



PHYSICS

BOOKS - CHETANA PUBLICATION

REFLECTION OF LIGHT

Example

1. What is light?



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2. What is meant by reflection of light and what are the types of reflection?



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3. What are the laws of reflection.



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4. If the reflected rays do not actually meet, such an image is called as.....image.

A. real

B. virtual

C. magnified

D. inverted

Answer:



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5. In a plane mirror, the perpendicular distance of the image from the mirror is equal to..... .

A. the perpendicular distance of the source from the object.

B. the perpendicular distance of the source from the mirror.

C. the parallel distance of the source from the object.

D. the parallel distance of the source from the mirror.

Answer:



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6. The image formed in a convex mirror is always..... .

A. virtual, smaller and behind the mirror

B. virtual, smaller and in front of the mirror

C. real, smaller and behind the mirror

D. real, smaller and in front of the mirror

Answer:



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7.images can be displayed on a screen.

A. Virtual

B. Real

C. Virtual and erect

D. Virtual and inverted

Answer:



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8. A concave mirror is also called as a.....
mirror.

A. converging

B. diverging

C. plane

D. outward curved

Answer:



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9. The centre of the mirror surface is called its

..... .

A. pole

B. centre of curvature

C. principal axis

D. focus

Answer:



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10. According to the new sign convention, the..... of the mirror is taken as origin.

A. focus

B. pole

C. optical centre

D. centre of curvature

Answer:



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11. A convex mirror is also called as a.....
mirror.

A. converging

B. plane

C. diverging

D. inward curved

Answer:



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12. In order to see the full image of a person standing in front of a mirror, the minimum height of the mirror must be

- A. same height as that of the person
- B. double the height of the person
- C. half the height of the person
- D. quarter the height of the person

Answer:



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13. If the inner surface of the spherical mirror is reflecting, then it is amirror, and if the outer surface is reflecting then it is mirror.

A. convex, concave

B. convex, plane

C. concave, plane

D. concave, convex

Answer:



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14. The image formed by a concave mirror is
..... .

A. always virtual and erect

B. always virtual and inverted

C. virtual if the object is placed between
the pole and the focus

D. virtual if the object is beyond the focus

Answer:



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15. No matter how far you stand from a spherical mirror, your image appears erect.

The mirror may be

A. plane

B. concave

C. convex

D. either plane or convex

Answer:



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16. In case of a concave mirror, an erect image is

- A. real and enlarged.
- B. real and diminished
- C. virtual and diminished
- D. virtual and enlarged

Answer:



17. A rear view mirror of a car is

- A. plane mirror
- B. concave mirror
- C. convex mirror
- D. cylindrical mirror

Answer:



18. An image of an object placed at infinite distance from a concave mirror is formed at

- A. the focus of the mirror
- B. behind the mirror
- C. centre of curvature
- D. infinity

Answer:



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19. A ray of light parallel to principal axis after reflection from concave mirror passes through

A. centre of curvature

B. focus

C. pole

D. optical centre

Answer:



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20. The image made by a plane mirror is a..... image.

A. real

B. virtual

C. inverted

D. diminished

Answer:



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21. The size of the image of an object placed at the focus of a concave mirror is

A. erect

B. very large

C. same size

D. diminished

Answer:



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22. For virtual images, the height is
while for real images, it is

- A. positive, positive
- B. negative, positive
- C. negative, negative
- D. positive, negative

Answer:



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23. Find the odd man out:

Torches, flood lights, head lamps of vehicles,
rear view mirror.



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24. Find the odd man out:

Side mirrors of cars, parking mirrors, flood
lights, mirror fitted in shops.



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25. Find the odd man out:

Image is laterally inverted, image is of same size, image is at same distance, image is diminished.



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26. What is a mirror?



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27. What kind of mirror will a doctor use to concentrate on teeth, eyes, ears etc.?



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28. What do the nature, position and size of the image depend on?



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29. Give the expression for mirror formula.



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30. State any four uses of concave mirror.



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31. What are the two types of spherical mirror?



