

1. why it is hard to see an address in the dark?

- ☐ A due to the fact that light scarred from darkness
- ☐ B because of the light is in dark color
- ☐ C light is reflecting off objects and into your eyes, without a light source you cannot see anything
- ☐ D the eye can not give light at night

2. Each narrow beam from a light source travels in a straight line and is called?

- ☐ A light ray
- ☐ B light line
- ☐ C light source
- ☐ D light over

3. What are the smooth surfaces that reflect light to form images?

- ☐ A concave mirror
- ☐ B Plane mirror
- ☐ C convex mirror
- ☐ D spherical mirror

4. Which type of mirrors would give the same distance to the image as same as the object?

- ☐ A concave mirror
- ☐ B Plane mirror
- ☐ C convex mirror
- ☐ D spherical mirror

5. What do you call the imaginary light rays that appear to come from virtual images (shown as dotted lines in the figure)?

- ☐ A Virtual Ray
- ☐ B Real Ray
- ☐ C Back side Ray
- ☐ D Front side Ray

6. every virtual image is ALWAYS

- ☐ A reversed
- ☐ B Upside down
- ☐ C Inverted
- ☐ D Upright

7. Which mirror has a surface curved inward?

- ☐ A plane mirror
- ☐ B concave mirror
- ☐ C convex mirror
- ☐ D garage mirror

8. the other name is converging mirror, what is the first name?

- ☐ A plane mirror
- ☐ B concave mirror
- ☐ C convex mirror
- ☐ D supermarket mirror

9. what is the name of the point in which all rays are reflected?

- ☐ A principle axis
- ☐ B center of the curvature
- ☐ C focal distance
- ☐ D focal point

10. In a concave mirror, where do you put an object so that the image has the same size?

- ☐ A C
- ☐ B f
- ☐ C $0.5 f$
- ☐ D $2C$

11. In a concave mirror, Where do you put the object so that the image is virtual?

- ☐ A between c and f
- ☐ B between the mirror and f
- ☐ C at C
- ☐ D at f

12. In a concave mirror, in which case the reflection will produce NO IMAGE?

- ☐ A when the object is at C
- ☐ B when the object is at f
- ☐ C when the object is between f and C
- ☐ D when the object is beyond C

13. give an example of concave mirror uses in real life.

- ☐ A parking mirror
- ☐ B Dentist
- ☐ C grocery mirror
- ☐ D side mirrors in the car

14. give an example of concave mirror uses in real life.

- ☐ A Spot light
- ☐ B garage mirrors
- ☐ C supermarket mirrors
- ☐ D car mirrors

15. Which mirror has surface curved outward?

- ☐ A plane mirror
- ☐ B concave mirror
- ☐ C convex mirror
- ☐ D dentist mirror

16. what is the other name of convex mirror?

- ☐ A diverging mirror
- ☐ B converging mirror
- ☐ C plane mirror
- ☐ D spotlight mirror

17. what is the point at which all reflected rays extensions are assembled there?

- ☐ A focal point
- ☐ B center of the curvature
- ☐ C optical axis
- ☐ D virtual focal point

18. what are the characteristics of images in convex mirrors?

- ☐ A upright, smaller, virtual
- ☐ B upright, bigger, virtual
- ☐ C upright, smaller, real
- ☐ D inverted, smaller, virtual

19. in convex mirrors, where do you put the object so that the image is upright, smaller, virtual

- ☐ A at f
- ☐ B at c
- ☐ C at $2f$
- ☐ D anywhere in front of the mirror

20. give an example of a real life application of convex mirror?

- ☐ A Dentist mirror
- ☐ B spotlight mirror
- ☐ C parking mirrors
- ☐ D toilet mirror

21. What is a transparent material with at least one curved surface that causes light rays to bend?

- ☐ A Lens
- ☐ B mirror
- ☐ C spherical mirror
- ☐ D hand of the door

22. What is a lens that is thicker in the middle than at the edges

- ☐ A convex
- ☐ B concave
- ☐ C spherical
- ☐ D plane

23. what is the other name of the convex lens?

- ☐ A diverging
- ☐ B converging
- ☐ C escaping
- ☐ D running

24. All light rays traveling parallel to the optical axis are refracted so they pass through a single point, what is this point?

- ☐ A focal point
- ☐ B point center
- ☐ C point of refraction
- ☐ D point of reflection

25. where is the location of the object in convex lens, so that the image has the same size?

