Revision Sheet

IGCSE Physics · Unit 3 Waves

22 vocabulary items · 14 marks of exam questions (14 questions)

Part 1 · Vocabulary review (22 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · Chinese to English

Write the English word.

1. _____ [1]
2. _____ [1]
3. _____ [1]
4. _____ [1]
5. _____ [1]
6. _____ [1]
7. _____ [1]
8. _____ [1]
9. _____ [1]
10. _____ [1]
11. _____ [1]
12. _____ [1]
13. _____ [1]
14. _____ [1]
15. _____ [1]
16. _____ [1]
17. _____ [1]

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18. _____ [1]
19. _____ [1]
20. _____ [1]
21. _____ [1]
22. _____ [1]

Part 2 · Exam questions (14 marks, 14 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

23 Waves in a ripple tank are diffracted as they pass through a narrow gap.

What can be done to make the spreading due to diffraction greater?

A Decrease the frequency of the waves and keep the speed constant.

B Decrease the speed of the waves and keep the frequency constant.

C Increase the frequency of the waves and keep the speed constant.

D Increase the frequency of the waves and decrease the speed.

24 White light enters a glass prism. The light leaving the other side of the prism is separated into colours.

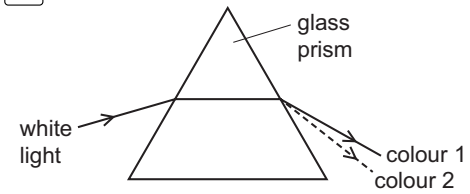


diagram 1

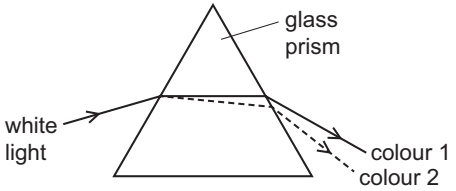


diagram 2

Which row correctly describes what happens?

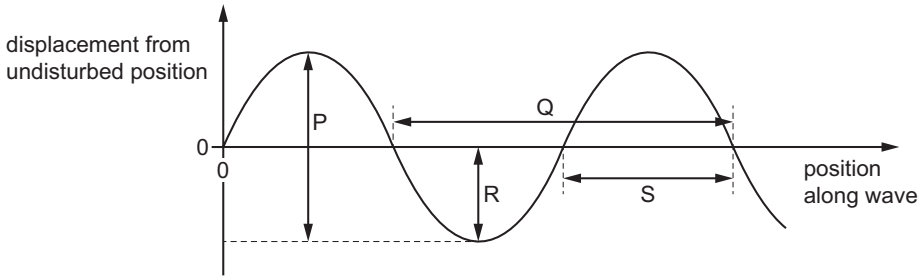
	path taken by the light	colour 1	colour 2
A	diagram 1	red	violet
B	diagram 1	violet	red
C	diagram 2	red	violet
D	diagram 2	violet	red

25 A remote-controlled vehicle is travelling on the surface of a planet. The vehicle senses an obstacle ahead. It sends a radio message to the control room from where it is being controlled. The control room is 2.4×10^6 km away from the vehicle. The control room sends a message back to the vehicle telling it to stop.

What is the minimum time that elapses between the vehicle sensing the obstacle and receiving the message back from the control room?

A 8.0 ms **B** 16 ms **C** 8.0 s **D** 16 s

26 The diagram shows a wave.



Which dimensions describe the properties of the wave?

A P = amplitude, S = speed

B P = speed, Q = wavelength

C R = amplitude, Q = wavelength

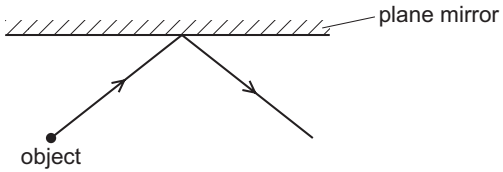
D R = amplitude, S = wavelength

27 Which row describes some characteristics of an image formed in a plane mirror?

	image type	image size
A	real	diminished
B	real	same size as the object
C	virtual	diminished
D	virtual	same size as the object

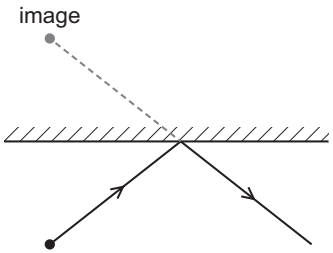
28 An object is placed in front of a plane mirror.

The ray diagram shows the reflection of one ray of light from the object by the mirror.

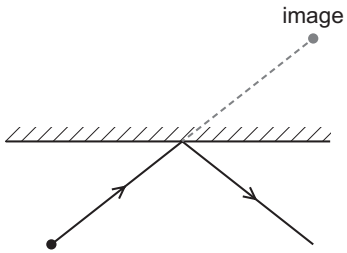


Where does the mirror form an image of the object?

