# OCR Gateway Physics

## GCSE Student practical P5.1.1

**Name** ..... **Class** ..... **Date** .....

## Wave properties

### Specification references:

- P5.1a
- P5.1e

### Aims

Waves are all around us – examples include light, sound, waves on the sea, radio waves, and many more. In this activity you will learn the differences between transverse and longitudinal waves and label their key features. You will also see how the particles in each type of wave move and 'see' sound waves on an oscilloscope.

### Learning outcomes

After completing this practical, you should be able to:

- label the parts of transverse and longitudinal waves
- describe how the particles move when waves pass
- observe the wavelength and frequency of a sound wave on an oscilloscope.

### Task

**1 The slinky spring**

Watch as your teacher uses a slinky to demonstrate transverse and longitudinal waves.

**2 Waves in a fish tank**

Watch from the side as your teacher demonstrates waves travelling through the water in a fish tank. Watch the floating cork – it shows that although the waves travel along the tank, the water itself does not.

**3 Sounds on an oscilloscope**

Your teacher will use a recorder to produce different sounds. Observe the waves on the screen of the oscilloscope. See what happens when you increase the amplitude and when you increase the frequency.

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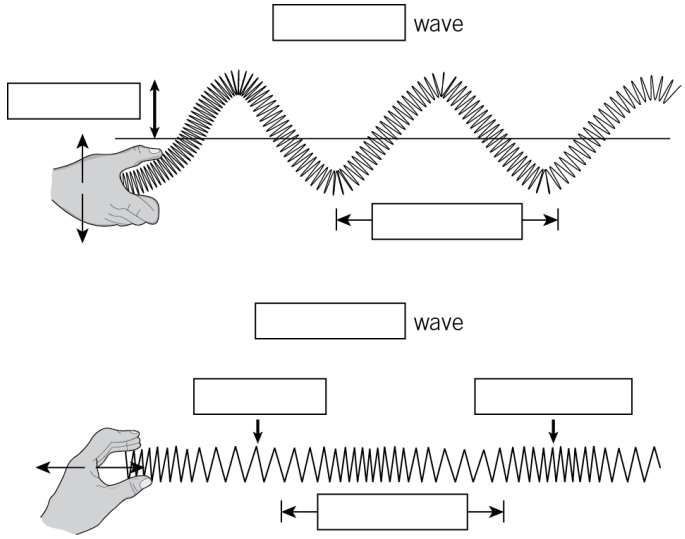
### Questions

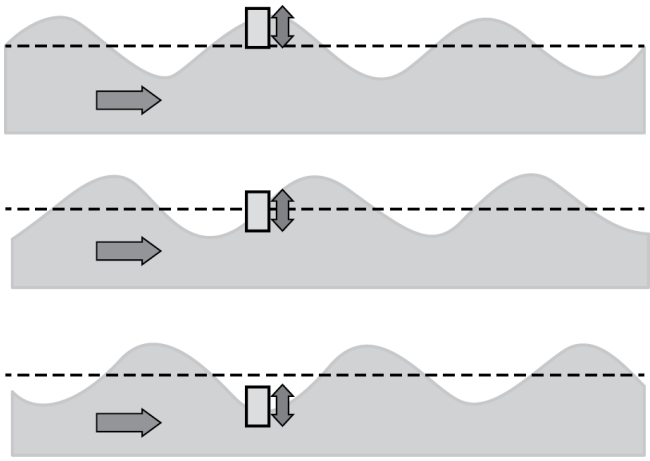
**1** Use the words from the list to label the diagrams.

wavelength, amplitude, longitudinal, transverse, compression, rarefaction




(*7 marks*)

**2** The diagram shows a cork floating in a fish tank as waves pass along the water in a tank.



Explain how this shows that although the energy in the waves moves along the tank, the water itself does not.

.....

..... (*2 marks*)

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**3** When a sound gets louder, the ..... of the wave on the oscilloscope screen increases. When the pitch of a sound gets higher, the wavelength of the wave on the screen gets ...... (*2 marks*)

## Student follow up

Use the words from the list to complete the sentences:

sound parallel water at right angles

In a transverse wave, the particles vibrate ..... to the direction that the wave is travelling. In a longitudinal wave, the particles vibrate ..... to the direction of wave travel.

..... waves are an example of a transverse wave.

..... is an example of a longitudinal wave. (*4 marks*)