



# PHYSICS

## BOOKS - MODERN PUBLICATION

### Optical Instruments

#### Example

1. The near point of a person suffering from hypermetropia is 75 cm. calculate the focal length and power of the lens required to

enable him to read the newspaper which is kept at 25 cm form the eye.



[Watch Video Solution](#)

2. The far point of a myopic person in 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem?



[Watch Video Solution](#)

3. Calculate the maximum angular magnification produced by a magnifying glass of 5 cm focal length. Distance for distinct vision = 25 cm.



[Watch Video Solution](#)

4. A compound microscope with an objective of 1.0 cm focal length and an eye-piece of 2.0 cm focal length has a tube of length of 20 cm. Calculate the magnifying power of the

microscope, if the final image is formed at the near point of the eye.



[Watch Video Solution](#)

5. The focal length of the objective and astronomical telescope is 75 cm and that of the eye-piece is 5 cm. If the final image is formed at the least distance of distinct vision from the eye, calculate the magnifying power of the telescope.



[Watch Video Solution](#)

6. The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem?



[Watch Video Solution](#)

7. The far point of a myopic person is 80 cm. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly ?

In what way does the corrective lens help the

person above? Does the lens magnify very distant objects? Explain.



[Watch Video Solution](#)

8. The far point of a myopic person is 80 cm. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly?

The person above prefers to remove his spectacles, while reading a book. Explain, why.



[Watch Video Solution](#)

**9.** A certain person can see clearly objects at a distnaces btween 20 cm and 250 cm from his eye.

What spectacles are required to enable him to see distant objects clearly?



**Watch Video Solution**

**10.** A certain person can see clearly objects at a distnaces btween 20 cm and 250 cm from his eye.

What spectacles are required to enable him to see distant objects clearly?



[Watch Video Solution](#)

**11.** The near point of a person suffering from hypermetropia is 75 cm. calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm form the eye.



[Watch Video Solution](#)



**12.** The far point of a myopic person is 80 cm. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly ?

In what way does the corrective lens help the person above? Does the lens magnify very distant objects? Explain.



**Watch Video Solution**

**13.** The far point of a myopic person is 80 cm. In front of the eye. What is the power of the

lens required to enable him to see very distant objects clearly ?

The person above prefers to remove his spectacles,while reaing a book.Explain,why.



[Watch Video Solution](#)

**14.** A detective uses a converging lens of focal lenth 12 cm to examine the fine details of some cloth fibers found at the scene of a crime.

What is the maximum magnification given by the lens?



[Watch Video Solution](#)

**15.** A detective uses a converging lens of focal length 12 cm to examine the fine details of some cloth fibers found at the scene of a crime.

What is the maximum magnification given by the lens?



[Watch Video Solution](#)

**16.** A converging lens of focal length 6.25 cm is used as magnifying glass. If the near point of the observer is 25 cm from the eye and the lens is held close to the eye, calculate the distance of the object from the lens



**Watch Video Solution**

**17.** A converging lens of focal length 6.25 cm is used as magnifying glass. If the near point of the observer is 25 cm from the eye and the

lens is held close to the eye, calculate the distance of the object from the lens



[Watch Video Solution](#)

**18.** A man with normal near point (25 cm) reads a book with small print using a magnifying glass: a thin convex lens of focal length 5 cm- What is the closest and the farthest distance at which he should keep the lens from the page so that he can read the

book when viewing through the magnifying glass?



[Watch Video Solution](#)

**19.** A man with normal near point (25 cm) reads a book with small print using a magnifying glass: a thin convex lens of focal length 5 cm- What is the closest and the farthest distance at which he should keep the lens from the page so that he can read the

book when viewing through the magnifying glass?



[Watch Video Solution](#)

**20.** A compound microscope has a magnification of 30. The focal length of its eyepiece is 5 cm. Assuming the final image to be formed at least distance of distinct vision (25 cm), calculate the magnification produced by the objective.



