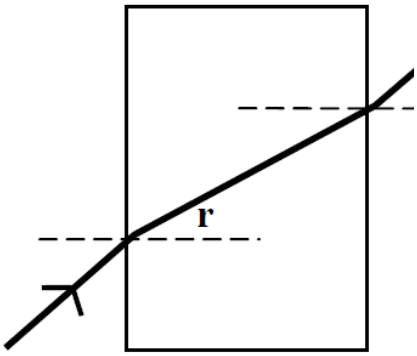
Light Answers – NAT 5

1) Refraction is the **change in** the **speed of light** when moving from one medium to another.

2) a)



(Angle of incidence i, is the angle between the normal and the ray of light entering the block.)

b) Angle i is greater than angle r. (i>r)

c) The rays entering and leaving the glass block are **parallel**.

3) a) The student attaches the piece of paper to a wall opposite to a window.

With one hand he/she holds the metre stick against the piece of paper.

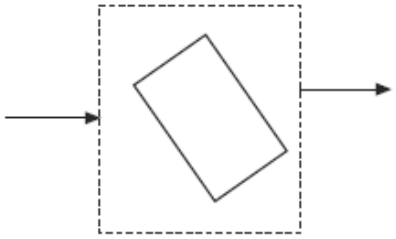
The convex lens is moved backwards and forwards from the paper until a sharp image is obtained.

The distance between the paper and the lens at this point is the focal length of the lens.

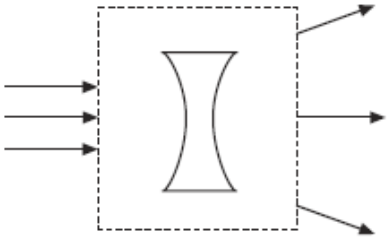
b) The image is upside down, back to front and smaller in relation to the object.

c) The thinner the convex lens the longer the focal length of the lens.

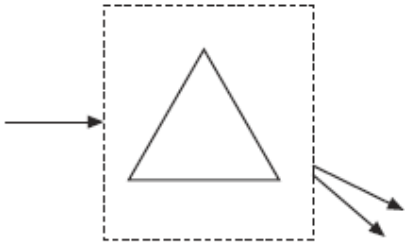
4) a)



b)

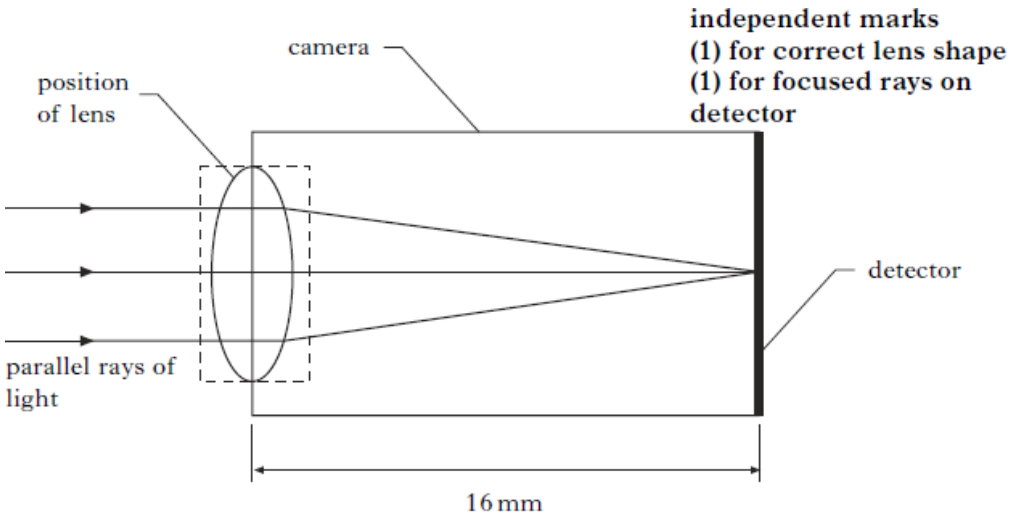


c)



Visible spectrum

5)



independent marks
(1) for correct lens shape
(1) for focused rays on detector

6) a) C – Cornea, P – Pupil, L- Lens (convex), R – Retina, O – Optic Nerve, B - Brain.

b) Light does not pass through the Iris, it passes through the pupil.

c) The screen of the eye is called the Retina.

d) The cornea and the lens (convex).

7) a) + b)

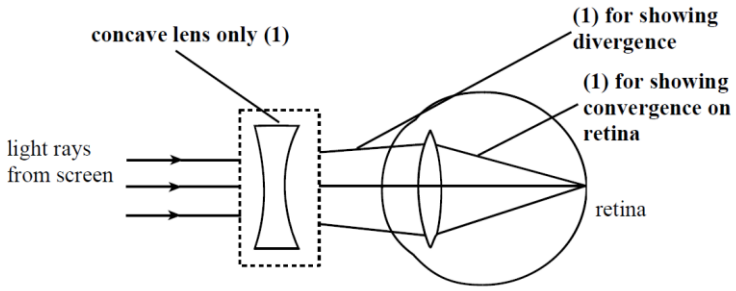
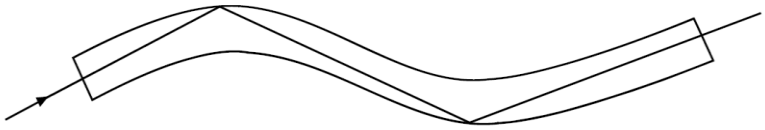


Figure 2

c) Short sight.

d) Mr McMullen wears **concave** lenses in his glasses to cure his **short sight**.

8) a)



b) Only light energy is transmitted through an optical fibre. (No heat energy transfer)

9) a) X – Light guide , Y- Image guide

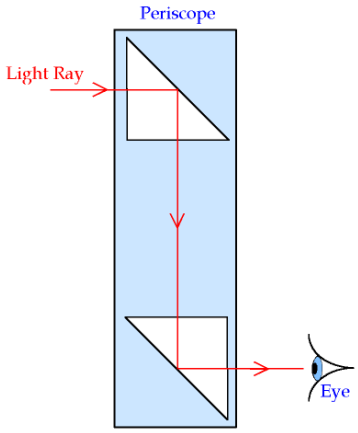
b) X – Transmits the light inside the patient

Y – Transmits the reflected light back to the doctor's eyes.

c) To allow the doctor to steer to different parts inside the body.

10) a) Total Internal Reflection. (TIR)

b)



Two plane mirrors can be used here instead of the two prisms to show the reflections.