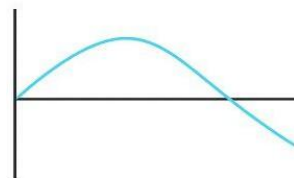
#### Workbook page 139 Q.3



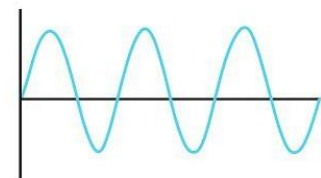
Quieter



Louder



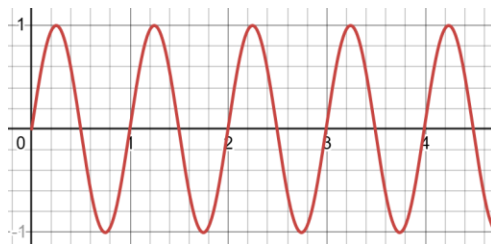
Lower pitch



Higher pitch

### Question 1:

Determine the Amplitude and Frequency of the wave below.



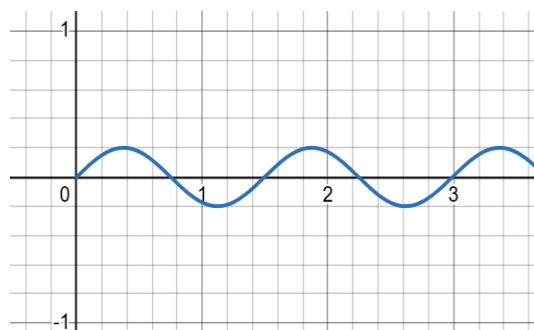
Frequency: 1 Hz

Amplitude: 1 cm

### Question 2:

Circle the correct word between the brackets.

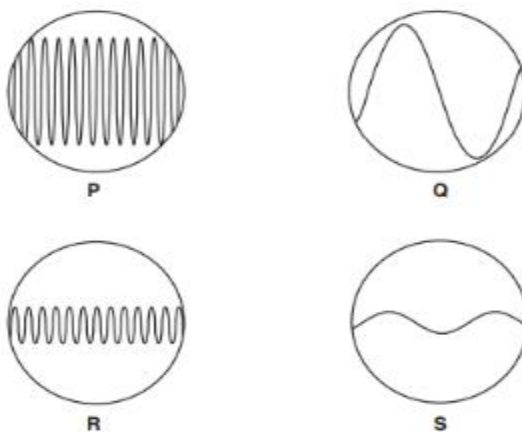
Compared to the wave in Question 1, the wave in the diagram is **(Louder/Softer)** and has **(Higher/Lower)** pitch.



### 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.

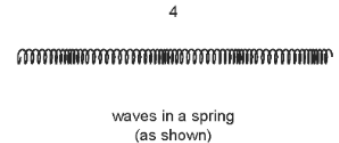
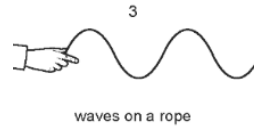
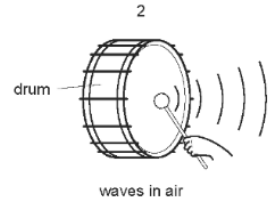
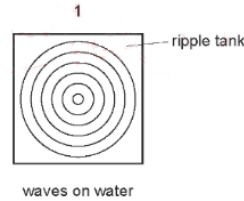
S, because it has the smallest amplitude and the smallest number of waves passing.

#### Question 4:

The diagrams show examples of wave motion.

Which are longitudinal waves?

2 and 4

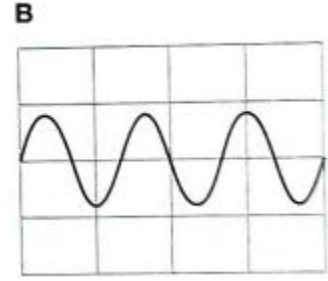
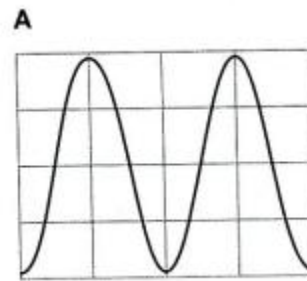


#### Question 5:

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



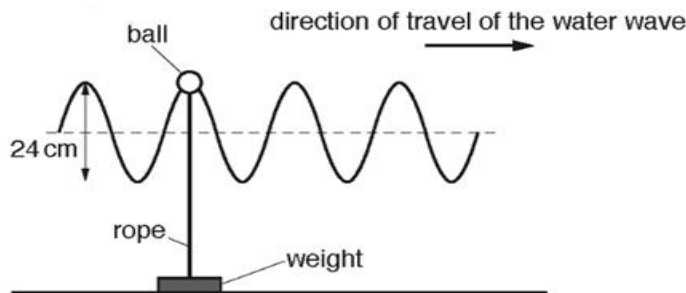
b) Complete the following sentences by crossing out the incorrect word.

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.

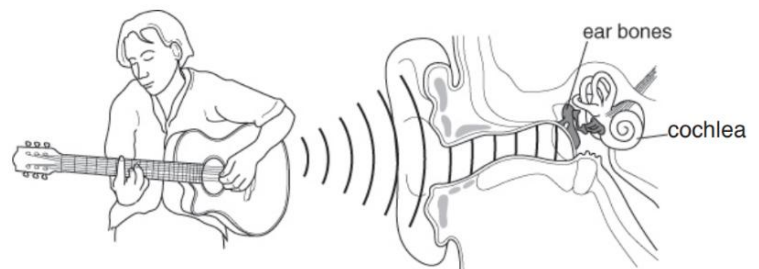
- ☐ absorbed
- ☒ reflected
- ☐ refracted
- ☐ transmitted

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