[Watch Video Solution](#)

21. The focal lengths of the objective and eyepiece of a compound microscope are 4 cm and 6 cm respectively. If an object is placed at a distance of 6 cm from the objective, what is the magnification produced by the microscope? Distance of distinct vision = 25 cm.



[Watch Video Solution](#)



**22.** The focal lengths of the objective and eye-piece of a compound microscope are 1.25 cm and 5 cm respectively. Find the position of the object relative to the objective in order to obtain an angular magnification of 30 in normal adjustment.



**Watch Video Solution**

**23.** The focal length of the eye-piece and objective of a compound microscope are 5 cm and

1 cm respectively and the length of the tube is 20 cm. Calculate the magnifying power of the microscope, when the final image is formed at infinity. The value of least distance of distinct vision is 25 cm.



[Watch Video Solution](#)

**24.** The magnifying power of an astronomical telescope in the normal adjustment position is 20. If the length of the telescope is 105 cm in

this adjustment ,find the focal lengths of the two lenses.



**Watch Video Solution**

**25.** A small telescope has an objective lens of focal length 140 cm and an eyepiece of focal length 5.0 cm. (A) If this telescope is used to view a 100 m tall tower 3 km away, what is the height of the image of the tower formed by the objective lens? (B) What is the height of

the final image of the tower if it is formed at 25 cm?



[Watch Video Solution](#)

**26.** A telescope has objective lens of focal length 15m. If this telescope is used to view the moon, what is the diameter of the image of the moon formed by the objective lens? The diameter of the moon is  $3.48 \times 10^6 m$ , and the radius of lunar orbit is  $3.8 \times 10^8 m$ .



[Watch Video Solution](#)

**27.** A telescope has objective lens of focal length 15m. If this telescope is used to view the moon, what is the diameter of the image of the moon formed by the objective lens? The diameter of the moon is  $3.48 \times 10^6 m$ , and the radius of lunar orbit is  $3.8 \times 10^8 m$ .



**Watch Video Solution**

**28.** A compound microscope is used to enlarge an object kept at a distance of 0.03 m from its

objective, which consists of several convex lenses and has focal length  $0.02\text{ m}$ . If a lens of focal length  $0.1\text{ m}$  is removed from the objective, find out the distance by which the eye-piece of the microscope must be moved to refocus the image.



[Watch Video Solution](#)

**29.** A reflecting type telescope has a concave reflector of radius of curvature  $120$

cm. Calculate the focal length of eye-piece to secure a magnification of 20.



[Watch Video Solution](#)

**30.** The lens of our eye has a diameter of 0.8 cm .How much fainter star can be seen through the 508 cm objective telescope at Mount Polomar in U.S.A?



[Watch Video Solution](#)

**31.** In a compound microscope, the objective and eye-piece have focal lengths of 0.95 cm and 5 cm respectively and are kept at a distance of 20 cm. The last image is formed at a distance of 25 cm from the eye-piece. Calculate the position of the object and the total magnification.



**Watch Video Solution**



**32.** A telescope has an objective of focal length 50 cm and eye-piece of focal length 5 cm. The last distance of distinct vision is 25 cm. The telescope is focussed for distinct vision on a scale 200 cm away from the objective. Calculate the separation between the objective and eye-piece



**Watch Video Solution**

**33.** A telescope has an objective of focal length 50 cm and eye-piece of focal length 5 cm. The last distance of distinct vision is 25 cm. The telescope is focussed for distinct vision on a scale 200 cm away from the objective. Calculate the magnification produced.



**Watch Video Solution**

**34.** .....is called natural optical instrument.



**Watch Video Solution**

**35.** Name the structure that determines the eye colour in humans. What is the normal function of this structure?



**Watch Video Solution**

**36.** What is the function of optic nerve?



**Watch Video Solution**

**37.** What is the function of rods on the retina?



**Watch Video Solution**

**38.** What is the function of cones in the eye?



**Watch Video Solution**

**39.** What do you mean by accommodation?



**Watch Video Solution**

**40.** What is meant by depth of focus of the eye or a camera?



**Watch Video Solution**

**41.** What is the range of vision for normal eye?



**Watch Video Solution**

**42.** What is myopia?



**Watch Video Solution**

**43.** What is hypermetropia?



**Watch Video Solution**

**44.** What is meant by presbyopia ?



**Watch Video Solution**

**45.** What is astigmatism?



**Watch Video Solution**

**46.** What is the cause of astigmatism?



**Watch Video Solution**

**47.** A person looking at a person wearing a shirt with a pattern comprising vertical and horizontal lines is able to see the vertical lines more distinctly than the horizontal ones. What is this defect due to? How is such a defect of vision corrected?





