

Y10 Waves – More Questions

Name

1. The diagram shows some of the kinds of waves in the electromagnetic spectrum. Choose words from this list to complete the empty boxes on the diagram.

alpha radiation infrared radiation radio waves X-rays

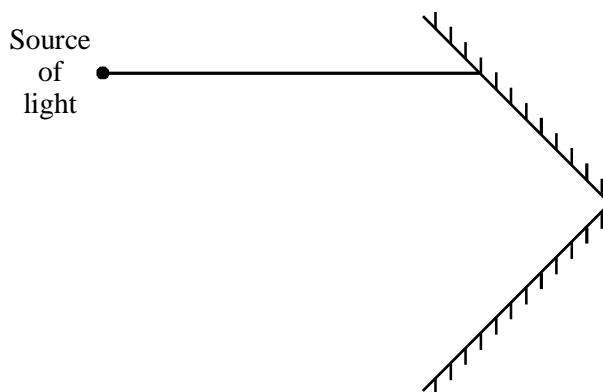
Shortest wavelength							Longest wavelength	
gamma radiation		ultraviolet radiation	light		microwaves			

(Total 3 marks)

2. (a) The diagram shows two mirrors at right angles to each other. A ray of light shines onto one mirror as shown.

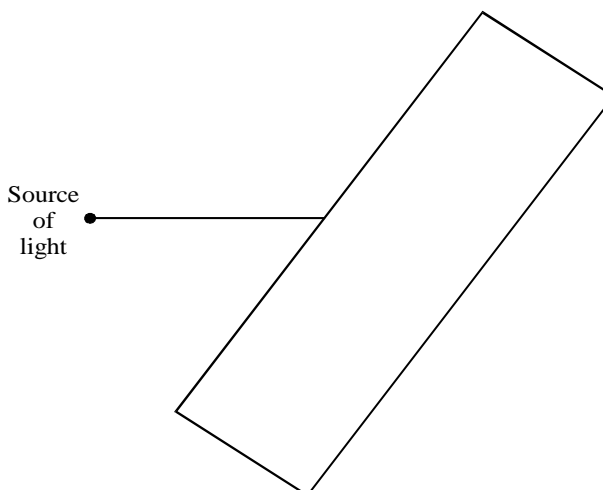
Carefully draw the path of the ray which is reflected from both mirrors.

Draw an arrow on the ray to show the direction of the light.



(3)

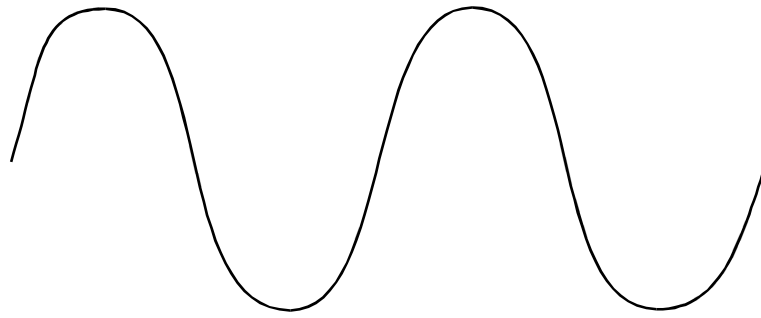
- (b) Light can also be made to change direction as it passes into and out from a block of glass. Complete the ray diagram below.



(2)

(Total 5 marks)

3. (a) On the wave drawn below, mark the amplitude and wavelength.



(2)

- (b) A wave is said to have a frequency of 25 Hz.

Explain what the term *frequency* means.

.....
.....
.....

(1)

- (c) From the electromagnetic spectrum, give the name and use of a radiation of lower frequency than light.