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32. Match the columns:

Column 'A'	Column 'B'
(1) Plane mirror	(a) Rear view mirror
(2) Concave mirror	(b) At laughing gallery
(3) Convex mirror	(c) At a hair dresser
(4) Irregular curved mirror	(d) At a dentist



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33. Match the columns:

Column 'A'	Column 'B'
(1) Plane mirror	(a) Virtual and diminished image
(2) Concave mirror	(b) Virtual and same size image
(3) Convex mirror	(c) Real and inverted image



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34. State whether the following statements are true or false. Correct the false statements:

If the mirrors are kept at right angle to each

other, then the number of images formed will be 4.



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35. State whether the following statements are true or false. Correct the false statements:

A convex mirror is used in flood lights.



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36. State whether the following statements are true or false. Correct the false statements:

A concave mirror always forms a magnified image.



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37. State whether the following statements are true or false. Correct the false statements:

Images formed by convex mirrors are always virtual.





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38. State whether the following statements are true or false. Correct the false statements:

The distance between the focus and the pole is called the radius of curvature.



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39. State whether the following statements are true or false. Correct the false statements:

Reflection from a spherical mirror obeys laws of reflection.



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40. State whether the following statements are true or false. Correct the false statements:

The reflecting surface of a concave mirror is curved.



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41. State whether the following statements are true or false. Correct the false statements:

Distances measured in the direction of the incident light are taken as positive.



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42. State whether the following statements are true or false. Correct the false statements:

If the image is erect, the height of the image is negative.





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43. State whether the following statements are true or false. Correct the false statements:

A real image can be displayed on a screen.



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44. State whether the following statements are true or false. Correct the false statements:

A concave mirror always forms a real and inverted image.



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45. State whether the following statements are true or false. Correct the false statements:

Doctors use diverging beam of light to study teeth, ears and eyes.



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46. A concave mirror is also called as a.....
mirror.





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47. Concave mirrors are used in torches and in car headlights.



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48. A dentist uses a concave mirror while examining teeth.



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49. A bird is sitting in front of two plane mirrors inclined at an angle of 60° to each other. How many images does the bird see in the mirror?



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50. A coin is kept in front of two plane mirrors inclined to each other. If 3 images of the coin are seen then what is the angle A between the mirrors?



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51. An image is formed 5 cm behind a convex mirror of focal length 10 cm. At what distance is the object placed from the mirror?



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52. An object placed 20 cm in front of a convex mirror is found to have an image 15cm behind the mirror. Find the focal length of the mirror.



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53. An object is placed at a distance of 36 cm from a concave mirror of focal length 12 cm. Find the image distance.



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54. An arrow is placed at a distance of 25 cm from a diverging mirror of focal length 20 cm. Find the image distance.



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55. An object 4 cm in height is placed at a distance of 36 cm from a concave mirror. The image is formed 18 cm in the front of the mirror. Find the height of the image.



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56. An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3 cm high. Find the image distance.





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57. An object 10 cm in height is placed at a distance of 36 cm from a concave mirror. If the image is formed at a distance of 18 cm in front of the mirror, find the height of image.



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58. A converging mirror forms a real image of height 4 cm of an object of height 1 cm placed

20 cm away from the mirror. Find the image distance.



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59. Rajashree wants to get an inverted image of height 5 cm of an object kept at a distance of 30 cm from a concave mirror. The focal length of the mirror is 10 cm. At what distance from the mirror should she place the screen ? What will be the type of the image, and what is the height of the object?



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60. An object of height 7 cm is kept at a distance of 25 cm in front of a concave mirror. The focal length of the mirror is 15 cm. At what distance from the mirror should a screen be kept so as to get a clear image? What will be the size and nature of the image?



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61. A 10 cm long stick is kept horizontally in front of the concave mirror having focal length of 10 cm in such a way that the end of the stick closest to the pole is at a distance of 20 cm. What will be the length of the image?



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62. A 10 cm long stick is kept horizontally in front of the concave mirror having focal length of 10 cm in such a way that the end of

the stick closest to the pole is at a distance of 20 cm. What will be the length of the image?



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63. A convex mirror has a focal length of 18cm. The image of an object kept in front of the mirror is half the height of the object. What is the distance of the object from the mirror?



