29 Nov 2024 Live Classes Schedule

Time	Class	Instructor
8:00AM	29 NOVEMBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	29 NOVEMBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

NDA 1 2025 LIVE CLASSES

Time	Class	Instructor
1:00PM	PHYSICS - REFLECTION OF LIGHT - CLASS 2	NAVJYOTI SIR
4:30PM	ENGLISH - ADAPTATION OF BORROWED WORDS - CLASS 1	ANURADHA MA'AM
5:30PM	MATHS - LIMITS & CONTINUITY - CLASS 2	NAVJYOTI SIR

CDS 1 2025 LIVE CLASSES

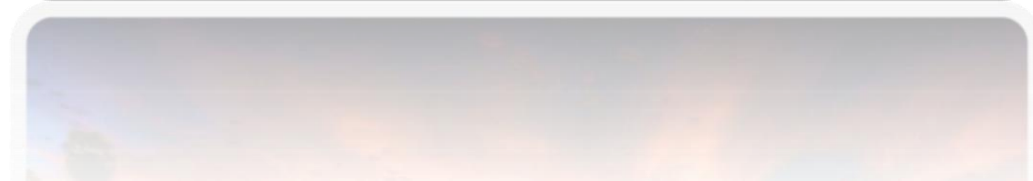| Time	Class	Instructor
1:00PM	PHYSICS - REFLECTION OF LIGHT - CLASS 2	NAVJYOTI SIR
4:30PM	ENGLISH - ADAPTATION OF BORROWED WORDS - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - TRIGONOMETRY - CLASS 3	NAVJYOTI SIR

REFLECTION OF LIGHT – PRACTISE MCQs

A point object is placed at the centre of curvature of a spherical concave mirror. Which one among the following would be the correct location of image formed ?

(a) At infinity

(b) At the centre of curvature

(c) At the focal point

(d) Between the focal point and the centre of curvature

Object
_____
At c

Image
_____
At c

(real, inverted and of same size)

A point object is placed at the centre of curvature of a spherical concave mirror. Which one among the following would be the correct location of image formed ?

