NCERT Solutions for 7th Class Science: Chapter 15-Light

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Class 7: Science Chapter 15 solutions. Complete Class 7 Science Chapter 15 Notes.

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Exercises

1. Fill in the blanks:

(a) An image that cannot be obtained on a screen is called _____.

(b) Image formed by a convex _____ is always virtual and smaller in size.

(c) An image formed by a _____ mirror is always of the same size as that of the object.

(d) An image which can be obtained on a screen is called a _____ image.

(e) An image formed by a concave _____ cannot be obtained on a screen.

Answer

(a) An image that cannot be obtained on a screen is called virtual image.

(b) Image formed by a convex mirror is always virtual and smaller in size.

(c) An image formed by a plane mirror is always of the same size as that of the object.

(d) An image which can be obtained on a screen is called a real image.

(e) An image formed by a concave lens cannot be obtained on a screen.

2. Mark T if the statement is true and F if it is false:

(a) We can obtain an enlarged and erect image by a convex mirror. (T/F)

(b) A concave lens always form a virtual image. (T/F)

(c) We can obtain a real, enlarged and inverted image by a concave mirror. (T/F)

(d) A real image cannot be obtained on a screen. (T/F)

(e) A concave mirror always form a real image. (T/F)

Answer

(a) F

(b) T

(c) T

(d) F

(e) F

3. Match the items given in Column I with one or more items of Column II.

Column I	Column II
(a) A plane mirror	**(i) Used as a magnifying glass.**
(b) A convex mirror	**(ii) Can form image of objects spread over a large area.**
(c) A convex lens	**(iii) Used by dentists to see enlarged image of teeth.**
(d) A concave mirror	**(iv) The image is always inverted and magnified.**
(e) A concave lens	**(v) The image is erect and of the same size as the object.**
-	**(vi) The image is erect and smaller in size than the object.**

Answer

Column I	Column II
(a) A plane mirror	(v) The image is erect and of the same size as the object.
(b) A convex mirror	(ii) Can form image of objects spread over a large area.
(c) A convex lens	(i) Used as a magnifying glass.
(d) A concave mirror	(iii) Used by dentists to see enlarged image of teeth.

(e) A concave lens	(vi) The image is erect and smaller in size than the object.

4. State the characteristics of the image formed by a plane mirror.

Answer

Characteristics of the image formed by a plane mirror:

(i) The image formed is virtual

(ii) The image is laterally inverted.

(iii) It is of the same size as the object.

(iv) The image is situated at the same distance from the mirror as the object.

(v) The image is erected.

5. Find out the letters of English alphabet or any other language known to you in which the image formed in a plane mirror appears exactly like the letter itself. Discuss your findings.

Answer

A, H, I, M, O, T, U, V, W, X, Y are the letters of English alphabet in which the image formed in a plane mirror appears exactly like the letter itself.

Discuss with your classmates to find the same types of words from other languages.

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6. What is a virtual image? Give one situation where a virtual image is formed.

Answer

The image which cannot be formed or obtained on the screen is called virtual image.

When we stand in front of our dressing table mirror, we use to see our virtual image. The virtual image is formed in case of plane and convex mirror.

7. State two differences between a convex and a concave lens.

Answer

Convex lens	Concave lens
(i) Convex lens converges the light falling on it.	(i) Concave lens diverges the light falling on it.
(ii) Convex lens is thicker in the middle.	(ii) Concave lens is thinner in the middle.

8. Give one use each of a concave and a convex mirror.

Answer

Concave mirror forms large images therefore it is used by dentists to see enlarged image of teeth.

Convex mirror forms diminished image therefore it used as rear view mirror in vehicles.

9. Which type of mirror can form a real image?

Answer

Concave mirror can form a real image.

10. Which type of lens forms always a virtual image?

Answer

Concave lens forms always a virtual image.

Choose the correct option in questions 11–13

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11. A virtual image larger than the object can be produced by a

(i) concave lens

(ii) concave mirror

(iii) convex mirror

(iv) plane mirror

Answer

(ii) concave mirror can produce a virtual image larger than the object.

12. David is observing his image in a plane mirror. The distance between the mirror and his image is 4 m. If he moves 1 m towards the mirror, then the distance between David and his image will be

(i) 3 m

(ii) 5 m

(iii) 6 m

(iv) 8 m

Answer

(iii) 6 m

In case of plane mirror, the image is situated at the same distance from the mirror as the object.

Initial distance between David and the mirror = 4 m

Final distance between David and the mirror = 4-1 = 3 m

Therefore, distance between David and his image = 3+3 = 6m

13. The rear view mirror of a car is a plane mirror. A driver is reversing his car at a speed of 2 m/s. The driver sees in his rear view mirror the image of a truck parked behind his car. The speed at which the image of the truck appears to approach the driver will be

(i) 1 m/s

(ii) 2 m/s

(iii) 4 m/s

(iv) 8 m/s

Answer

(iii) 4 m/s

In case of plane mirror, the distance is always doubled therefore the speed is in case between the image and the object. So, when driver is reversing his car at a speed of 2 m/s, then the image is also coming closer to the mirror by 2m/s. Thus, it seems that the image of the truck appears to approach the driver at 4 m/s.

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