NAME: .....

THIN LENSES

1. In a short-sighted eye, rays from distant objects are not focused on the retina.
Where are these rays focused and what type of lens is needed to correct the problem?

	where focused	lens needed
A	behind the retina	converging lens
B	behind the retina	diverging lens
C	in front of the retina	converging lens
D	in front of the retina	diverging lens

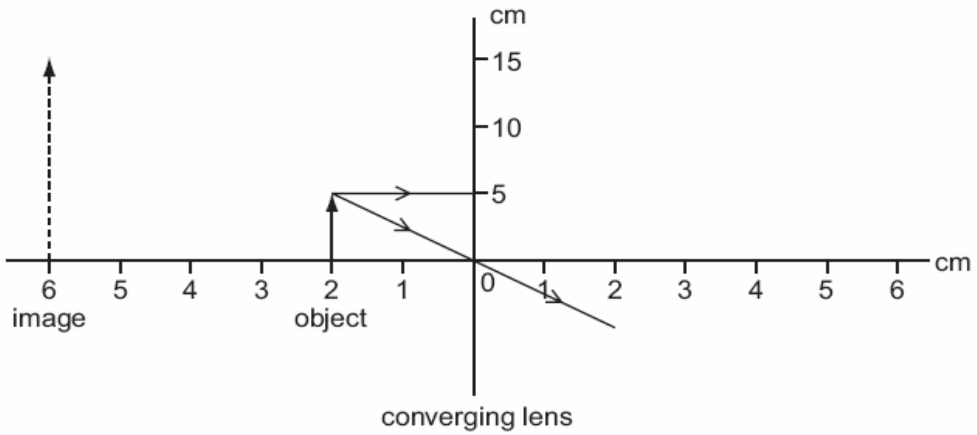
2. When an object is placed at the focus of a concave mirror, the image will be formed at _____.

A. infinity
B. focus
C. centre of curvature
D. pole

3. An object of size 2.0 cm is placed perpendicular to the principal axis of a concave mirror. The distance of the object from the mirror equals to the radius of curvature. The size of the image will be _____.

A. 0.5 cm
B. 1.5 cm
C. 1.0 cm
D. 2.0 cm

4. An object 5.0 cm high is placed 2.0 cm from a converging (convex) lens which is being used as a magnifying glass.
The image produced is 6.0 cm from the lens and is 15 cm high.

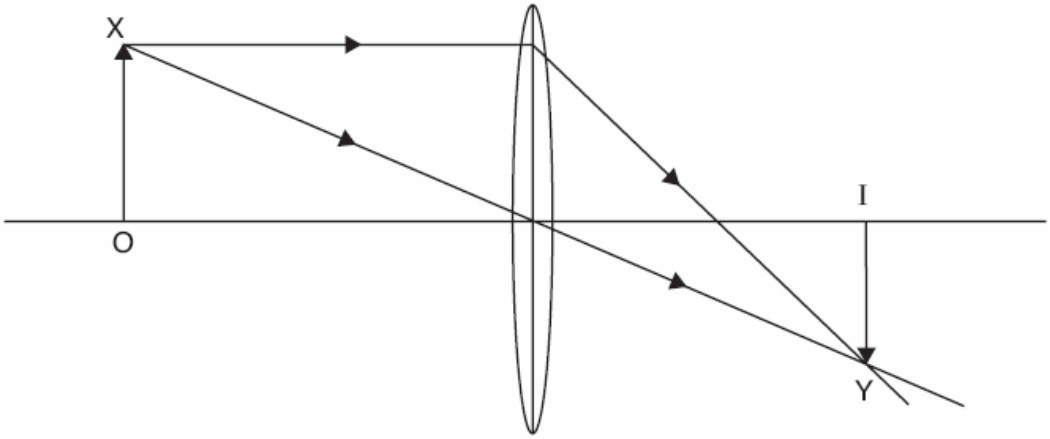


What is the focal length of the lens?
A 2.0 cm
B 3.0 cm
C 4.0 cm
D 6.0 cm

5. A real object is placed before a convex lens. The image formed by it is virtual, erect and magnified. The object is placed between

(A) 2f and infinity
(B) 2f and 3f
(C) f and 2f
(D) lens' optical centre and f

6. An object OX is placed in front of a converging lens. The lens forms an image IY.
The figure below shows two rays from the object to the image.



(a) On the figure above ,
(i) Clearly mark and label the principal focus and the focal length of the lens, [3]
(ii) Draw a third ray from X to Y. [1]

(b) The following list contains descriptions that can be applied to images.
Tick any which apply to the image shown in Figure.

real	☐
virtual	☐
enlarged	☐
diminished	☐
inverted	☐
upright	☐
image distance less than object distance	☐
image distance more than object distance	☐

[4]

(c) State two things that happen to the image in Fig. 8.1 when the object is moved further away from the lens.

1.
.....

.....

2.

.....

.....[2]

[Total: 10]

7. Fig. 5.2 shows a normal eye viewing an object close to it. Fig. 5.3 is a long-sighted eye viewing an object at the same distance.