(a) At infinity

(b) At the centre of curvature

(c) At the focal point

(d) Between the focal point and the centre of curvature

Answer: B

Image Formed by a Plane Mirror is

A. Virtual, Behind The Mirror And Enlarged

B. Virtual, Behind The Mirror And Of The Same Size As The Object ✓

C. Real, At The Surface Of The Mirror And Enlarged

D. More Than One Of The Above

Image Formed by a Plane Mirror is

A. Virtual, Behind The Mirror And Enlarged

B. **Virtual, Behind The Mirror And Of The Same Size As The Object**

C. Real, At The Surface Of The Mirror And Enlarged

D. More Than One Of The Above

The Angle Between The Incident Ray And Normal Is Called

A. Angle of reflection

B. Angle of refraction

C. Angle of incidence

D. None of the Above
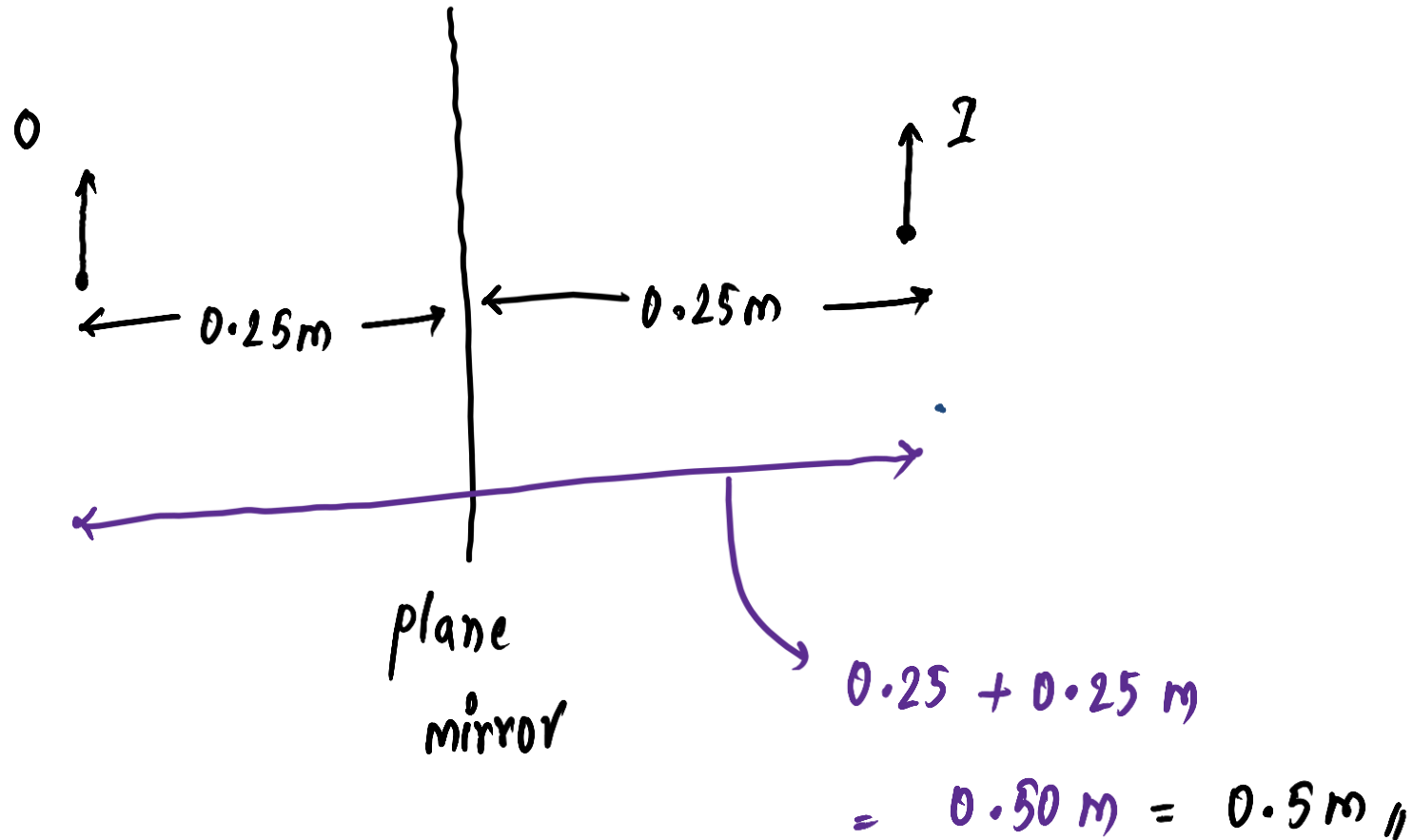
incident ray

Normal

i
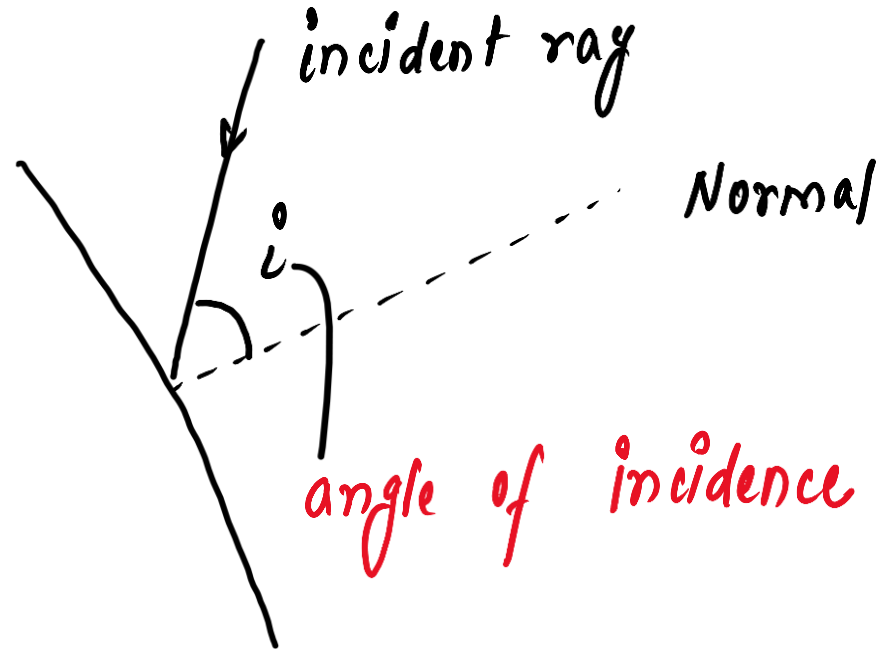
angle of incidence

The Angle Between The Incident Ray And Normal Is Called

A.   Angle of reflection

B.   Angle of refraction

C.   **Angle of incidence**

D.   None of the Above

An Object Is Placed At A Distance of 0.25 m In Front Of A Plane Mirror.

The Distance Between The Object And Image Will Be

A. 0.25 m

B. 1.0 m

C. 0.5 m

D. 0.125 m

O

I

← 0.25m → ← 0.25m →

plane

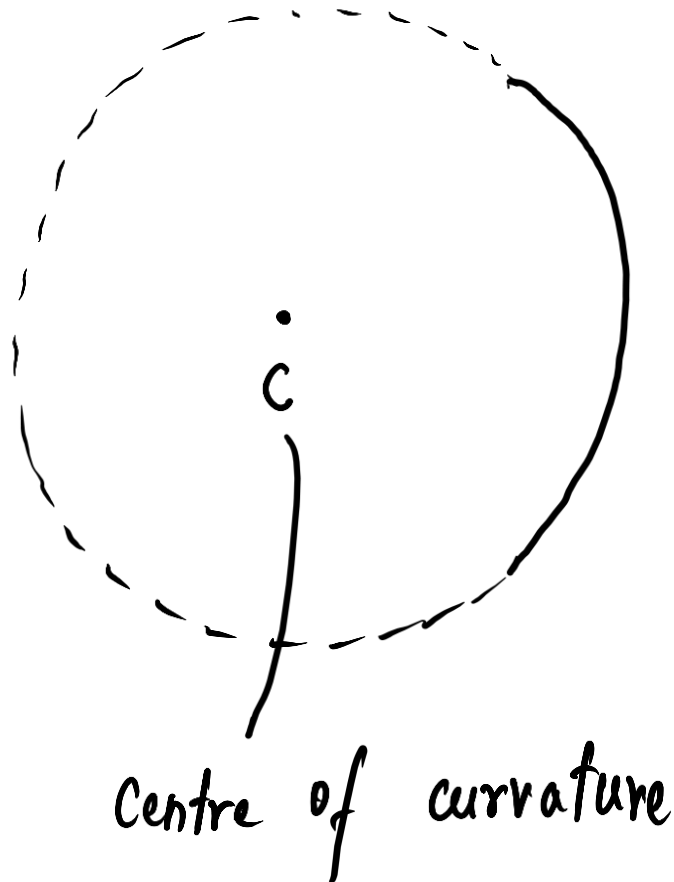mirror

0.25 + 0.25 m

= 0.50 m = 0.5 m

An Object Is Placed At A Distance of 0.25 m In Front Of A Plane Mirror.

