

NDA-CDS 2 2024

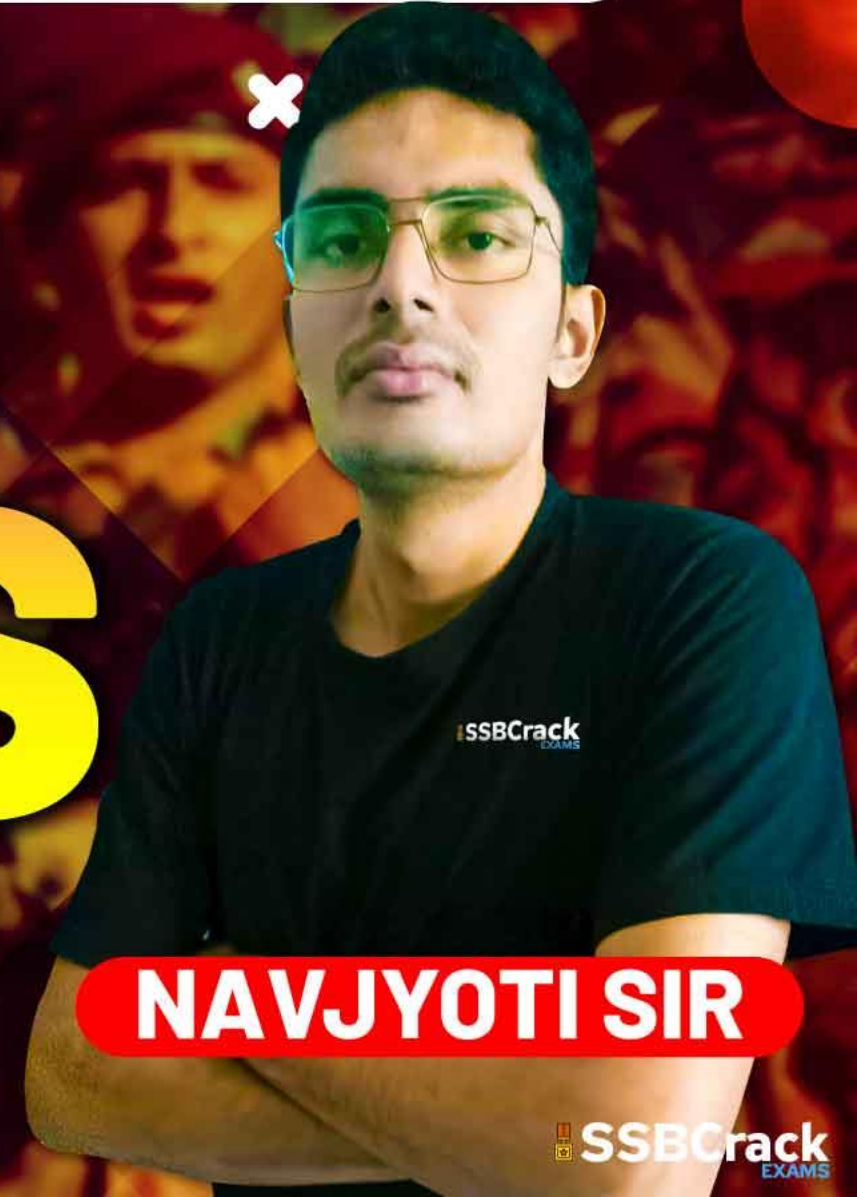
GS

LIVE

PHYSICS

REVISION

CLASS 2



NAVJYOTI SIR

SSBCrack
EXAMS



06 August 2024 Live Classes Schedule

8:00AM --- 06 AUGUST 2024 DAILY CURRENT AFFAIRS --- RUBY MA'AM

9:00AM --- 06 AUGUST 2024 DAILY DEFENCE UPDATES --- DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM --- INTRODUCTION OF PPDT & PRACTICE --- ANURADHA MA'AM

