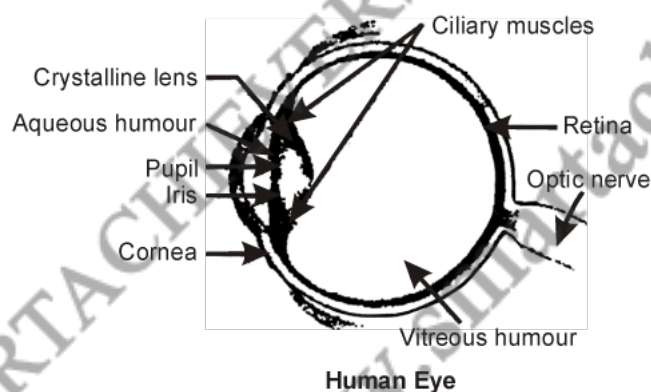


- Q1.** Draw ray diagrams each showing (a) myopic eye and (b) hypermetropic eye.
- Q2.** A student sitting at the back of the classroom cannot read clearly the letters written on the blackboard. What advice will a doctor give to her? Draw ray diagram for the correction of this defect.
- Q3.** How are we able to see nearby and also the distant objects clearly?
- Q4.** A person needs a lens of power – 4.5 D for correction of her vision.
(a) What kind of defect in vision is she suffering from?
(b) What is the focal length of the corrective lens?
(c) What is the nature of the corrective lens?
- Q5.** How will you use two identical prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light? Draw the diagram.
- Q6.** Draw a ray diagram showing the dispersion through a prism when a narrow beam of white light is incident on one of its refracting surfaces. Also indicate the order of the colours of the spectrum obtained.
- Q7.** Is the position of a star as seen by us its true position? Justify your answer.
- Q8.** Why do we see a rainbow in the sky only after rainfall?
- Q9.** Why is the colour of the clear sky blue?
- Q10.** What is the difference in colours of the Sun observed during sunrise/sunset and noon? Give explanation for each.
- Q11.** Explain the structure and functioning of Human eye. How are we able to see nearby as well as distant objects?

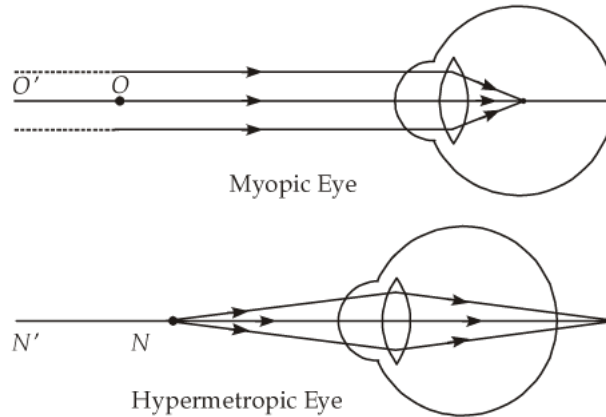


- Q12.** When do we consider a person to be myopic or hypermetropic? Explain using diagrams how the defects associated with myopic and hypermetropic eye can be corrected?
- Q13.** Explain the refraction of light through a triangular glass prism using a labelled ray diagram. Hence define the angle of deviation.
- Q14.** How can we explain the reddish appearance of Sun at sunrise or sunset? Why does it not appear red at noon?
- Q15.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.

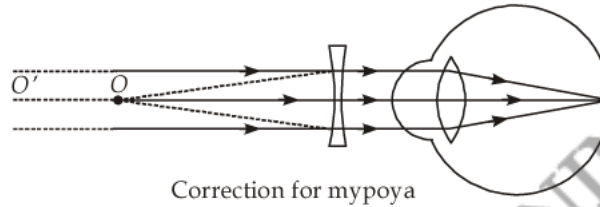
Q16. How does refraction take place in the atmosphere? Why do stars twinkle but not the planets?

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S1.



S2. **Hint:** The student is suffering from myopia (near sightedness). Doctor advises her to use a concave lens of appropriate power to correct this defect.