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64. An object 2 cm in height is placed at a distance of 16 cm from a concave mirror. If the focal length of the mirror is 9.6 cm., find the image distance, nature and size of the image.



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65. An arrow of 2.5 cm height is placed at a distance of 25 cm from a diverging mirror of focal length 20 cm. Find the nature, position and size of the image formed.





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66. Define the following:

Centre of curvature of mirror (C)



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67. Define the following:

Radius of curvature [®]



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68. Define the following:

Pole (P)



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69. Define the following:

Principal axis of a mirror



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70. Define the following:

Focus of a concave mirror (F)



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71. Define the following:

Focus of a convex mirror (F)



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72. Define the following:

Focal length of a mirror (f)



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73. Describe the positions of the source of light with respect to a concave mirror in (a) Torch light (b) Projector lamp (c) Flood light.



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74. Why are concave mirrors used in solar devices?



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75. Why are the mirrors fitted on the outside of cars convex?



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76. Why does obtaining the image of the Sun on a paper with the help of a concave mirror burn the paper?



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77. If a spherical mirror breaks, what type of mirrors are the individual pieces?



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78. Answer the following questions:

State the rules for drawing a ray diagram in the case of images formed by spherical mirrors.



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79. Which type of mirrors are used in the following?

Periscope, floodlights, shaving mirror, kaleidoscope, street lights, head lamps of a car.



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80. Distinguish between Convex mirror and Concave mirror.



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81. Distinguish between:

Real image and Virtual image



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82. Distinguish between:

Principal Focus of Concave and Convex Mirror



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83. Distinguish between:

Explain the difference between a plane mirror, a concave mirror and a convex mirror with respect to the type and size of the images produced.



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84. If we hold a page of a book in front of a mirror, we see laterally inverted letters in the mirror. Why does it happen?





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85. Which letters of the English alphabet form images that look the same as the original letters?



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86. If we keep the mirrors parallel to each other, how many images will we see ?



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87. When a person stands in front of a plane mirror, how is the image formed? What is the nature of the image?



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88. Place two plane mirrors at an angle of 90° to each other. Place a small object between them. Images will be formed in both mirrors. How many images do you see? Now change the angle between the mirrors as given in the

following table and count the number of images each time. How is this number related to the measure of the angle?



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89. Three mirrors are created from a single sphere. Which of the following - pole, centre of curvature, radius of curvature, principal axis - will be common to them and which will not be

common?



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90. What sign conventions are used for reflection from a spherical mirror?



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91. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object at infinity for a concave mirror.



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92. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object beyond centre of curvature for a concave mirror.



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93. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object at the centre of curvature for a concave mirror.



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94. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object between F and C for a concave mirror.



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95. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object at focus for a concave mirror.





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96. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object between pole and focus for a concave mirror.



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97. Draw ray diagrams for the cases of images obtained in concave mirrors:

A ray diagram for object at focus for a concave mirror.



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98. In order to see the full image of a person standing in front of a mirror, the minimum height of the mirror must be half the height of the person. Explain.



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99. Explain the images formed by concave mirrors with respect to position of the image and object and also the Nature and size of image



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Exercise

1. If the reflected rays do not actually meet, such an image is called as.....image.

A. real

B. virtual

C. magnified

D. inverted

Answer:



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2. In order to see the full image of a person standing in front of a mirror, the minimum height of the mirror must be

A. same height as that of the person

B. double the height of the person

C. half the height of the person

D. quarter the height of the person

Answer:



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3. A rear view mirror of a car is

A. plane mirror

B. concave mirror

C. convex mirror

D. cylindrical mirror

Answer:



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4. A ray of light parallel to principal axis after reflection from concave mirror passes through

..... .

A. centre of curvature

B. focus

C. pole

D. optical centre

Answer:



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5. State True or False. Correct the false statement:

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image is formed at a distance of 18 cm in front of the mirror, find the height of the image.



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17. An image is formed 5 cm behind a convex mirror of focal length 10 cm. At what distance is the object placed from the mirror?



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18. Explain the sign conventions for reflection by spherical mirrors



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19. In order to see the full image of a person standing in front of a mirror, the minimum height of the mirror must be half the height of the person. Explain.



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