The Distance Between The Object And Image Will Be

A. 0.25 m

B. 1.0 m

C. **0.5 m**

D. 0.125 m

Centre Of Sphere Of Which The Mirror Is A Part Is Called

A. Centre of Aperture

B. Radius of Curvature

C. Focus

D. Centre of Curvature

C

Centre of curvature

Centre Of Sphere Of Which The Mirror Is A Part Is Called

A. Centre of Aperture

B. Radius of Curvature

C. Focus

D. **Centre of Curvature**

Which Type Of Mirror Can Produce A Magnification Of +1.5 ?

A. Concave ✓

B. Convex

C. Both (A) and (B)

D. None of the above

$+ 1.5$

$\dfrac{}{I}$

erect

Concave
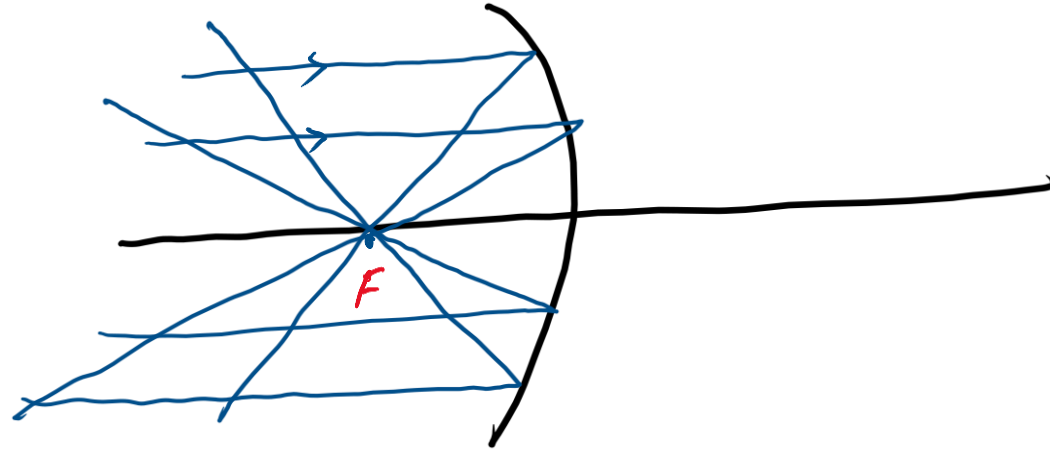
object when placed between F and P,

$(m > 1)$

Convex

always produces diminished image,

$(m < 1)$

Which Type Of Mirror Can Produce A Magnification Of +1.5 ?

A. Concave

B. Convex

C. Both (A) and (B)

D. None of the above

Which Of The Following Is Correct For A Concave Mirror ?

A. Diverging Mirror

B. Converging Mirror ✓

C. Both (A) and (B)

D. None of the above

F

(Light rays are converged to point F (principal focus)

Which Of The Following Is Correct For A Concave Mirror ?

A. Diverging Mirror

B. **Converging Mirror**

C. Both (A) and (B)

D. None of the above

Name The Mirror Used In The Design Of Solar Furnace

A. Concave

B. Convex

C. Plane

D. None of the above

As concave mirror is converging, large amount of heat can be produced at point F.

SSBCrack
EXAMS

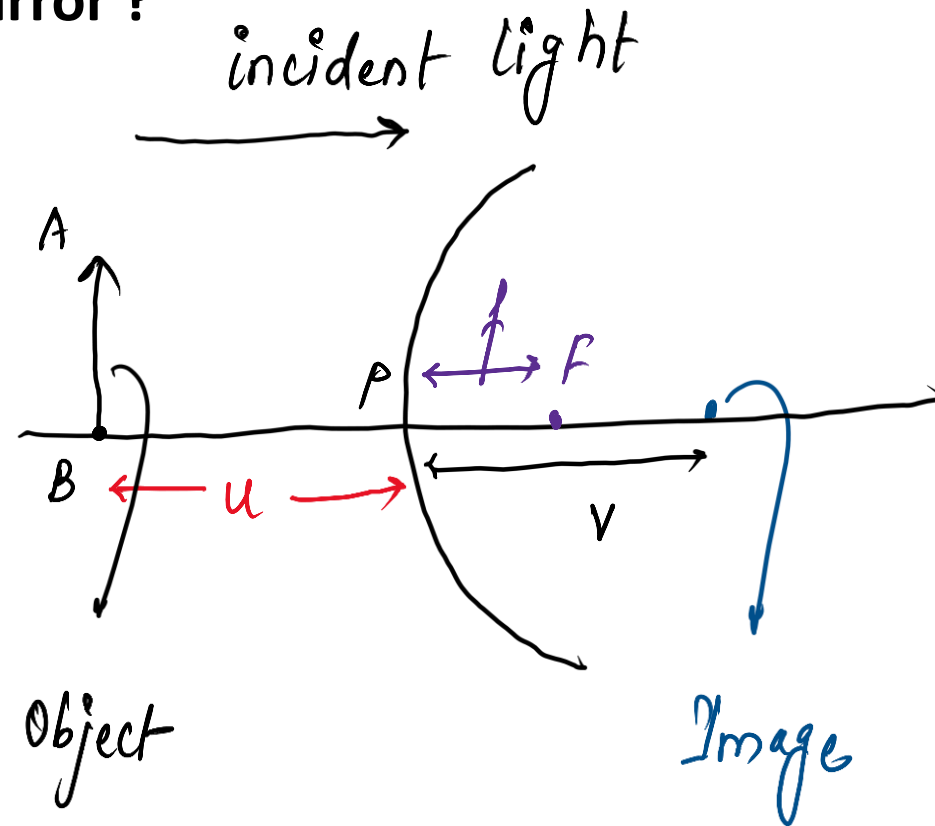# Name The Mirror Used In The Design Of Solar Furnace

A. Concave

B. Convex

C. Plane

D. None of the above

Which One Is True For A Convex Mirror ?

