

The picture shows a converging lens with rays of light passing through it.

What two properties of light are illustrated in this picture?

Property 1 light refracts

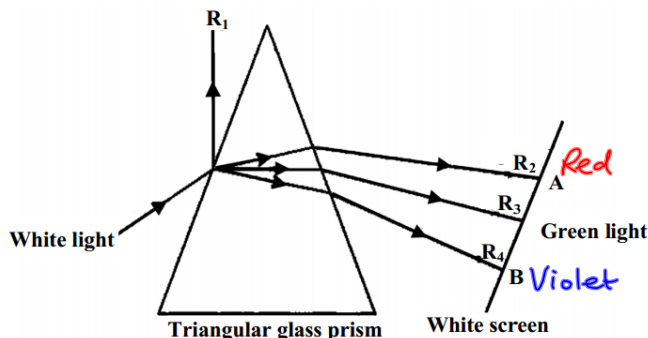
Property 2 light travels in straight lines

What causes the appearance of a 'second' drinking straw in the drink in the glass shown in the photograph?

What? Refraction



- (a) A narrow beam (ray) of white light is directed onto a triangular glass prism as shown in the diagram.



The paths of four rays: R_1 , R_2 , R_3 and R_4 produced from this ray of white light are shown in the diagram.

- (i) Ray one (R_1) is deflected off the prism as shown in the diagram. What word is used to describe the deflection of ray one (R_1)? (3)

Reflection

- (ii) Rays two, three and four (R_2 , R_3 , and R_4) enter and leave the prism and change direction each time. What is this change of direction of light called? (3)

Refraction

- (iii) A single ray of white light enters the prism and a band of light of many colours leaves the prism. Just three of the emergent rays are shown in the diagram. The coloured rays are produced from the white light. What is this separation of white light into coloured light called? (3)

Dispersion

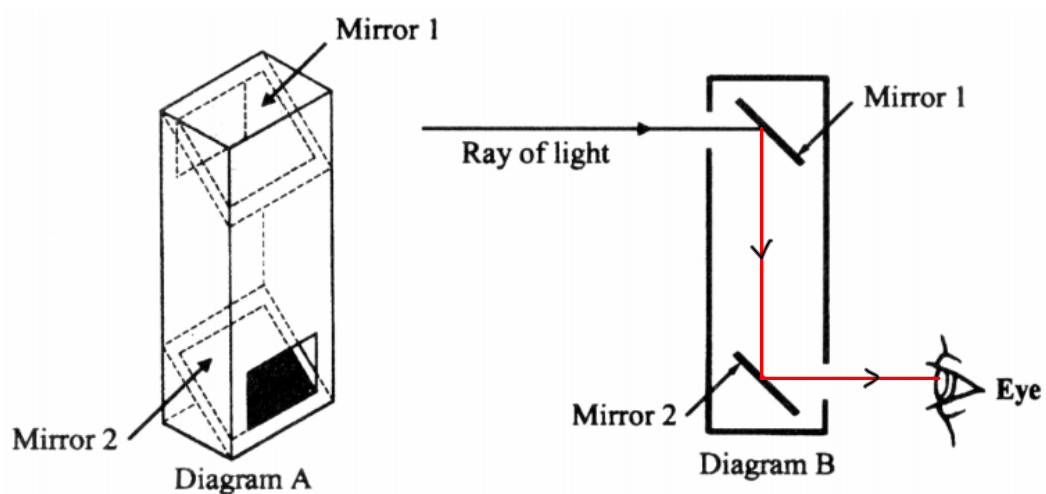
- (iv) Give the colour of light that can be seen at the extreme ends **A** and **B** on the white screen. (6)

A Red B Violet

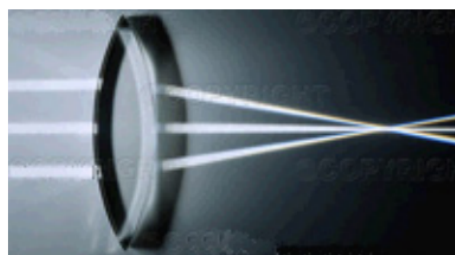
- (v) Name a natural phenomenon that produces a band of coloured light from sunlight. (3)

Name Rain bow

- (i) Diagram A is of a simple periscope. Complete diagram B *showing the reflections of the ray of light at both mirrors.* (6)



- (b) The photograph shows narrow beams of light (rays) passing through a lens-shaped piece of transparent material. *Parallel rays of light enter the material from the left and when they leave the material they converge and pass through a common point, before moving apart.*



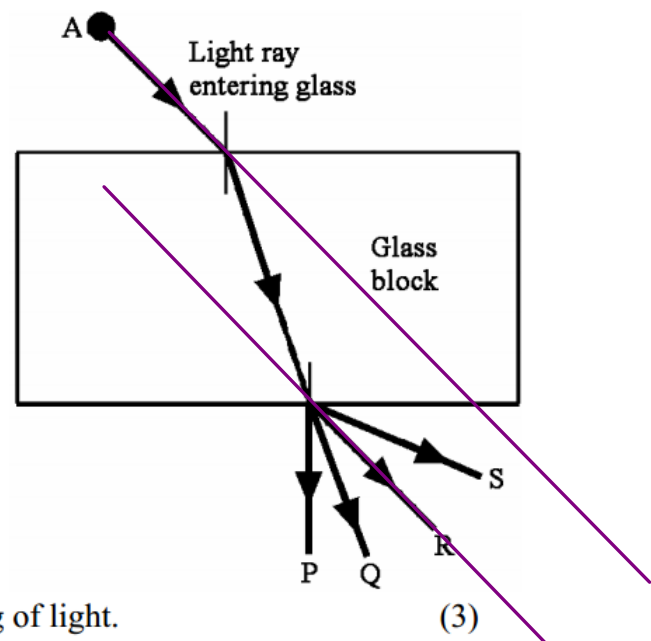
Give a *use* for a lens having this effect on light.

(3)

magnifying glass

The path of this light ray is shown in the second diagram.

The light ray from **A** bends both on entering and on leaving the glass block.



- (i) What is this *bending of light* called? (3)

What? Refraction

- (ii) Pick, from 'rays' **P, Q, R** or **S** the path taken by the light ray leaving the glass. (3)

Ray R

- (iii) Give an *application* of this bending of light. (3)

Application lens

- (iv) Name *another way* in which the direction of a light ray can be changed. (3)

Reflection