Name

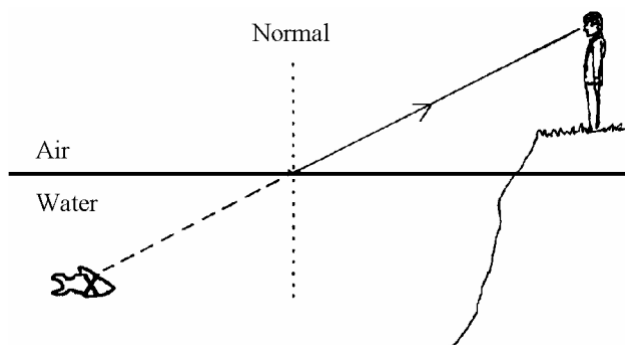
Use

(2)

(Total 5 marks)

4. A man is walking along the bank of a river.

He sees a fish which seems to be at X.



(a) Show, on the diagram, where the fish **really** is.

Complete the ray of light which goes from the fish into the man's eye.

(2)

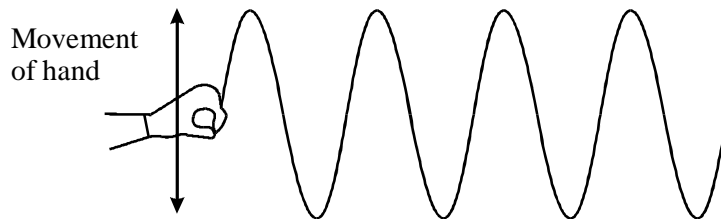
(b) Complete the sentence.

The ray of light is as it passes from the water into the air.

(1)

(Total 3 marks)

5. The diagram shows a wave travelling along a rope.



(a) On the diagram:

(i) show the wavelength and label it **W**;

(ii) show the amplitude and label it **A**.

(2)

(b) The wavelength of the wave is 0.1 m. Its frequency is 2 Hz.

Calculate the speed of the wave. Show clearly how you work out your answer and give the unit.

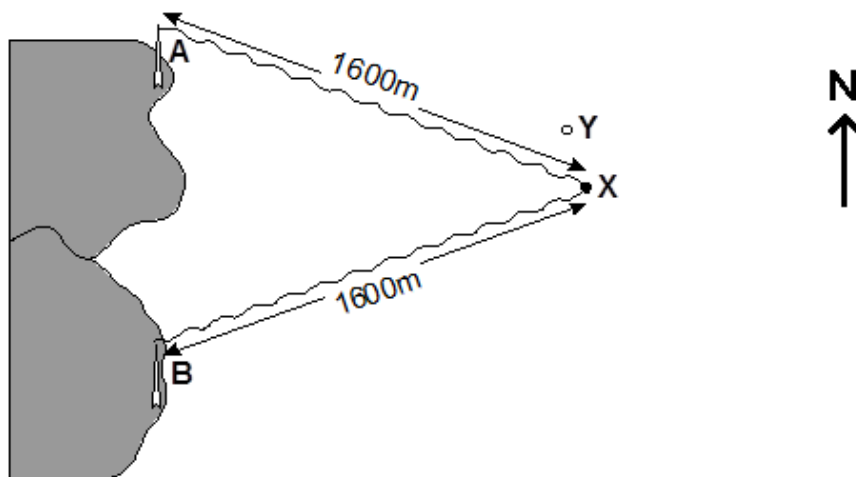
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Speed of wave

(3)

(Total 5 marks)

6. In the diagram below A and B are two radio navigation beacons. They both transmit at 1.5 MHz. The waves from both A and B have the same amplitude and they are in phase with each other. A ship is at point X, 1600 m away from each beacon.



- (i) Calculate the wavelength of the radio waves.
(The speed of radio waves is 3×10^8 m/s.)

.....

(3)

- (ii) Calculate the number of wavelengths which is equal to the distance between A and X.

.....

(1)

- (iii) If the ship sails East for 1km, what will happen to the strength of the radio signal it receives from the beacons?

.....

(1)

- (iv) If the ship sails South for 1km, what will happen to the strength of the radio signal it receives from the beacons? Why?

.....

(2)

(Total 7 marks)