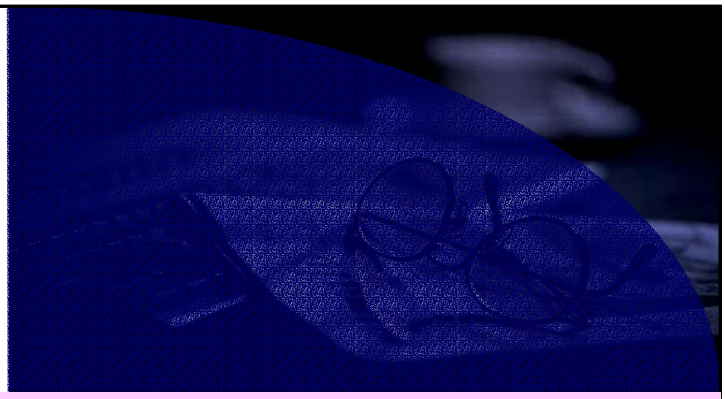
assessment for learning

year 8



Science Interactive LTD. PO BOX 50764 LONDON NW6 9AT web: www: science-interactive.co.uk

8K Light

Assessment for learning...year 8 (level 3-6)

Answer all questions:

Total marks	**28**
Time allowed	**25 mins.**

Question 1:

A white box of photographic paper has written on it, in large red letters:

WARNING:
OPEN ONLY BY THE LIGHT OF A RED SAFELIGHT

(a) The box of paper is in a photographic darkroom where the only light is from a **red** lamp.

(i) What colour does the white box appear?

.....

1 mark

(ii) What colour does the red writing appear?

.....

1 mark

(b) The red lamp is now switched off and a green lamp is switched on.

(i) What colour does the red writing appear in green light?

.....

1 mark

(ii) Explain why the writing appears to be this colour.

.....

.....

1 mark

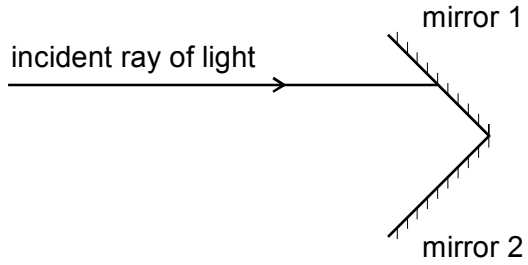
Maximum 4 marks

Question 2:

Two mirrors at 90° to each other **always** reflect a ray of light back parallel to the incident ray.

(a) (i) In the diagram below, a ray of light strikes mirror 1 at an angle of 45°.

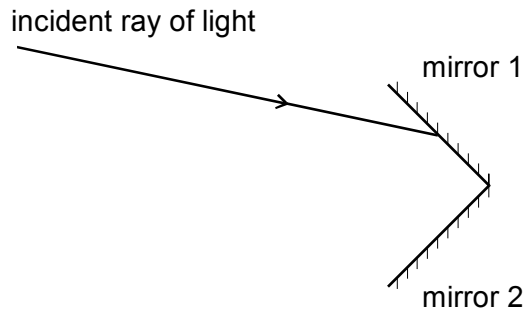
Complete the diagram to show how the mirrors reflect the ray.
Use a ruler and a protractor.



1 mark

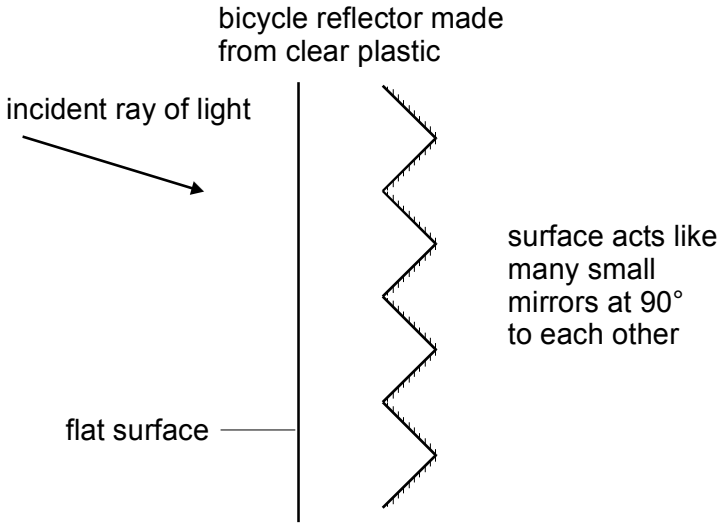
(ii) In the next diagram, a ray of light strikes mirror 1 at a different angle.

Complete the diagram to show how the mirrors reflect the ray.
Use a ruler and a protractor.



1 mark

(b) Bicycles must have a reflector fixed to the rear mudguard or to the seat.



The diagram shows part of a bicycle reflector and an incident ray of light. The light passes through the flat surface and is reflected from the small 'mirrors'.

(i) In which direction is the ray of light reflected?

.....

1 mark

(ii) At night, car drivers can easily see bicycle reflectors in the beam from their headlights.
Explain why.

.....

.....

1 mark

(iii) Why is a plane mirror **not** suitable as a bicycle reflector?

.....