[Watch Video Solution](#)

**48.** Name the type of lenses used for correcting a myopic eye



[Watch Video Solution](#)

**49.** Name the type of lenses used for correcting a hypermetropic eye



[Watch Video Solution](#)



50. Name the type of lenses used for correcting a  
an astigmatic eye?



[Watch Video Solution](#)

51. Least distance of distinct vision of a normal  
eye is:



[Watch Video Solution](#)

**52.** What should be the position of an object relative to biconvex lens so that it behaves like a magnifying glass?



**Watch Video Solution**

**53.** What is the magnification produced by a single convex lens used as simple microscope in normal use?



**Watch Video Solution**

54. Why do we prefer a magnifying glass of smaller focal length?



[Watch Video Solution](#)

55. Name a few uses of magnifying glass.



[Watch Video Solution](#)

56. Define the magnifying power of a compound microscope when the final image is formed at infinity. Why must both the

objective and the eye piece of a compound microscope has short focal length? Explain.



[Watch Video Solution](#)

**57.** Answer the following questions: Why must both the objective and the eyepiece of a compound microscope have short focal lengths?



[Watch Video Solution](#)

**58.** Answer the following questions: Why must both the objective and the eyepiece of a compound microscope have short focal lengths?



**Watch Video Solution**

**59.** Two lenses of focal lengths 5 cm and 50 cm are to be used for making a telescope. Which will you use for the objective?



**Watch Video Solution**

**60.** What is normal adjustment?



**Watch Video Solution**

**61.** What is the distance between object and eye lens, when the telescope is on normal adjustment?



**Watch Video Solution**

**62.** What is the distance between object and eye lens, when the telescope is on normal adjustment?



**Watch Video Solution**

**63.** What is the magnifying power of an astronomical telescope in normal adjustment?  
What is its length?



**Watch Video Solution**

**64.** How does magnifying power of a telescope change on decreasing the aperture of its objective lens? Justify your answer.



**Watch Video Solution**

**65.** Astronomers prefer to use telescopes with large objective diameters to observe astronomical objects. why?



**Watch Video Solution**



**66.** How will you distinguish between a compound microscope and a telescope simply by seeing it?



**Watch Video Solution**

**67.** If a telescope is inverted, will it serve as a microscope?



**Watch Video Solution**

**68.** Explain two advantages of a reflecting telescope over a refracting telescope.



**Watch Video Solution**

**69.** Give principle, construction, working and merits of a prism binocular.



**Watch Video Solution**

**70.** What is a Cassegrain telescope?



[Watch Video Solution](#)

71. Telescope lens usually has large aperture. Why?



[Watch Video Solution](#)

72. What for are the optical instruments used?



[Watch Video Solution](#)

**73.** The far point of a myopic person is 80 cm. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly ?

The person above prefers to remove his spectacles, while reading a book. Explain, why.



**Watch Video Solution**

**74.** A hypermetropic person prefers to remove his spectacles, while driving. Explain, why.





[Watch Video Solution](#)

**75.** What is difference between hypermetropia and presbyopia?



[Watch Video Solution](#)

**76.** Draw a labelled diagram showing course of rays for a simple microscope or magnifying glass.



[Watch Video Solution](#)

**77.** Draw a ray diagram to show the image formation by a simple microscope. What is the nature of the image formed?



**Watch Video Solution**

**78.** What is difference between magnification and angular magnification produced by a lens?



**Watch Video Solution**

**79.** An object is first seen in red light and then in violet light through a simple microscope. In which case is the magnifying power of simple microscope greater?