A. u = -ve , v = +ve , f = -ve

B. u = -ve , v = +ve , f = +ve ✓

C. u = +ve , v = +ve , f = -ve

D. u = +ve , v = -ve , f = -ve

incident light

A

P   F

B ← u →

v

Object

Image

$u = -ve$

$v = +ve$

$f = +ve$

Which One Is True For A Convex Mirror ?

A. $u = -ve$, $v = +ve$, $f = -ve$

B. $u = -ve$, $v = +ve$, $f = +ve$

C. $u = +ve$, $v = +ve$, $f = -ve$

D. $u = +ve$, $v = -ve$, $f = -ve$

The Radius Of Curvature Of A Spherical Mirror Is 14 cm. What Is Its Focal Length ?

A. 28 cm

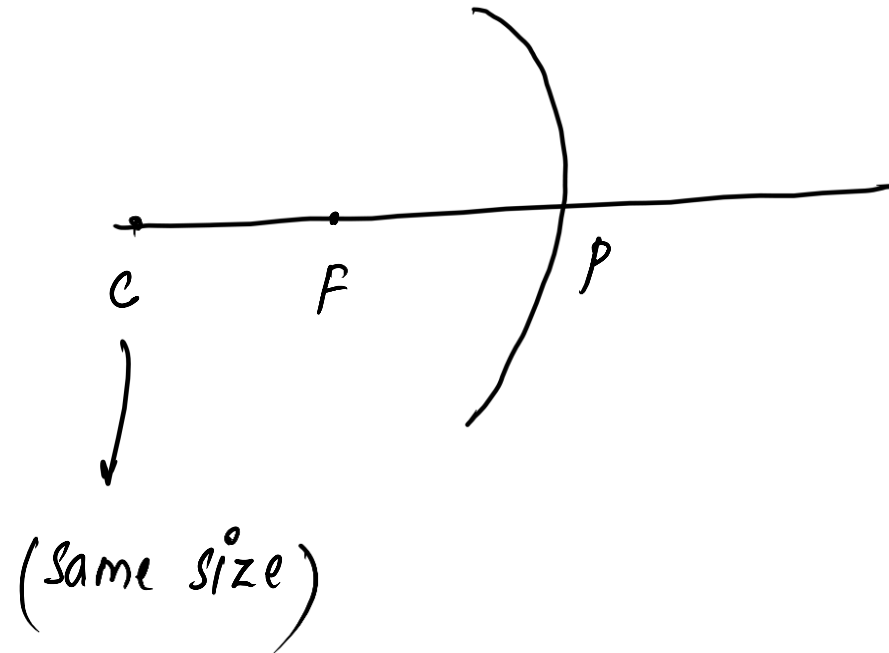B. 14 cm

C. 7 cm

D. 56 cm

$$R = 2f$$

$$14 = 2 \times f$$

$$f = 7 cm$$

The Radius Of Curvature Of A Spherical Mirror Is 14 cm. What Is Its Focal Length ?

A. 28 cm

B. 14 cm

C. **7 cm**

D. 56 cm

At What Position An Object Is To Be Kept In Front Of A Concave Mirror To Get An Enlarged Image?

A. At F ✓

B. Between F and C ✓

C. At C

D. Between F and P ✓

(Same size)

An enlarged image is formed when object is between C and P.

At What Position An Object Is To Be Kept In Front Of A Concave Mirror To Get An Enlarged Image?

A. At F

B. Between F and C

C. At C

D. **Between F and P**

Which Mirror Is Used As A Rear-view Mirror In Vehicles ?

A. Convex

B. Plane

C. Concave

D. None of the above

Convex mirror produces
diminished images,

so wide area can be seen.

Which Mirror Is Used As A Rear-view Mirror In Vehicles ?

A. Convex

B. Plane

C. Concave

D. None of the above

What Does A Positive And Less Than 1 Value Of Magnification Suggest ?

A. Enlarged and Erect Image.

B. Diminished and Erect image.

C. Enlarged and Inverted Image.

D. Diminished and Inverted Image.

$$\text{magnification } (m) = \frac{\text{height of image} (h')}{\text{height of object} (h)} \qquad \frac{h'}{h} < 1$$

$$h' < h$$

positive $\longrightarrow$ erect image   Less than 1 value

diminished image

**What Does A Positive And Less Than 1 Value Of Magnification Suggest ?**

A. Enlarged and Erect Image.

B. **Diminished and Erect image.**

C. Enlarged and Inverted Image.

D. Diminished and Inverted Image.

Which one of the following statements is correct for a plane mirror?

(a) Its focal length is zero.

(b) The size of the image of an object placed in front of the mirror is slightly less than that of the object.

(c) The image is virtual, erect and laterally inverted. ✓

(d) Its focal length is 200 cm.