AFCAT 2 2024 LIVE CLASSES

1:00PM --- MAHA MARATHON SESSION - PART 2

NDA 2 2024 LIVE CLASSES

11:00AM --- GK - HISTORY REVISION - CLASS 2 --- RUBY MA'AM

12:00PM --- PHYSICS REVISION - CLASS 2 --- NAVJYOTI SIR ✓

1:00PM --- MATHS REVISION - CLASS 2 --- NAVJYOTI SIR

2:00PM --- BIOLOGY REVISION - CLASS 2 --- SHIVANGI MA'AM

CDS 2 2024 LIVE CLASSES

11:00AM --- GK - HISTORY REVISION - CLASS 2 --- RUBY MA'AM

12:00PM --- PHYSICS REVISION - CLASS 2 --- NAVJYOTI SIR ✓

2:00PM --- BIOLOGY REVISION - CLASS 2 --- SHIVANGI MA'AM

3:00PM --- MATHS REVISION - CLASS 2 --- NAVJYOTI SIR

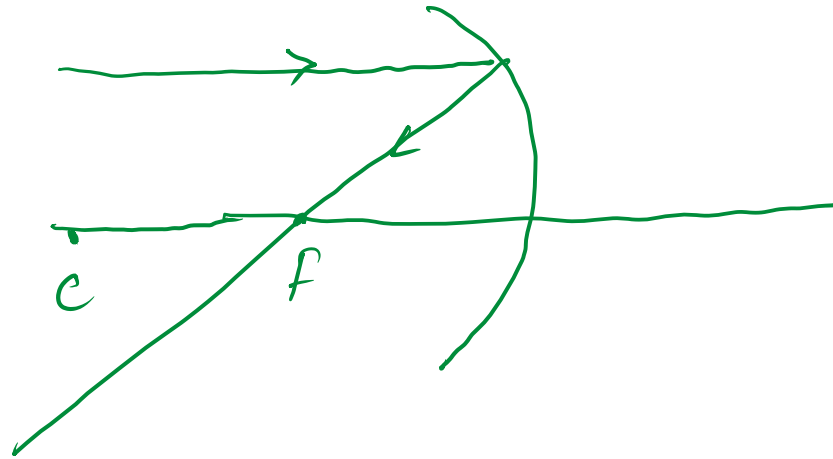


REVISION TOPICS :

- **Reflection of Light**
- **Refraction of Light**

A beam of light parallel to the principal axis of a concave mirror passes through the :

- (a) Center of curvature
- (b) Principal focus
- (c) Vertex
- (d) Pole



A beam of light parallel to the principal axis of a concave mirror passes through the :

- (a) Center of curvature
- (b) Principal focus
- (c) Vertex
- (d) Pole

Answer: B

The mirror formula is given by:

(a) $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ *Len's formula*

(b) $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ *Mirror formula,*

(c) $f = u + v$

(d) $f = uv$

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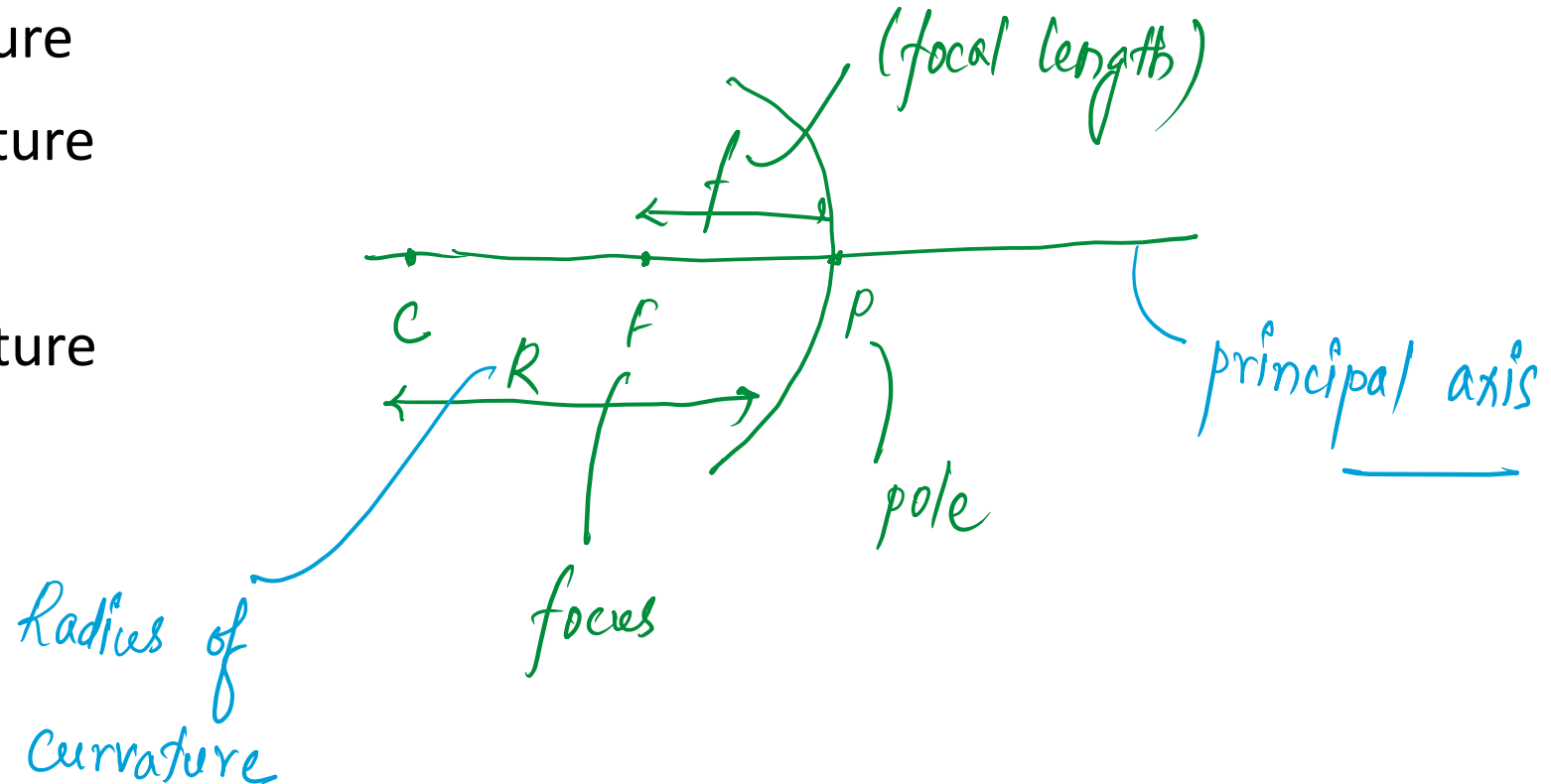
(c) $f = u + v$