**Watch Video Solution**

**80.** Draw a labelled ray diagram showing the formation of a final image by a compound microscope at least distance of distinct vision.



**Watch Video Solution**

**81.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**82.** Draw the ray diagram of a compound microscope.



**Watch Video Solution**



**83.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**84.** Draw the ray diagram of a compound microscope.



**Watch Video Solution**

**85.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



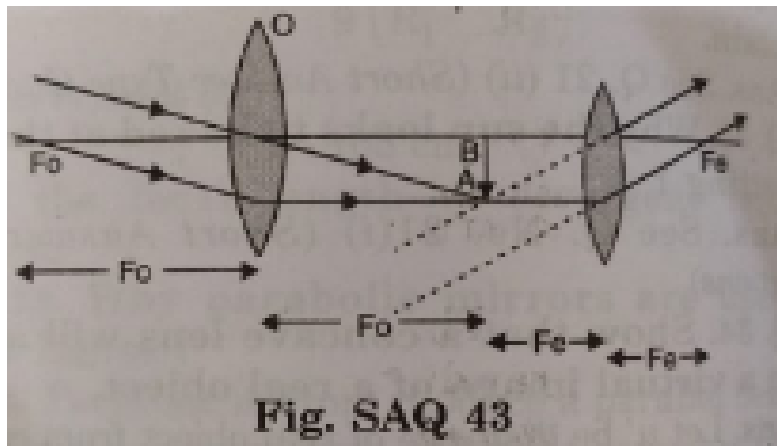
**Watch Video Solution**

**86.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**87.** Draw path of rays for astronomical telescope in normal adjustment.



**Watch Video Solution**

**88.** By giving sign-conventions, derive the lens formula relating object distance, image distance and focal length for a thin convex

lens. Draw a ray diagram to show the formation of image of an object placed between optical centre and focus of a convex lens.



[Watch Video Solution](#)

**89.** What is the magnifying power of an astronomical telescope when the final image of a distant object is formed at least distance of distinct vision?



[Watch Video Solution](#)

**90.** Draw the course of rays in an astronomical telescope, when the final image is formed at infinity. Also define the magnifying power of the astronomical telescope in this position.



**Watch Video Solution**

**91.** Draw the course of rays in an astronomical telescope, when the final image is formed at infinity. Also define the magnifying power of the astronomical telescope in this position.



[Watch Video Solution](#)

**92.** What is the magnifying power of an astronomical telescope when the final image of a distant object is formed at least distance of distinct vision?



[Watch Video Solution](#)

**93.** Which two main considerations are kept in mind while designing the objective of an

astronomical telescope?



**Watch Video Solution**

**94.** An astronomical telescope uses two lenses of power 10 D and 1 D. What is its magnifying power in normal adjustment?



**Watch Video Solution**

**95.** Distinguish between magnifying power and resolving power of a telescope.



[Watch Video Solution](#)

**96.** On what factors does magnifying power of telescope depend?



[Watch Video Solution](#)

**97.** Define resolving power of compound microscope.



[Watch Video Solution](#)



**98.** On what factors does

magnifying power of telescope depend?



**Watch Video Solution**

**99.** On what factors does the resolving power of telescope depend?



**Watch Video Solution**

**100.** How will the magnifying power of a refracting type astronomical telescope be affected on increasing for its eye piece the focal length



**Watch Video Solution**

**101.** How will the magnifying power of a refracting type astronomical telescope be affected on increasing for its eye piece the aperture? Justify your answer.





[Watch Video Solution](#)

**102.** What do you mean by light gathering power of a telescope?



[Watch Video Solution](#)

**103.** What is the special point about prism binoculars, though it is a pair of astronomical telescopes?



[Watch Video Solution](#)

**104.** Draw a ray diagram to illustrate the image formation by a Newtonian type of reflecting telescope.



**Watch Video Solution**

**105.** Draw a neat labeled ray diagram for a simple astronomical telescope using a reflector.



**Watch Video Solution**

**106.** Draw a labelled ray diagram of a reflecting type telescope. Write its any one advantage over refracting type telescope.