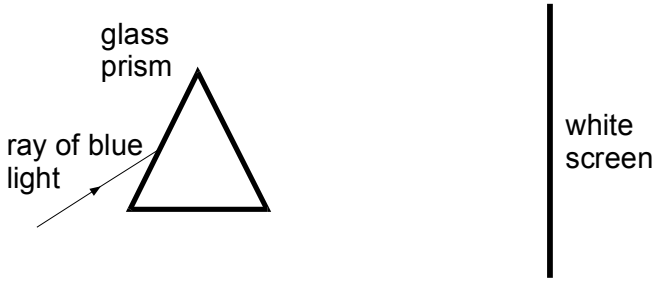
.....

1 mark

Maximum 5 marks

Question 3:

A ray of **blue** light falls on a glass prism as shown in the diagram.



(a) On the diagram, draw the path of the **blue** ray through the prism and from the prism to the screen. Use a ruler.

2 marks

(b) The blue ray is replaced by a ray of **white** light.

(i) What would you now see on the screen?

.....

1 mark

A red filter is placed between the prism and the screen.

(ii) What would you now see on the screen?

.....

.....

1 mark

(iii) Explain how the red filter causes the change.

.....

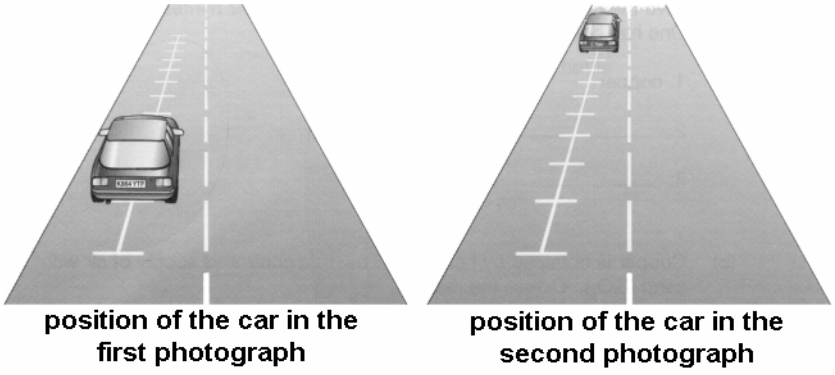
.....

1 mark

Maximum 5 marks

Question 4:

Speed cameras are used to detect motorists who break the speed limit. A number of lines 2 m apart are painted on the road. As a speeding car crosses the painted lines, the camera takes two photographs, 0.5 s apart.



(a) (i) How far did the car move between the two photographs?
Give the correct unit.

.....

.....

1 mark

(ii) How fast is the car in the photographs moving?

.....

..... **m/s**

1 mark

(b) It takes 0.0002 s to take each photograph.
How far does the car move while the speed camera is taking **one** photograph?

.....

..... **m**

1 mark

(c)The speed camera gives out bright flashes to provide enough light for the photographs. How does the light from the flash get back to the camera to produce the photographs?

.....

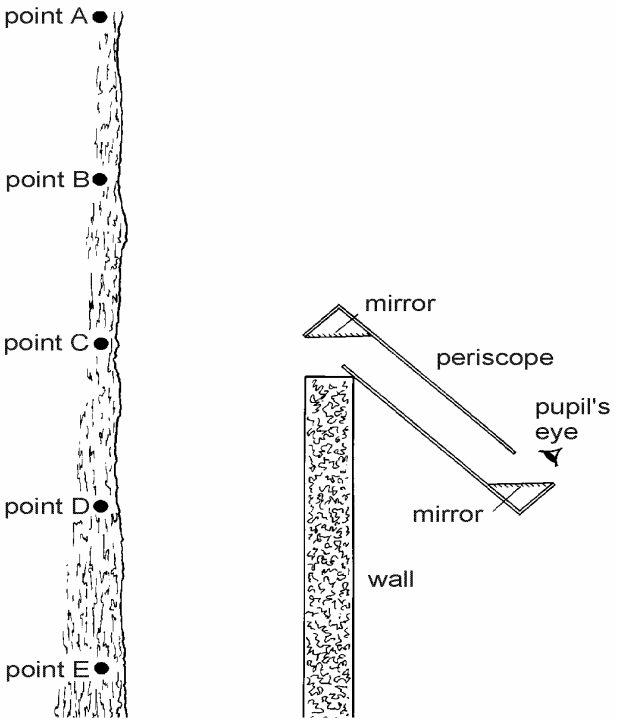
.....

1 mark

Maximum 4 marks

Question 5:

A pupil is observing the behaviour of a woodpecker. He uses a periscope to look over a wall at a tree, and waits for the bird to land on the trunk.



The pupil can only watch one part of the tree trunk at a time.

(a) Tick the box to show the point on the tree trunk which he can see using the periscope in the position shown.

point A ☐

point B ☐

point C ☐

point D ☐

point E ☐

1 mark

(b) Draw the path of the ray of light to show how the pupil sees this point. Use a ruler. Show the direction of the ray of light.

3 mark

(c) What should the pupil do to the periscope to watch point C?

.....

.....

1 mark

Maximum 5 marks

-