When an object is placed 45 centimeters in front of a diverging lens with a focal length of 15 centimeters, what are the image distance and the magnification?

Choose 1 answer:

- (A) d = 22.25 cm and m = -1.0
- (B) d = -11.25 cm and m = 0.25
- (C) d = -22.25 cm and m = 0.25
- (D) d = 10.25 cm and m = 4.1

Which of the following statements best describes the image produced by a concave lens?

Choose 1 answer:

- (A) Real, upright, and reduced image
- (B) Virtual, upright, and reduced image
- (C) Real, inverted, and enlarged image
- (D) Virtual, inverted, and enlarged image

What is the height of the image of an apple (h = 12 cm) sitting 2 meters away that is projected onto your retina if the focal length of the retina is 20 millimeters?

Choose 1 answer:

- INCORRECT
  0.40 cm
- INCORRECT
  1.8 cm
- CORRECT (SELECTED)
  0.12 cm
- INCORRECT
  1.2 cm

An object that is 3cm tall is placed 30cm from a convex spherical mirror of radius 40cm, along its central axis. What is the height of the image that is formed?

Possible Answers:

$7.5cm$

$12.0cm$

$1.2cm$

$6.0cm$

$1.7cm$

During an experiment, a thin-lens system in its initial state produces a real, inverted, and enlarged image and in its final state produces a virtual, upright, and enlarged image. Which of the following statements best elucidates on what kind of change occurred for the thin-lens system?

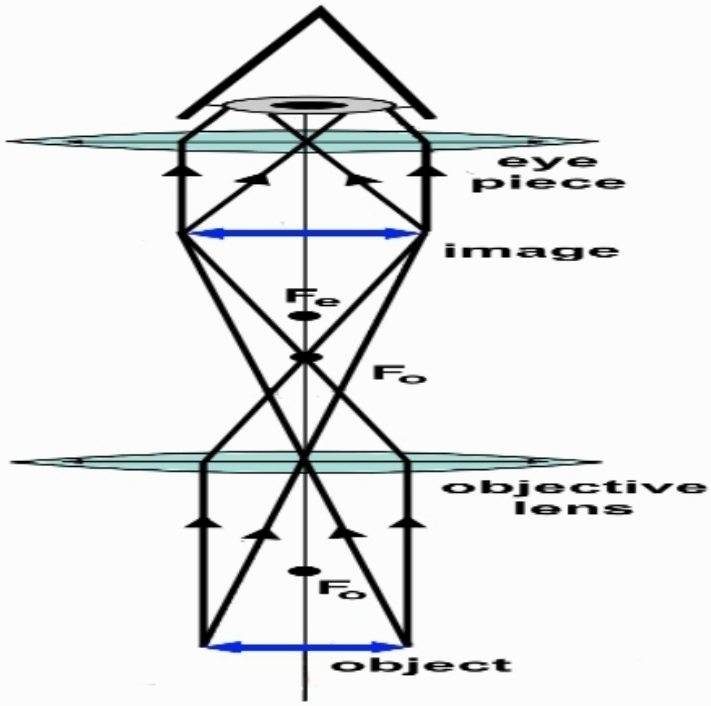
Choose 1 answer:

- (A) The object is moved from a point outside the radius of curvature to a point within the focal length of a concave lens.
- (B) The converging lens is swapped for a diverging lens to create the switch in orientation.
- (C) The object is moved from a point outside the focal length to a point within the focal length of a convex lens.
- (D) An additional converging lens was placed outside the focal point of the original lens.

Which of the following statements accurately describes an image formed by a thin converging lens?

Choose 1 answer:

- (A) The image is always real and inverted within the focal length of the lens.
- (B) The image is always larger than the object within the radius of curvature of the lens.
- (C) The image is always smaller than the object outside the focal length of the lens.
- (D) The image is always virtual and upright outside the radius of curvature of the lens.



Choose 1 answer:

CORRECT (SELECTED)

The image from the objective lens is produced within the focal point of the eyepiece, which then produces a real, upright, and enlarged image on the retina.

INCORRECT

The final image produced by the microscope is similar to the image produced by the astronomical telescope, which is a virtual, inverted, and enlarged image.

INCORRECT

The objective has a short focal length to produce an image that is roughly the same size and orientation as the object.

INCORRECT

By decreasing the focal length and increasing the diameter of the objective, the magnifying and light-gathering power can be increased respectively.

A virtual image is formed $8cm$ from a convex mirror with a focal length of $10cm$. How far from the mirror is the object that created this image?

Possible Answers:

$40cm$

$4.4cm$

$22.5cm$

$2cm$

$2.5cm$

How far from a converging lens must an object be placed to produce an image that is NOT real and inverted? Given the answer as d_o in terms of the focal length, f.

Possible Answers:

$f < d_o < 2f$

$d_o = 2f$

$d_o > 2f$

$d_o = f$ ✓

A certain farsighted person cannot focus on objects closer to his eyes than $140cm$. What focal length eyeglass lenses are needed in order to focus on a newspaper held at $35cm$ from the person's eyes, if the glasses are worn $2cm$ from his eyes?

Possible Answers:

$47cm$

$43cm$ ✓

$28cm$

$2cm$

$27cm$

An object is placed 50cm in front of a concave mirror of radius 60cm. How far from the mirror is the image?

Possible Answers:

$120cm$

$20cm$

$75cm$ ✓

$300cm$

$60cm$

An object is placed 50cm in front of a concave mirror of radius 60cm. How far from the mirror is the image?

Possible Answers:

$120cm$

$20cm$

$75cm$ ✓

$300cm$

$60cm$