

# Mark schemes

**1**

(a) (i)



*if more than **one** box is ticked, award no mark*

1 (L3)

(ii) It is reflected

*accept 'it reflects'*

*accept 'it bounces off'*

1 (L4)

(b) (i) • bulb

*accept 'lamp' or 'light'*

1 (L3)

• battery **or** cells

*accept 'cell'*

1 (L3)

• switch

*answers must be in the correct order*

1

(ii) a series circuit drawn with the correct symbols such as



*accept '—|—' for '—||—'*

*accept '—|||—' or '—|-----|—'*

*accept curved wires*

1 (L4)

**[6]**

2

(a) (i) B

1

(ii) any **one** from

- light travels in straight lines
- light will not pass through the cardboard

*accept 'the cardboard blocks the light'  
or 'the cardboard is opaque'*

- they are in the shadow of the cardboard

*do **not** accept 'they are in the shadow'*

1

(b) green

1

(c) Q

1

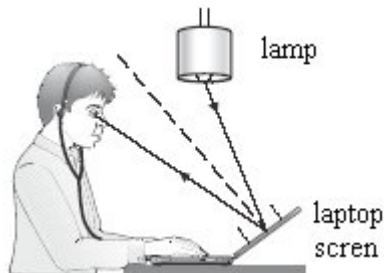
[4]

3

(a) (i) • a continuous straight line from the lamp to the screen **and** from the screen to George's eye

1 (L5)

- angle of incidence approximately equal to the angle of reflection



*accept a reflection anywhere between the dotted lines  
on the laptop screen*

1 (L5)

- arrows in the correct direction on the incident and reflected ray  
*accept one arrow on a continuous ray showing reflection*

1 (L5)

(ii) the reflected ray **or** the light image misses George's eyes

*accept 'the ray of light is reflected at a different angle'  
accept 'it moves down'*

*'the lamp is not shining in his eye's is insufficient*

*do **not** accept responses referring to scattering*

*'it changes' is insufficient*

*do **not** accept 'the ray of light is reflected above his eye'*

1 (L6)

(b) from electrical energy to sound energy

**both** answers are required for the mark  
answers must be in the correct order

1 (L5)

[5]

4

- (a)
- a straight line from the snail to the surface and from the surface to the fish

*the line must reach the fish within the tolerance shown below the ray must be continuous  
ignore an incident ray towards the snail  
ignore rays refracted at the surface*

1 (L5)

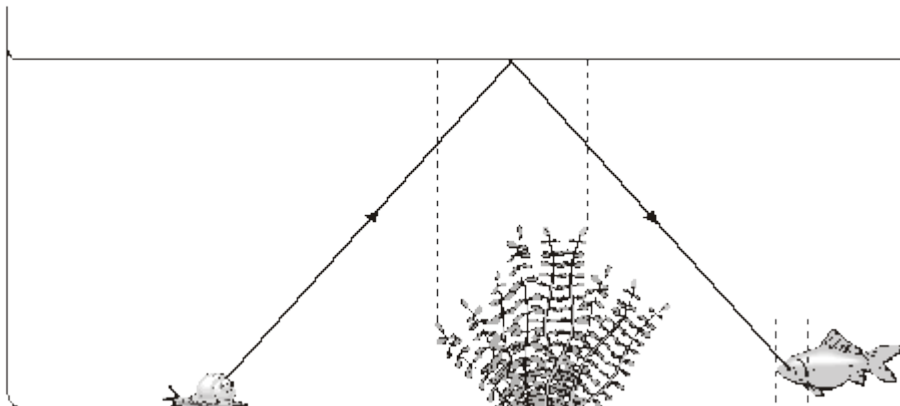
- the angle of incidence should be approximately equal to the angle of reflection

*the line must reach the surface of the water within the tolerance shown below*

1 (L6)

- arrow pointing towards the fish **or** away from the snail

*accept a single arrow in the correct direction on either the incident **or** the reflected ray  
if two arrows are drawn, they must both be in the correct direction*

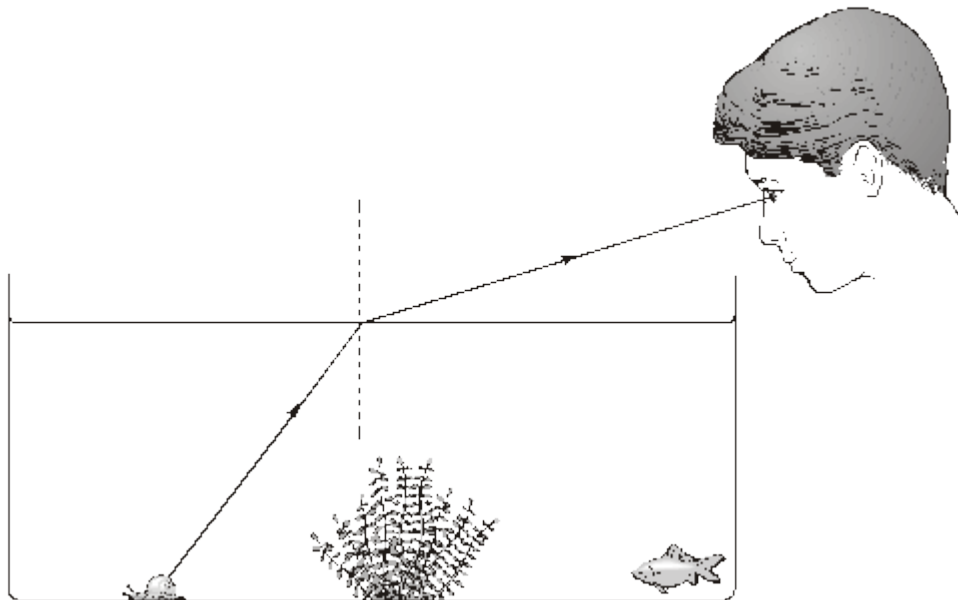


1 (L5)

- (b) (i) • a ray from the snail to Andrew's eye bending at the surface  
*both parts of the ray must be straight and must slope upwards and to the right*  
*the ray must be continuous*  
*ignore any incident rays drawn towards the snail*  
*the ray must bend further away from the normal at the surface as it goes from water to air*

1 (L6)

- an arrow pointing towards Andrew on any part of the ray  
*if two arrows are drawn, they must both be in the correct direction*



1 (L6)

- (ii) • refraction

1 (L6)

[6]

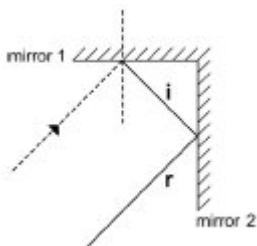
5

(a) • true false

for **all four** correct, award two marks  
 for **any two or three** correct, award one mark  
 for **one** correct answer, award no marks  
 if more than one box is ticked in any row, do not give credit for that row

2 (L6)

(b) (i) •



award one mark for approximately equal angles of incidence and reflection at mirror 1  
 award one mark for a continuous ray that is reflected off mirror 1 and mirror 2  
**both** rays are required for the mark rays must be drawn as straight lines  
 ignore any arrows

2 (L7)

(ii) • rays 'i' and 'r' correctly labelled on diagram as shown above  
**both** rays, correctly labelled, are required for the mark

1 (L7)

(c) any **two** from

- white light is a mixture of colours
- the red book absorbs all of the colours of light except red  
*accept 'the other colours are absorbed'*
- only red light is reflected  
*'red light is reflected' is insufficient*

2 (L7)

(d) •

	red	green	black
red filter	✓		
green filter			✓

***both** ticks are required for the mark*

*if more than one tick is placed in any row, award no mark*

1 (L7)

**[8]**