**Watch Video Solution**

**107.** Explain two advantages of a reflecting telescope over a refracting telescope.



**Watch Video Solution**

**108.** Out of the following of which colour, sensitivity of human eye is the highest?



**Watch Video Solution**

**109.** The nature has provided two eyes (instead of one) to us. What is the importance of this nature's gift?



**Watch Video Solution**

**110.** What is meant by 20 / 20 vision?



**Watch Video Solution**

**111.** At the time of solar eclipse, the light from the entire sun is cut off, although its diameter is several hundred times larger than that of the moon. Why?



**Watch Video Solution**

**112.** To the naked eye, the sun appears only a small bright disc, although its diameter is very large ( $\sim 10^9 m$ ). Why?



**Watch Video Solution**

**113.** When observed from the earth, the angular diameter of the solar disc is 32 minutes of arc. Determine the diameter of the image of the sun formed by a convex lens of focal length 25 cm.







[Watch Video Solution](#)

**114.** Microscopes in which object is illuminated by ultraviolet light can give higher magnifications than the microscopes that use visible light.

how do you explain this?



[Watch Video Solution](#)

**115.** Microscopes in which object is illuminated by ultraviolet light can give higher

magnifications than the microscopes that use visible light.

how do you explain this?



[Watch Video Solution](#)

**116.** Microscopes in which object is illuminated by ultraviolet light can give higher magnifications than the microscopes that use visible light.

how do you explain this?



[Watch Video Solution](#)

**117.** A refracting telescope has an objective of focal length 1 m and an eye-piece of focal length 20 cm. A real image of the sun 10 cm in diameter is formed on a screen 24 cm from the eye-piece. What angle does the sun subtend at the objective?



**Watch Video Solution**

**Exercise**

1. Explain briefly the structure of human eye.



**Watch Video Solution**

2. Give a labelled diagram of the eye and write the function of its main parts.



**Watch Video Solution**

3. What is myopia? What are its causes? Name the type of the lens to correct this defect.



[Watch Video Solution](#)

4. What is hypermetropia?



[Watch Video Solution](#)

5. What is Accommodation of eye? Write various defects of vision and their cause. How the eye of person suffering from nearsightedness and farsightedness may be corrected ?



[Watch Video Solution](#)

6. What is the magnification produced by a single convex lens used as simple microscope in normal use?



**Watch Video Solution**

7. Explain the working of simple microscope and find an expression for its magnifying power. What are the uses of simple microscope?



**Watch Video Solution**

8. Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



[Watch Video Solution](#)

9. Explain the working of simple microscope and find an expression for its magnifying power. What are the uses of simple microscope?



[Watch Video Solution](#)

**10.** Explain the working of simple microscope and find an expression for its magnifying power. What are the uses of simple microscope?



[Watch Video Solution](#)

**11.** Explain the working of simple microscope and find an expression for its magnifying



power. What are the uses of simple microscope?



[Watch Video Solution](#)

**12.** Explain the working of simple microscope and find an expression for its magnifying power. What are the uses of simple microscope?



[Watch Video Solution](#)

**13.** What is a microscope? Explain simple microscope. Calculate its magnifying power.



**Watch Video Solution**

**14.** Draw a labelled ray diagram of a compound microscope. Explain its working and derive an expression for its magnification power when final image is formed at a least distance of distinct vision.



**Watch Video Solution**

**15.** Explain the working of simple microscope and find an expression for its magnifying power. What are the uses of simple microscope?



**Watch Video Solution**

**16.** Define the magnifying power of compound microscope.



**Watch Video Solution**

**17.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**18.** Draw a labelled ray diagram of a compound microscope. Explain its working and derive an expression for its magnification power when final image is formed at a least distance of distinct vision.





[Watch Video Solution](#)

**19.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



[Watch Video Solution](#)

**20.** with the help of labelled diagram, explain the formation of final image at least distance of distinct vision in case of astronomical

telescope. Define its magnifying power and derive an expression for its magnifying power.