$-u = v$
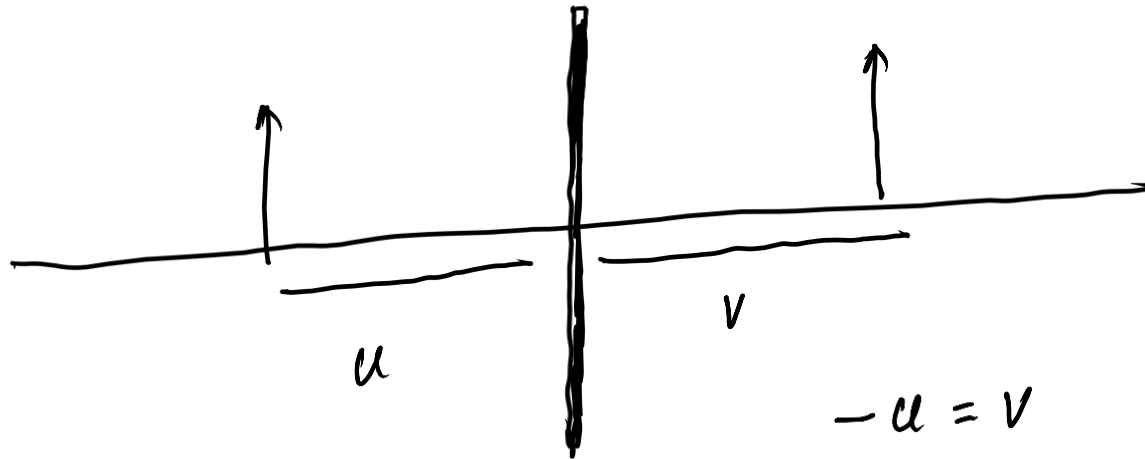
Mirror formula,

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{-u} + \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{f} = 0$$

$$f \approx \infty$$

(focal length of plane mirror $= \infty$)

Which one of the following statements is correct for a plane mirror?

(a) Its focal length is zero.

(b) The size of the image of an object placed in front of the mirror is slightly less than that of the object.

(c) The image is virtual, erect and laterally inverted.

(d) Its focal length is 200 cm.

Answer : C

The image we see in plane mirror is

(a)   real and thus can be photographed.

(b)   virtual and nearer than the object.

(c)   virtual and is laterally inverted.

(d)   real but cannot be photographed.

The image we see in plane mirror is

(a) real and thus can be photographed.

(b) virtual and nearer than the object.

(c) virtual and is laterally inverted.

(d) real but cannot be photographed.

Answer : C

Spherical mirror formula relating an object distance 'u', image distance 'v' and focal length of mirror 'f' may be applied to a plane mirror when

(a) focal length goes to infinity. ✓

(b) focal length goes to zero.

(c) image distance goes to zero.

(d) image distance goes to infinity.

Spherical mirror formula relating an object distance 'u', image distance 'v' and focal length of mirror 'f' may be applied to a plane mirror when

(a)   focal length goes to infinity.

(b)   focal length goes to zero.

(c)   image distance goes to zero.

(d)   image distance goes to infinity.

Answer : A

A rectangle ABCD is kept in front of a concave mirror of focal length f with its corners A and B being, respectively, at distances 2f and 3f from the mirror with AB along the principal axis as shown in the figure. It forms an image A'B'C'D' in front of the mirror. What is the ratio of B'C' to A'D' ?
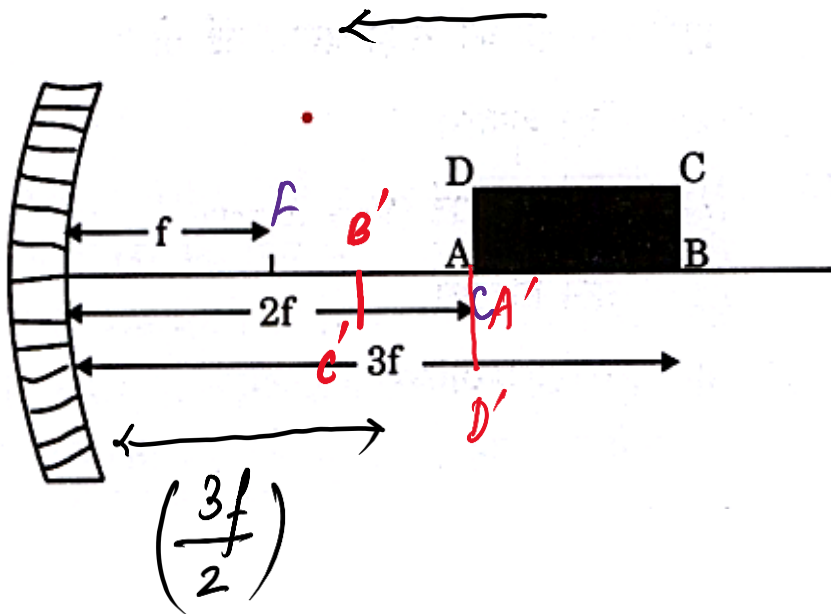
$$BC \longrightarrow beyond\ C$$

$$B'C'\ (image\ for\ BC)$$

$$\longrightarrow between\ F\ and\ C.$$

$$\boxed{AD = A'D'}\ \left(At\ C,\ size\ of\ object\right.$$

$$= size\ of\ image)$$

(a)   1

(b)   2

(c) $\dfrac{1}{2}$

(d) $\dfrac{2}{3}$

$$m = \frac{-v}{u} = \frac{h'}{h}$$

$$\frac{-(-3f/2)}{-3f} = \frac{B'C'}{BC} \implies \frac{1}{2}\left(= \frac{B'C'}{AD}\right)$$

