Mirrors and the Reflection of Light DiBucci

MULTIPLE CHOICE

1. If you stand 2.0 m in front of a plane mirror, how far away would you see the image of yourself?

a) 1.0 m
b) 2.0 m
c) 4.0 m
d) 8.0 m

2. Plane mirrors produce images which

a) are always smaller than the actual object.
b) are always larger than the actual object.
c) are always the same size as the actual object.
d) could be smaller, larger, or the same size as the actual object, depending on the placement of the object.

3. A laser beam strikes a plane's reflecting surface with an angle of incidence of 37ø. What is the angle between the incident ray and the reflected ray?

a) 37ø
b) 74ø
c) 45ø
d) 90ø

4. How far are you from your image when you stand 0.75 m in front of a vertical plane mirror?

a) 0.75 m
b) 1.5 m
c) 3.0 m
d) None of the above.

5. A plane mirror forms an image that is

a) real and upright.
b) virtual and upright.
c) real and upside down.
d) virtual and upside down.

6. The angle of incidence

a) must equal the angle of reflection.
b) is always less than the angle of reflection.
c) is always greater than the angle of reflection.
d) may be greater than, less than, or equal to the angle of reflection.

7. How fast do you approach your image when you approach a vertical plane mirror at a speed of 2 m/s?

a) 1 m/s
b) 2 m/s
c) 4 m/s
d) None of the above.

8. An object is located 2.6 m in front of a plane mirror. The image formed by the mirror appears to be

a) 1.3 m in front of the mirror.
b) on the mirror's surface.
c) 1.3 m behind the mirror's surface.
d) 2.6 m behind the mirror's surface.

9. A concave mirror with a radius of 20 cm creates a real image 30 cm from the mirror. What is the object distance?

a) 20 cm
b) 15 cm
c) 7.5 cm
d) 5.0 cm

10. When a person stands 40 cm in front of a cosmatic mirror (concave mirror), the erect image is twice the size of the object. What is the focal length of the mirror?

a) 27 cm
b) 40 cm
c) 80 cm
d) 160 cm

11. A person's face is 30 cm in front of a concave shaving mirror. If the image is an erect image 1.5 times as large as the object, what is the mirror's focal length?

a) 20 cm
b) 50 cm
c) 70 cm
d) 90 cm

12. An object is placed 15 cm from a concave mirror of focal length 20 cm. The object is 4.0 cm tall. How tall is the image?

a) 1.0 cm
b) 2.0 cm
c) 8.0 cm
d) 16 cm

13. An object is placed 15 cm from a concave mirror of focal length 20 cm. The object is 4.0 cm tall. Where is it located?

a) 12 cm
b) 15 cm
c) 60 cm
d) 120 cm

14. A spherical concave mirror has a radius of curvature of 50 cm. How far from the mirror is the focal point located?

a) 25 cm
b) 50 cm
c) 75 cm
d) 100 cm

15. A light ray, traveling parallel to a concave mirror's axis, strikes the mirror's surface near its midpoint. After reflection, this ray

a) again travels parallel to the mirror's axis.
b) travels at right angles to the mirror's axis.
c) passes through the mirror's center of curvature.
d) passes through the mirror's focal point.

16. A light ray, traveling obliquely to a concave mirror's axis, crosses the axis at the mirror's center of curvature before striking the mirror's surface. After reflection, this ray

a) travels parallel to the mirror's axis.
b) travels at right angles to the mirror's axis.
c) passes through the mirror's center of curvature.
d) passes through the mirror's focal point.

17. A negative magnification for a mirror means

a) the image is inverted, and the mirror is concave.
b) the image is inverted, and the mirror is convex.
c) the image is inverted, and the mirror may be concave or convex.
d) the image is upright, and the mirror is convex.
e) the image is upright, and the mirror may be concave or convex.

18. Which of the following is an accurate statement?

a) A mirror always forms a real image.
b) A mirror always forms a virtual image.
c) A mirror always forms an image larger than the object.
d) A mirror always forms an image smaller than the object.
e) None of the above is true.

19. Sometimes when you look into a curved mirror you see a magnified image (a great big you!) and sometimes you see a diminished image (a little you). If you look at the bottom (convex) side of a shiny spoon, what will you see?

a) You won't see an image of yourself because no image will be formed.
b) You will see a little you, upside down.
c) You will see a little you, right side up.
d) You will see a little you, but whether you are right side up or upside down depends on how near you are to the spoon.
e) You will either see a little you or a great big you, depending on how near you are to the spoon.

20. If you stand in front of a convex mirror, at the same distance from it as its radius of curvature,

a) you won't see your image because there is none.
b) you won't see your image because it's focused at a different distance.
c) you will see your image and you will appear smaller.
d) you will see your image and you will appear larger.
e) you will see your image at your same height.