[Watch Video Solution](#)

**21.** Define the magnifying power of compound microscope.



[Watch Video Solution](#)

**22.** Define the magnifying power of compound microscope.



[Watch Video Solution](#)

**23.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



[Watch Video Solution](#)

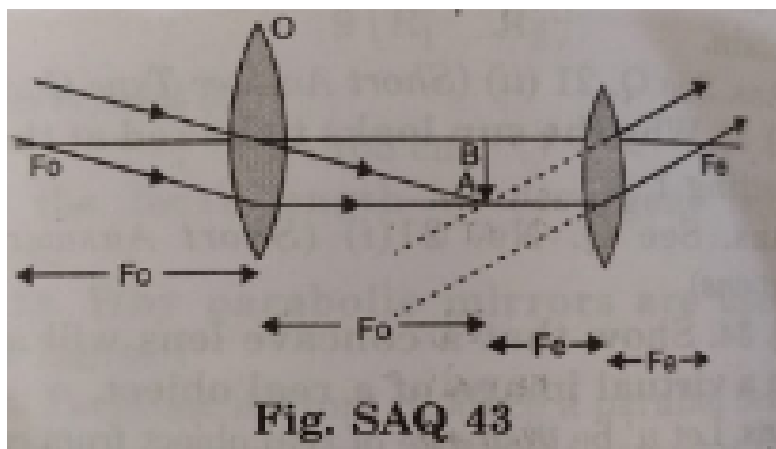
**24.** What is the magnifying power of an astronomical telescope in normal adjustment?  
What is its length?





Watch Video Solution

25. Draw path of rays for astronomical telescope in normal adjustment.



Watch Video Solution



**26.** Draw a ray diagram of an astronomical telescope in the normal adjustment position. State two drawbacks of this type of telescope.



**Watch Video Solution**

**27.** Draw a labelled diagram of an astronomical telescope and explain its working. Give an expression for its magnifying power.



**Watch Video Solution**

**28.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



**Watch Video Solution**

**29.** What is the magnifying power of an astronomical telescope when the final image of a distant object is formed at least distance of distinct vision?



**Watch Video Solution**

**30.** What is the magnifying power of an astronomical telescope in normal adjustment?

What is its length?



[Watch Video Solution](#)

**31.** Draw a labelled ray diagram to show the image formation in a refracting type astronomical telescope .Why should the diameter of teh objctive of a telescope large?



[Watch Video Solution](#)

**32.** Draw a labelled ray diagram of a reflecting type telescope. Write its any one advantage over refracting type telescope.



**Watch Video Solution**

**33.** Draw a ray diagram of an astronomical telescope in the normal adjustment position. State two drawbacks of this type of telescope.



**Watch Video Solution**

**34.** Explain two advantages of a reflecting telescope over a refracting telescope.



**Watch Video Solution**

**35.** Draw a ray diagram to illustrate the image formation by a Newtonian type of reflecting telescope.



**Watch Video Solution**

**36.** Explain two advantages of a reflecting telescope over a refracting telescope.



**Watch Video Solution**

**37.** Explain two advantages of a reflecting telescope over a refracting telescope.



**Watch Video Solution**

**38.** Bring out the difference between a refracting and a reflecting type telescope.



**Watch Video Solution**

**39.** Draw a labelled diagram of human eye and explain the terms :far point ,Power of accommodation , persistence of vision and the least distance of distinct vision for a human eye.



**Watch Video Solution**

**40.** With the help of a labelled diagram, explain the structure of eye and explain the function of its various parts.



**Watch Video Solution**

**41.** Draw a labelled diagram human eye.



**Watch Video Solution**



**42.** What is the cause of myopia? How can it be corrected ? Explain with a labelled diagram.



**Watch Video Solution**

**43.** What is Accommodation of eye? Write various defects of vision and their cause. How the eye of person suffering from nearsightedness and farsightedness may be corrected ?