opposite sides of rectangle
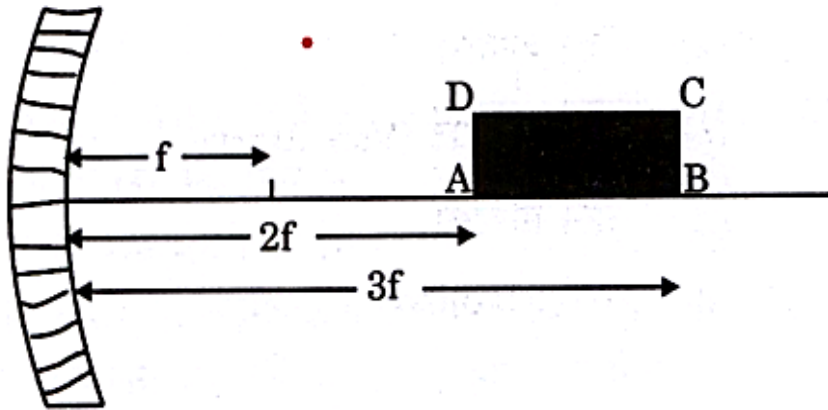
$$\frac{B'c'}{AD} = \frac{1}{2}$$

$$\frac{B'c'}{A'D'} = \frac{1}{2} \quad \left(\text{As} \quad \underline{A'D' = AD} \right)$$

For mirrors,

magnification,

$$m = \frac{h'}{h} = -\frac{v}{u}$$

A rectangle ABCD is kept in front of a concave mirror of focal length f with its corners A and B being, respectively, at distances 2f and 3f from the mirror with AB along the principal axis as shown in the figure. It forms an image A'B'C'D' in front of the mirror. What is the ratio of B'C' to A'D' ?
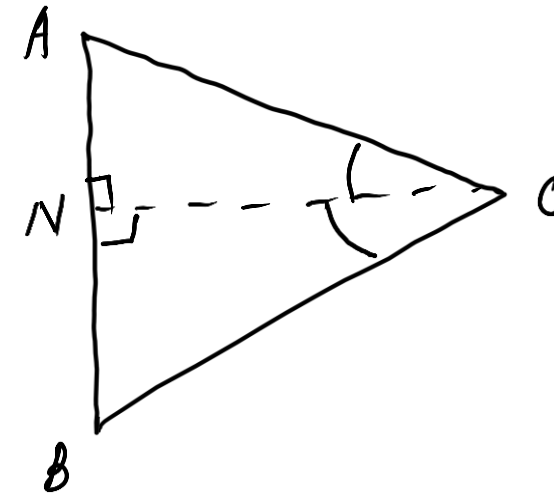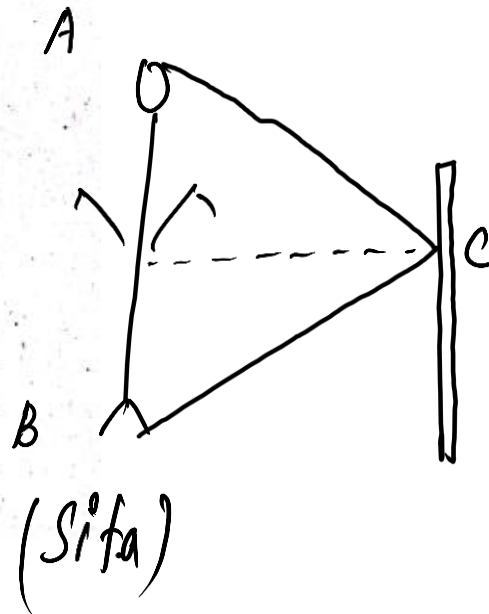
(a)   1

(b)   2

(c) $\dfrac{1}{2}$

(d) $\dfrac{2}{3}$

Answer : C

Sita, 1·5 m high, stands before a plane mirror fixed on a wall to view her full image. What should be the minimum height of the plane mirror so that Sita can view her image fully ?

(a) 0·50 m

(b) 0·35 m

(c) 0·75 m

(d) 0·25 m

(Sita)

$\triangle ANC \cong \triangle BNC$

$(AN = BN)$

$$\frac{1.5}{2} = 0.75 \text{ m}$$

Sita, 1·5 m high, stands before a plane mirror fixed on a wall to view her full image. What should be the minimum height of the plane mirror so that Sita can view her image fully ?

(a) 0·50 m

(b) 0·35 m

(c) 0·75 m

(d) 0·25 m

Answer: C

An object is placed in front of a convex mirror. Which one of the following statements is correct?

(a) It will never form an inverted image. ✓

(b) The image moves towards the focus when the object moves towards the mirror. ✗

(c) Depending on the position of the object with respect to the mirror, the image can be inverted and real. ✗

(d) The size of the image becomes larger than that of the object when the object is placed at a distance equal to half the focal length. ✗

Convex - mirror

image is always virtual, erect and diminished,

An object is placed in front of a convex mirror. Which one of the following statements is correct?

(a) It will never form an inverted image.

(b) The image moves towards the focus when the object moves towards the mirror.

(c) Depending on the position of the object with respect to the mirror, the image can be inverted and real.

(d) The size of the image becomes larger than that of the object when the object is placed at a distance equal to half the focal length.

Answer: A

In case of a concave mirror, if an object is kept between principal focus F and pole P of the mirror, then which one of the following statements about the image is NOT correct ?

(a) The image will be virtual ✓

(b) The image will be enlarged or magnified ✓

(c) The image will be formed at infinity ✓

back of the mirror

(d) The image will be erect ✓

In case of a concave mirror, if an object is kept between principal focus F and pole P of the mirror, then which one of the following statements about the image is NOT correct ?