21. If you stand in front of a convex mirror, at the same distance from it as its focal length,

a) you won't see your image because there is none.
b) you won't see your image because it's focused at a different distance.
c) you will see your image and you will appear smaller.
d) you will see your image and you will appear larger.
e) you will see your image at your same height.

22. If you stand in front of a concave mirror, exactly at its center of curvature,

a) you won't see your image because there is none.
b) you won't see your image because it's focused at a different distance.
c) you will see your image and you will appear smaller.
d) you will see your image and you will appear larger.
e) you will see your image at your same height.

23. If you stand in front of a concave mirror, exactly at its focal point,

a) you won't see your image because there is none.
b) you won't see your image because it's focused at a different distance.
c) you will see your image, and you will appear smaller.
d) you will see your image and you will appear larger.
e) you will see your image at your same height.

24. A light ray, traveling obliquely to a concave mirror's surface, crosses the axis at the mirror's focal point before striking the mirror's surface. After reflection, this ray

a) travels parallel to the mirror's axis.
b) travels at right angles to the mirror's axis.
c) passes through the mirror's center of curvature.
d) passes through the mirror's focal point.

25. An object is placed at a concave mirror's center of curvature. The image produced by the mirror is located

a) out beyond the center of curvature.
b) at the center of curvature.
c) between the center of curvature and the focal point.
d) at the focal point.

26. An object is positioned between a concave mirror's center of curvature and its focal point. The image produced by the mirror is located

a) out past the center of curvature.
b) at the center of curvature.
c) between the center of curvature and the focal point.
d) at the focal point.

27. An object is situated between a concave mirror's surface and its focal point. The image formed in this case is

a) real and inverted.
b) real and erect.
c) virtual and erect.
d) virtual and inverted.

28. An object is 47.5 cm tall. The image is 38.6 cm tall, and 14.8 cm from the mirror. How far is the object from the mirror?

a) 124 cm
b) 47.6 cm
c) 18.2 cm
d) 12.0 cm

29. An object is 14 cm in front of a convex mirror. The image is 5.8 cm behind the mirror. What is the focal length of the mirror?

a) -4.1 cm
b) -8.2 cm
c) -9.9 cm
d) -20 cm

30. An image is 4.0 cm behind a concave mirror with focal length 5.0 cm. Whare is the object?

a) 2.2 cm in front of the mirror.
b) 2.2 cm behind the mirror.
c) 9.0 cm in front of the mirror.
d) 1.0 cm behind the mirror.

31. A object is 12 cm in front of a concave mirror, and the image is 3.0 cm in front of the mirror. What is the focal length of the mirror?

a) 15 cm
b) 7.9 cm
c) 2.4 cm
d) 1.3 cm

32. An object is 10 cm in front of a concave mirror with focal length 3 cm. Where is the image?

a) 13 cm from the mirror
b) 7.0 cm from the mirror
c) 4.3 cm from the mirror
d) 3.3 cm from the mirror

33. Light arriving at a concave mirror on a path through the focal point is reflected

a) back parallel to the axis.
b) back on itself.
c) through the focal point.
d) through the center of curvature.

34. Light arriving at a concave mirror on a path parallel to the axis is reflected

a) back parallel to the axis.
b) back on itself.
c) through the focal point.
d) through the center of curvature.

35. If the radius of curvature of the concave mirror is r, the focal length is

a) 2r
b) r
c) r/2
d) Cannot be determined from the information given.

36. A single concave spherical mirror produces an image which is

a) always virtual.
b) always real.
c) real only if the object distance is less than f.
d) real only if the object distance is greater than f.

37. A single convex spherical mirror produces an image which is

a) always virtual.
b) always real.
c) real only if the object distance is less than f.
d) real only if the object distance is greater than f.

38. A convex spherical mirror has a focal length of -20 cm. An object is placed 10 cm in front of the mirror on the mirror's axis. Where is the image located?

a) 20 cm behind the mirror.
b) 20 cm in front of the mirror.
c) 6.7 cm behind the mirror.
d) 6.7 cm in front of the mirror.

39. A concave spherical mirror has a focal length of 20 cm. An object is placed 10 cm in front of the mirror on the mirror's axis. Where is the image located?

a) 20 cm behind the mirror.
b) 20 cm in front of the mirror.
c) 6.7 cm behind the mirror.
d) 6.7 cm in front of the mirror.

40. A convex spherical mirror has a focal length of -20 cm. An object is placed 30 cm in front of the mirror on the mirror's axis. Where is the image located?

a) 12 cm in front of the mirror.
b) 60 cm behind the mirror.
c) 60 cm in front of the mirror.
d) None of the above.

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