**Watch Video Solution**

**44.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**45.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**46.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**47.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**48.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**49.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

50. Draw a ray diagram of compound microscope for the final image formed at least distance of distinct vision?



[Watch Video Solution](#)

51. You are given two convex lenses of short aperture having focal lengths 4 cm and 8 cm respectively. Which one of these will you use as an objective and which one as an eye piece for constructing a compound microscope?



[Watch Video Solution](#)

**52.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**53.** Define the magnifying power of a compound microscope when the final image is formed at infinity. Why must both the objective and the eye piece of a compound microscope has short focal length? Explain.



[Watch Video Solution](#)

**54.** Answer the following questions: Why must both the objective and the eyepiece of a compound microscope have short focal lengths?



[Watch Video Solution](#)

**55.** Draw a ray diagram to show image formation in a compound microscope. Find

expression for its magnifying power.



[Watch Video Solution](#)

**56.** Draw a labelled ray diagram of a compound microscope. Explain its working and derive an expression for its magnification power when final image is formed at a least distance of distinct vision.



[Watch Video Solution](#)



**57.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**58.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**59.** Draw a ray diagram to show image formation in a compound microscope. Find expression for its magnifying power.



**Watch Video Solution**

**60.** Define the magnifying power of compound microscope.



**Watch Video Solution**

**61.** What is the magnifying power of an astronomical telescope when the final image of a distant object is formed at least distance of distinct vision?



**Watch Video Solution**

**62.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



**Watch Video Solution**

**63.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



**Watch Video Solution**

**64.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



**Watch Video Solution**

**65.** You are given two convex lenses of short aperture having focal lengths 4 cm and 8 cm respectively. Which one of these will you use as an objective and which one as an eye piece for constructing a compound microscope?



**Watch Video Solution**

**66.** What is the magnifying power of an astronomical telescope in normal adjustment?

What is its length?





[Watch Video Solution](#)

**67.** What is the magnifying power of an astronomical telescope when the final image of a distant object is formed at least distance of distinct vision?



[Watch Video Solution](#)

**68.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



[Watch Video Solution](#)

**69.** Explain the construction and working of an astronomical telescope. find an expression for its magnifying power in normal adjustment.



[Watch Video Solution](#)

**70.** Define the magnifying power of compound microscope.



[Watch Video Solution](#)

**71.** Describe the working of a prism binocular with a suitable diagram.



**Watch Video Solution**

**72.** What is the special point about prism binoculars, though it is a pair of astronomical telescopes?



**Watch Video Solution**



**73.** A person can not see clearly objects beyond a distance of 1.2 m. Name the defect of vision he is suffering from. What would be the power of correcting lens used to restore proper vision?



**Watch Video Solution**

**74.** A person cannot see object beyond 1.5 m distinctly . What type of lens should be used to restore proper vision?



**Watch Video Solution**

**75.** The near point of a person suffering from hypermetropia is 75 cm. calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm form the eye.



**Watch Video Solution**

**76.** A farsighted person has a near point of 75 cm for one eye and a near point of 100 cm for the other .What pwers should corrective

lenses have to allow the person to see an object clearly at a distance of 25cm.



[Watch Video Solution](#)

77. The near point of a person suffering from hypermetropia is 75 cm. calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm form the eye.



[Watch Video Solution](#)

**78.** The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem?



**Watch Video Solution**

**79.** A person with myopic eye cannot see objects beyond 1.2 m distinctly. What should be the type of the corrective lens used to restore proper vision?



**Watch Video Solution**

**80.** The far point of a myopic person is 80 cm. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly ?

In what way does the corrective lens help the person above? Does the lens magnify very distant objects? Explain.



**Watch Video Solution**

**81.** The near point of a hypermetropia eye is 1 m find the power of the lens required to correct this defect . Assume that near point of the normal eye is 25 cm



**Watch Video Solution**

**82.** A certain person can see clearly objects at a distnaces btween 20 cm and 250 cm from his eye.

What spectacles are required to enable him to see distant objects clearly?