(a) The image will be virtual

(b) The image will be enlarged or magnified

(c) The image will be formed at infinity

(d) The image will be erect

Answer : C

The correct relation between the radius of curvature R and focal length f of a spherical mirror is

(a) $R = f$

(b) $R = 2f$

(c) $R = 3f$

(d) $R = 4f$

The correct relation between the radius of curvature R and focal length f of a spherical mirror is

(a) $R = f$

(b) $R = 2f$

(c) $R = 3f$

(d) $R = 4f$

Answer: B

When a ray of light is reflected under multiple reflections by a set of plane parallel mirrors, then the intensity of the ray diminishes due to

(a) absorption as well as scattering of light from the mirrors ✓

(b) scattering of light by the atmosphere

(c) absorption of light by the atmosphere

(d) None of the above
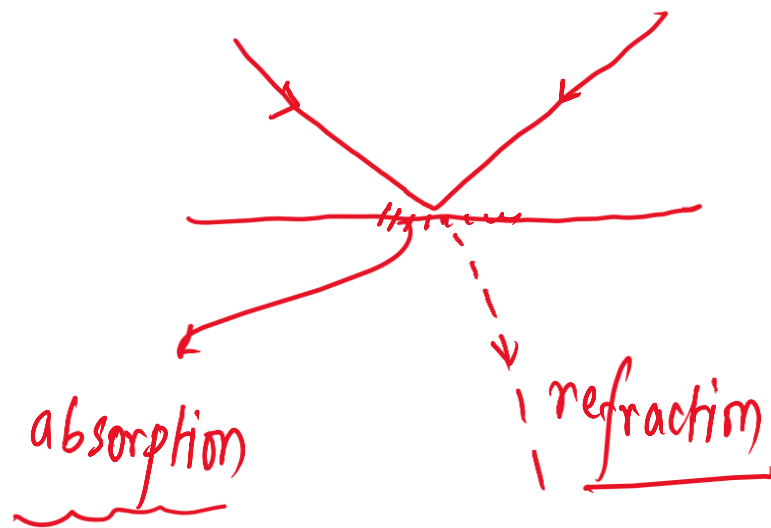
✓Reflection ✓

→ Refraction

intensity reduces, {
→ absorption
→ scattering (very minimal)

absorption   refraction

When a ray of light is reflected under multiple reflections by a set of plane parallel mirrors, then the intensity of the ray diminishes due to

(a) absorption as well as scattering of light from the mirrors

(b) scattering of light by the atmosphere

(c) absorption of light by the atmosphere

(d) None of the above

Answer: A

Which one of the following optical instruments produce a virtual image?

(a) A simple magnifier
(b) Movie projector
(c) An ordinary single lens reflex camera
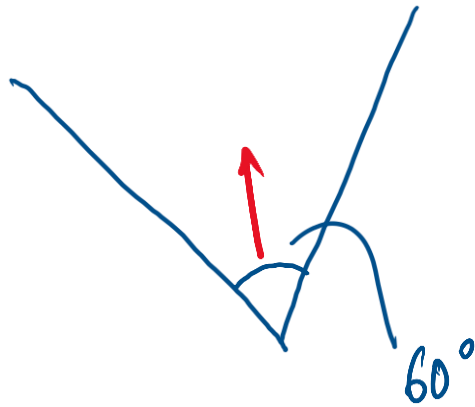(d) None of the above

virtual image

real image

Which one of the following optical instruments produce a virtual image?

(a) A simple magnifier

(b) Movie projector

(c) An ordinary single lens reflex camera

(d) None of the above

Answer: A

Two plane mirrors are inclined at an angle of 60° to each other. If an object is placed between them, then the number of images produced will be

(a) 5   (b) 6   (c) 10   (d) 4

$$\text{number of images} = \frac{360°}{\text{angle}} - 1$$

$$\frac{360°}{60°} - 1 = 5$$

60°

Two plane mirrors are inclined at an angle of 60° to each other. If an object is placed between them, then the number of images produced will be

(a) 5   (b) 6   (c) 10   (d) 4

Answer: A

In a motor car, spherical mirrors are utilised at two different places, (i) the head light and (ii) rear view mirror. What type of mirrors are used?

(a) concave for case (i) and convex for case (ii) ✓

(b) convex for case (i) and concave for case (ii)

(c) concave for both cases ✗

(d) convex for both cases ✗

In a motor car, spherical mirrors are utilised at two different places, (i) the head light and (ii) rear view mirror. What type of mirrors are used?

(a) concave for case (i) and convex for case (ii)

(b) convex for case (i) and concave for case (ii)

(c) concave for both cases

(d) convex for both cases

Answer: A

Which one of the following can be used to focus sun light?

(a) Plane mirror
(b) Concave lens
(c) Concave mirror
(d) Convex mirror

Which one of the following can be used to focus sun light?

(a) Plane mirror
(b) Concave lens
(c) Concave mirror
(d) Convex mirror

Answer: C

Which of the following are true regarding image formation with the help of mirrors?

I. A concave mirror can give a diminished virtual image. ✗

II. A concave mirror can give a real image. ✓

III. A convex mirror can give a virtual image. ✓

IV. A convex mirror cannot give a real image. ✓

Select the correct answer from the codes given below

(a) Both I and III

(b) Both I and IV

(c) I, III and IV

(d) II, III and IV ✓

Which of the following are true regarding image formation with the help of mirrors?

I. A concave mirror can give a diminished virtual image.

II. A concave mirror can give a real image.

III. A convex mirror can give a virtual image.

IV. A convex mirror cannot give a real image.

Select the correct answer from the codes given below

(a) Both I and III

(b) Both I and IV

(c) I, III and IV

(d) II, III and IV

Answer: D

Statement I Convex mirror is used as a driver mirror. → *rear - view mirror,*

Statement II Images formed by convex mirror are diminished in size.