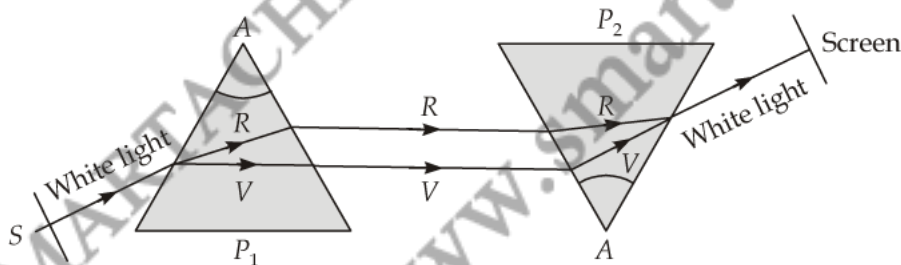
S3. **Hint:** Human eye is able to see nearby and distant objects clearly by changing the focal length of the eye lens using its power of accommodation.

S4. (a) Myopia

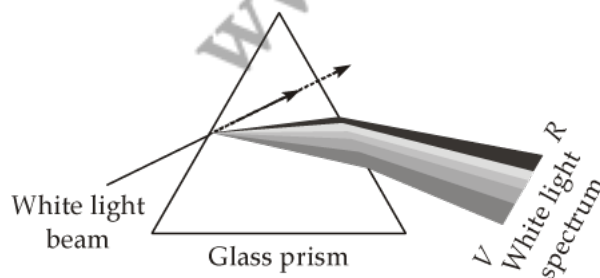
(b) **Hint:** $f = \frac{1}{-4.5} = -\frac{2}{5} = -0.22 \text{ m.}$

(c) Concave lens.

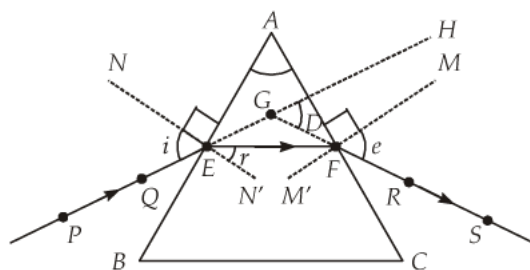
S5. **Hint:** By using two identical prisms, one placed inverted with respect to the other.



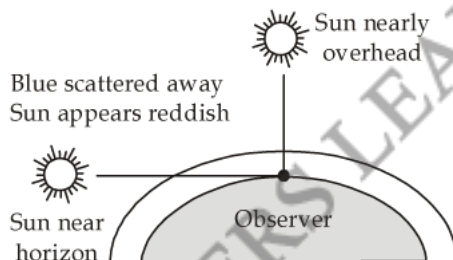
S6.



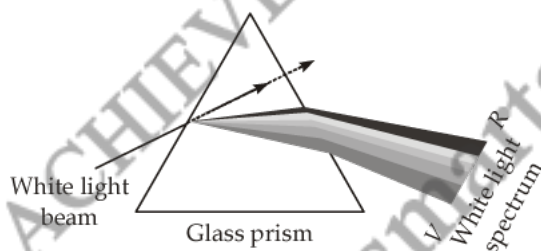
- S7.** No, light from stars undergoes atmospheric refraction which occurs in medium of gradually changing refractive index.
- S8. Hint:** The water droplets behave like prisms and disperse sunlight.
- S9. Hint:** Blue colour gets scattered the maximum.
- S10. Hint:** During sunrise and sunset the Sun appears reddish whereas at noon the Sun appears white. Explanation should be given in terms of atmospheric depth travelled by light. Colours are different due to scattering of light by atmospheric particles.
- S11. Hint:** Give explanation of each part and discuss power of accommodation.
- S12. Hint:** When a person is not able to see distant objects clearly but can see nearby objects clearly then he is considered to be myopic. If it is otherwise, he is hypermetropic. Give explanation based on figures.
- S13.** Angle of deviation is the angle D , between the incident ray and the emergent ray when a ray of light passes through a glass prism.



- S14. Hint:** Sun appears reddish at sunrise or sunset as blue light gets scattered away.



S15.



- S16. Hint:** Planets do not twinkle as they are closer to earth and are seen as extended sources.