[Watch Video Solution](#)

**83.** A certain nearsighted person cannot see objects clearly, when they are more than 78 cm from either eye.

The person's near point is 23 cm. How is this affected, when viewing through the corrective lenses? Assume that the lenses in spectacles are 3 cm in front of the eye.



[Watch Video Solution](#)

**84.** A diamond cutter uses a jeweller's lens to examine a diamond. If the focal length of the lens is 16 cm, what is the maximum angular magnification for the diamond?



[Watch Video Solution](#)

**85.** Sherlock Holmes looks at a fingerprint with a magnifying glass of power + 10 D. What is the maximum magnification of the fingerprint?





[Watch Video Solution](#)

**86.** A converging lens of power 25 D is used as a simple microscope. Calculate the magnifying power, if the distance of distinct vision is 25 cm.



[Watch Video Solution](#)

**87.** A man with normal near point (25 cm) reads a book with small print using a

magnifying glass: a thin convex lens of focal length 5 cm- What is the closest and the farthest distance at which he should keep the lens from the page so that he can read the book when viewing through the magnifying glass?



[Watch Video Solution](#)

**88.** A man with normal near point (25 cm) reads a book with small print using a magnifying glass: a thin convex lens of focal

length 5 cm- What is the maximum and the minimum angular magnification (magnifying power) possible using the above simple microscope?



[Watch Video Solution](#)

**89.** In a compound microscope, an object is placed at a distance of 1.5 cm from the objective of focal length 1.25 cm. If the eyepiece has a focal length of 5 cm and the final

image is formed at the near point, estimate the magnifying power of the microscope.



[Watch Video Solution](#)

**90.** The focal lengths of the objective and eyepiece of a compound microscope are 4 cm and 6 cm respectively. If an object is placed at a distance of 6 cm from the objective, what is the magnification produced by the microscope? Distance of distinct vision = 25 cm.



[Watch Video Solution](#)

**91.** A compound microscope consists of an objective lens of focal length 2.0 cm and an eyepiece of focal length 6.25 cm separated by a distance of 15 cm. How far from the objective should an object be placed in order to obtain the final image at the least distance of distinct vision (25 cm)? What is the magnifying power of the microscope in?



[Watch Video Solution](#)

**92.** The total magnification produced by a compound microscope is 20, while that produced by the eye-piece alone is 5. When the microscope is focussed on a certain object, the distance between objective and eye-piece is 14 cm. Find the focal length of objective and eye-piece, if distance of distinct vision is 20 cm.



**Watch Video Solution**

**93.** An astronomical telescope consists of two thin lenses set 36 cm apart and has a

magnifying power 8. Calculate the focal length of the lenses.



[Watch Video Solution](#)

**94.** The magnifying power an astronomical telescope in the normal adjustment position is 100. The distance between the objective and the eyepiece is 101 cm. Calculate the focal length of the objective and the eyepiece.



[Watch Video Solution](#)

**95.** An astronomical telescope, when in normal adjustment has magnifying power 5. If the distance between two lenses is 24 cm, find the focal length of both the lenses.



**Watch Video Solution**

**96.** A small telescope has an objective lens of focal length 140cm and an eyepiece of focal length 5.0cm. What is the magnifying power of the telescope for viewing distant objects



when- the final image is formed at the least distance of distinct vision (25cm)?



[Watch Video Solution](#)

**97.** An astronomical telescope, when in normal adjustment has magnifying power 5. If the distance between two lenses is 24 cm, find the focal length of both the lenses.



[Watch Video Solution](#)

**98.** A reflecting type telescope has a large spherical mirror for its objective with radius of curvature equal to 80 cm. What is the magnifying power of telescope, if eyepiece used has a focal length of 1.6 cm.



**Watch Video Solution**

**99.** The objective of telescope A has a diameter 3 times that of the objective of telescope

B.How much greater amount of light is gathered by A as compared to B?



[Watch Video Solution](#)

**100.** The lens of our eye has a diameter of 0.8 cm .How much fainter star can be seen through the 508 cm objective telescope at Mount Polomar in U.S.A?



[Watch Video Solution](#)