Codes

(a) Both the statements are individually true and Statement II is the correct explanation of Statement I

(b) Both the statements are individually true but Statement II is not the correct explanation of Statement I

(c) Statement I is true but Statement II is false

(d) Statement I is false but Statement II is true

Statement I Convex mirror is used as a driver mirror.

Statement II Images formed by convex mirror are diminished in size.

Codes

(a) Both the statements are individually true and Statement II is the correct explanation of Statement I

(b) Both the statements are individually true but Statement II is not the correct explanation of Statement I

(c) Statement I is true but Statement II is false

(d) Statement I is false but Statement II is true

Answer: A

To obtain the powerful parallel beams of light from a vehicle's headlight, one must use

(a) front surface silvered plane mirror
(b) back surface silvered plane mirror
(c) concave mirror ✓
(d) convex mirror

To obtain the powerful parallel beams of light from a vehicle's headlight, one must use

(a) front surface silvered plane mirror
(b) back surface silvered plane mirror
(c) concave mirror
(d) convex mirror

Answer: C

An object is placed at the focus of a concave mirror. The image will be

(a) real, inverted, same size at the focus

(b) real, upright, same size at the focus ✗

(c) virtual, inverted, highly enlarged at infinity ✗

(d) real, inverted, highly enlarged at infinity ✓

An object is placed at the focus of a concave mirror. The image will be

(a) real, inverted, same size at the focus
(b) real, upright, same size at the focus
(c) virtual, inverted, highly enlarged at infinity
(d) real, inverted, highly enlarged at infinity

Answer: D

An object is placed at the centre of curvature of a concave mirror of focal length 16 cm. If the object is shifted by 8 cm towards the focus, then the nature of the image would be

(a) real and magnified ✓
(b) virtual and magnified α
(c) real and reduced
(d) virtual and reduced α

At c ⟶ same size, real, inverted

between f and c — (magnified)/enlarged

same { real
        inverted

An object is placed at the centre of curvature of a concave mirror of focal length 16 cm. If the object is shifted by 8 cm towards the focus, then the nature of the image would be

(a) real and magnified
(b) virtual and magnified
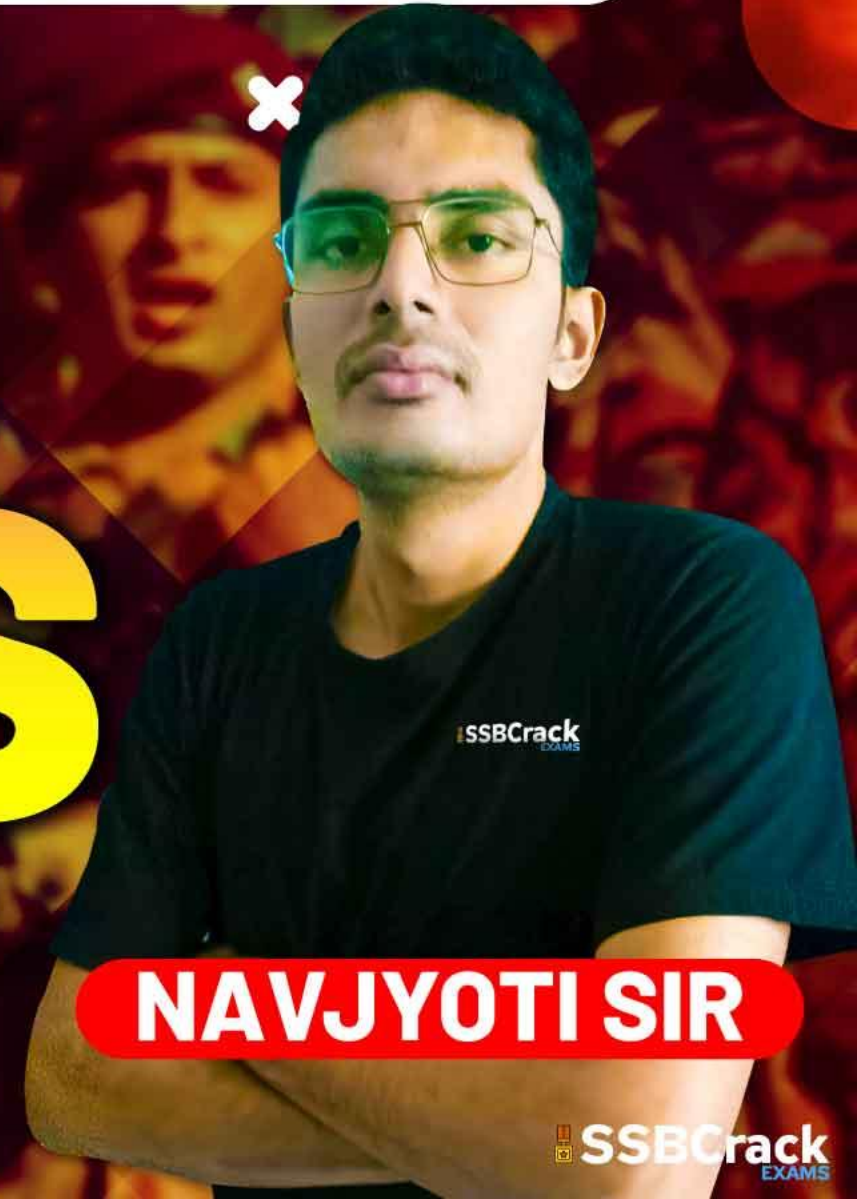(c) real and reduced
(d) virtual and reduced

Answer: B