A



B



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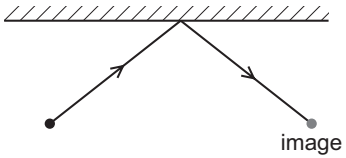

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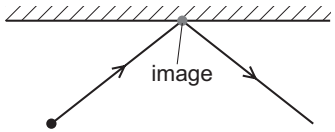
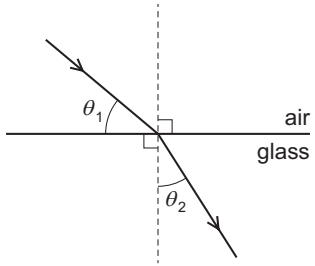


29 Light refracts as it enters glass from air, as shown.

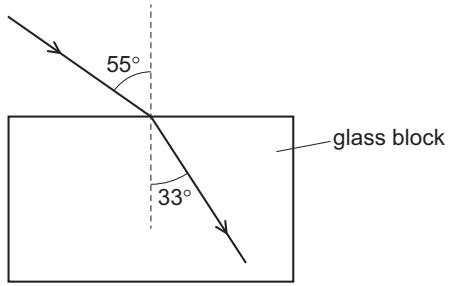


Which expression is equal to the refractive index of glass?

A $\dfrac{\sin\theta_1}{\sin\theta_2}$ **B** $\dfrac{\sin\theta_1}{\sin(90° - \theta_2)}$ **C** $\dfrac{\sin(90° - \theta_1)}{\sin\theta_2}$ **D** $\dfrac{\sin(90° - \theta_1)}{\sin(90° - \theta_2)}$

30 Light travelling at a speed of $3.0 \times 10^8\,\text{m/s}$ strikes the surface of a glass block and undergoes refraction as it enters the block.

The diagram shows a ray of this light before and after it enters the block.



What is the speed of light in the glass?

A $1.8 \times 10^8\,\text{m/s}$

B $2.0 \times 10^8\,\text{m/s}$

C $4.5 \times 10^8\,\text{m/s}$

D $5.0 \times 10^8\,\text{m/s}$

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31 Which row about converging lenses and diverging lenses is correct?

	converging lenses	diverging lenses
A	always produce inverted images	can focus a parallel beam of light
B	can be used as magnifying glasses	do not have a principal focus
C	can be used to correct short-sightedness	are usually thinner than converging lenses
D	can produce real and virtual images	can be used to correct short-sightedness

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32 The element mercury exists as a solid, a liquid or a gas.

Which row gives a possible set of values of the speeds of sound through mercury?

	speed of sound in frozen mercury / m/s	speed of sound in liquid mercury / m/s	speed of sound in mercury vapour / m/s
A	250	1500	2500
B	250	2500	1500
C	1500	250	2500
D	2500	1500	250

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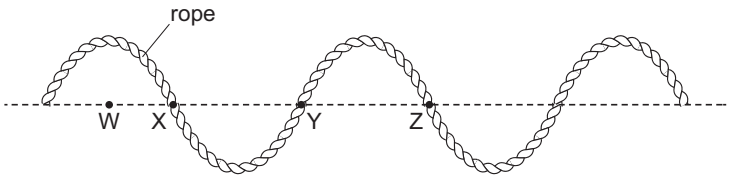
33 A transverse wave moves along a rope.

The diagram shows the position of the rope at one particular time.



Which two labelled points are one wavelength apart?

A W and X **B** W and Z **C** X and Z **D** Y and Z

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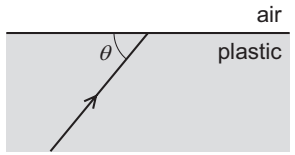
34 Light in transparent plastic meets a boundary with air. Light is transmitted into the air only if the angle marked θ in the diagram is greater than 36°.



What is the refractive index of the plastic?

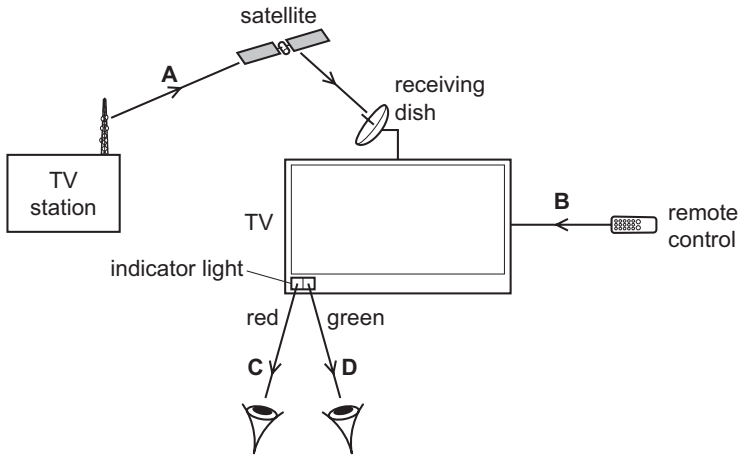
A 0.59 **B** 0.81 **C** 1.2 **D** 1.7

35 A television (TV) station transmits a signal to a television receiving dish.

The television has an on / off indicator light.

The television is switched on by a remote control which changes the indicator light from red to green.

Which electromagnetic wave used in these actions has the longest wavelength?



36 A student makes a list of some applications of waves.

1 medical scanning of soft tissue

2 sterilising water

3 using sonar to calculate ocean depths

Which applications use ultrasound waves?

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only