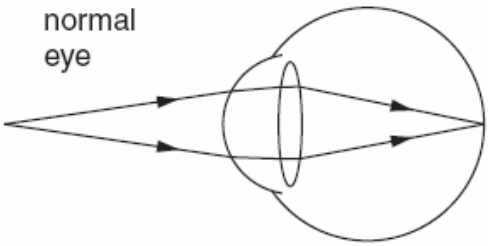


Fig 5.3

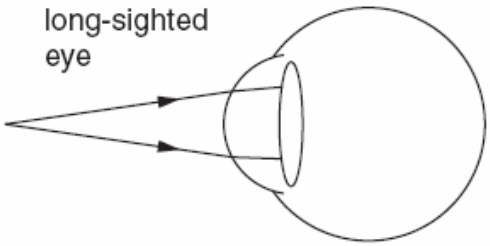


Fig 5.2

Complete Fig. 5.3 to show the rays travelling through the eye. [1]

8. Fig. 2.1 shows the lens of a simple camera being used to photograph an object.

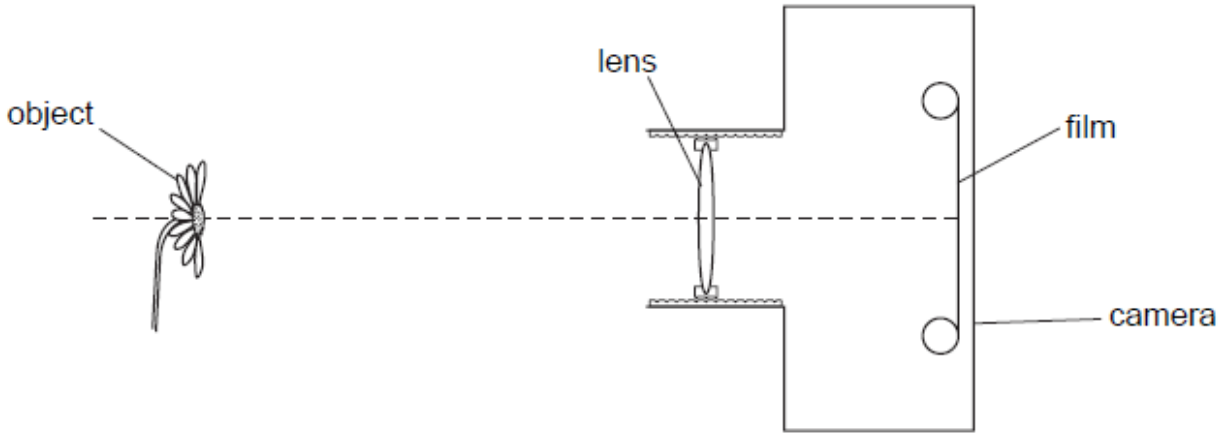


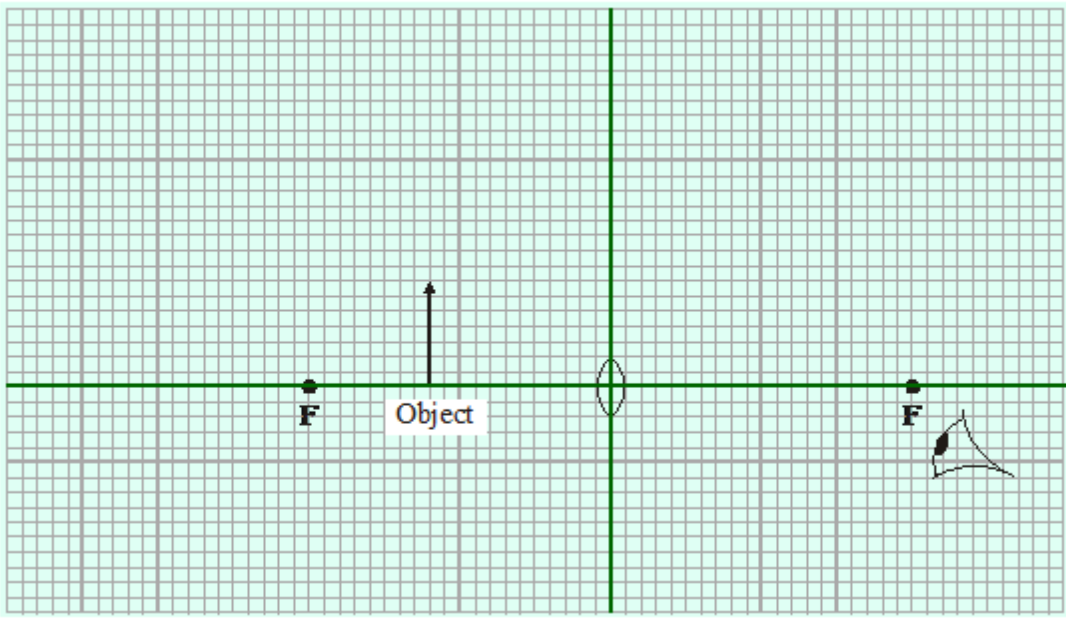
Fig. 2.1

The lens forms a focused image of the object on the film.
(a) Draw two rays from the top of the object to show how the lens forms the image. [2]
(b) The object moves closer to the camera. State how the lens is adjusted to keep the image in focus.

[1]

[Total 3m]

9. The diagram shows a converging lens of focal length 4 cm being used as a magnifying glass. An object 1.6 cm tall is placed 2.4 cm from the lens.



(a) On the diagram, use a ruler to construct accurately the position and size of the image. You should show how you construct your ray diagram and how light appears to come from the image to the eye.

(4 marks)

(b) The image is virtual. What is a virtual image?

(1 mark)

(c) Calculate the magnification produced by the lens. Show clearly how you work out your answer.

(2 marks)

(Total 7 marks)