- ☐ A f
- ☐ B $2f$
- ☐ C $3f$
- ☐ D $0.5 f$

26. In convex lens, where is the location of the object so that the image is virtual?

- ☐ A f
- ☐ B $2f$
- ☐ C between the lens and the mirror
- ☐ D $3f$

27. In a convex lens, where is the location of the object so that the image is magnified?

- ☐ A f
- ☐ B $2f$
- ☐ C between the lens and f
- ☐ D $3f$

28. what is the lens that is thinner in the middle and thicker at the edges

- ☐ A convex
- ☐ B concave
- ☐ C plane
- ☐ D mirror

29. what is the other name of the concave lens?

- ☐ A Diverging
- ☐ B converging
- ☐ C plane
- ☐ D circular

30. In concave mirror, where do you put the object so that the image is upright, virtual and smaller?

- (A) anywhere at the front of the lens
- (B) can't form a virtual image in the concave lens
- (C) can't form a upright image in the concave lens
- (D) can't form a smaller image in the concave lens

31. calculate the image distance when the object is placed at a distance of 60.0 cm from the lens with a focal length of 15 cm.

- (A) 20cm
- (B) 15cm
- (C) 30cm
- (D) 40cm

General law of lenses

$$\frac{1}{\text{focal length}} = \frac{1}{\text{object distance}} + \frac{1}{\text{image distance}} \quad \text{or} \quad \frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$f = \frac{d_o \cdot d_i}{d_i + d_o} \quad d_o = \frac{f \cdot d_i}{d_i - f} \quad d_i = \frac{f \cdot d_o}{d_o - f}$$

Magnification

$$M = \frac{\text{image size}}{\text{object size}} = \frac{d_i}{d_o}$$

32. What is the magnification of a diverging lens (f = -20 cm) if the object is located 35 cm from the center of the lens?

- (A) +0.364
- (B) -0.364
- (C) +0.25
- (D) -0.25

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Magnification

$$M = \frac{\text{image size}}{\text{object size}} = \frac{d_i}{d_o}$$

33. magnifying glass consists of a converging lens of focal length 25 cm. A bug is 8 mm long and placed 15 cm from the lens. What are the size of the image?

- (A) +20mm
- (B) -20mm
- (C) +10mm
- (D) -10mm

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Magnification

$$M = \frac{\text{image size}}{\text{object size}} = \frac{d_i}{d_o}$$

34. magnifying glass consists of a converging lens of focal length 25 cm. A bug is 8 mm long and placed 15 cm from the lens. What is the location of the image?

- (A) -37.5 cm
- (B) 37.5 cm
- (C) -17.5 cm
- (D) 17.5 cm

General law of lenses

$$\frac{1}{\text{focal length}} = \frac{1}{\text{object distance}} + \frac{1}{\text{image distance}} \quad \text{or} \quad \frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$f = \frac{d_o \cdot d_i}{d_i + d_o} \quad d_o = \frac{f \cdot d_i}{d_i - f} \quad d_i = \frac{f \cdot d_o}{d_o - f}$$

Magnification

$$M = \frac{\text{image size}}{\text{object size}} = \frac{d_i}{d_o}$$

35. one of the vision problem that occurs when the surface of the cornea is unevenly curved. that causes blurry vision at all distances

- ☐ A Astigmatism
- ☐ B Farsightedness
- ☐ C Nearsightedness
- ☐ D eye crossing

36. a vision problem in which the person can see distant objects clearly, but cannot bring nearby objects into focus

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- ☐ B Farsightedness
- ☐ C Nearsightedness
- ☐ D eye crossing

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- ☐ A Astigmatism
- ☐ B Farsightedness
- ☐ C Nearsightedness
- ☐ D eye crossing

38. Farsightedness can be corrected with a lens that bends light rays so they are less spread out before they enter the eye, what is the type of this lens?

- ☐ A Convex
- ☐ B Concave
- ☐ C Plane
- ☐ D Circular

39. Nearsightedness can be corrected with a lens that bends light rays so they are more spread out before they enter the eye, what is the type of this lens?

- ☐ A Convex
- ☐ B Concave
- ☐ C Plane
- ☐ D Circular

40. what is the type of the side mirrors in cars?

- ☐ A plane mirror
- ☐ B concave mirror
- ☐ C convex mirror
- ☐ D spherical mirror