(d) $f = uv$

Answer: B

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



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

- A. Centre of Aperture
- B. Radius of Curvature
- C. Focus
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A concave mirror with a focal length of 20 cm forms an image of an object placed 30 cm from the mirror. The distance of the image from the mirror is:

(a) 60 cm

(b) 30 cm

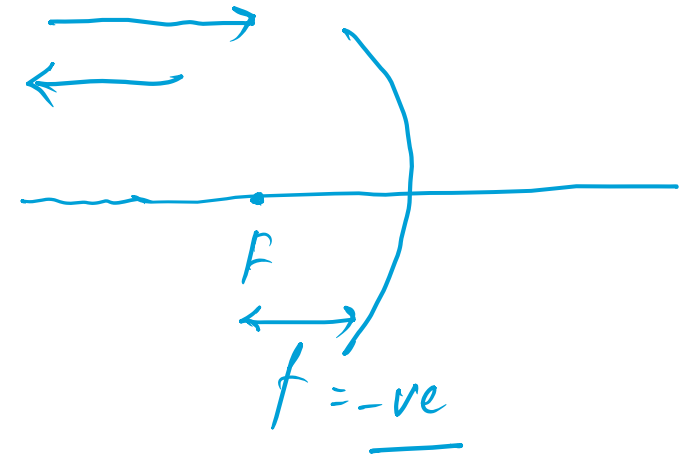
(c) 12 cm

(d) 15 cm

$$f = -20 \text{ cm}$$

$$v = ?$$

$$u = -30 \text{ cm}$$



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

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u} = \frac{1}{-20} - \frac{1}{(-30)}$$

$$\frac{1}{v} = -\frac{1}{20} + \frac{1}{30} = \frac{20 - 30}{600} = \frac{-10}{600}$$

$$v = \frac{-600}{10}$$

$$v = -60 \text{ cm}$$

A concave mirror with a focal length of 20 cm forms an image of an object placed 30 cm from the mirror. The distance of the image from the mirror is:

- (a) 60 cm
- (b) 30 cm
- (c) 12 cm
- (d) 15 cm

Answer: A

Which of the following statements is true for the image formed by a concave mirror when the object is placed beyond the center of curvature?

- (a) The image is real, inverted, and larger than the object.
- (b) The image is virtual, erect, and smaller than the object.
- (c) The image is real, inverted, and smaller than the object.
- (d) The image is virtual, erect, and larger than the object.

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- (c) The image is real, inverted, and smaller than the object.
- (d) The image is virtual, erect, and larger than the object.

Answer: C

The magnification produced by a plane mirror is:

(a) +1

(b) -1

(c) +2

(d) -2

$$\frac{\text{height of image}}{\text{height of object}} = \underline{\underline{+1}}$$

The magnification produced by a plane mirror is:

- (a) +1
- (b) -1
- (c) +2
- (d) -2

Answer: A

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) $R = 4f$

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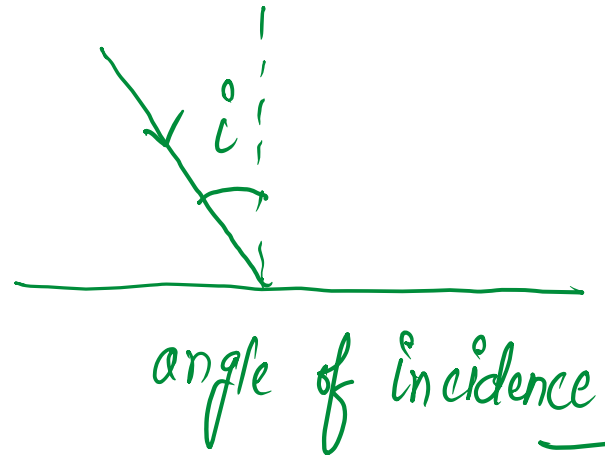
(c) $R = 3f$

(d) $R = 4f$

Answer : B

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

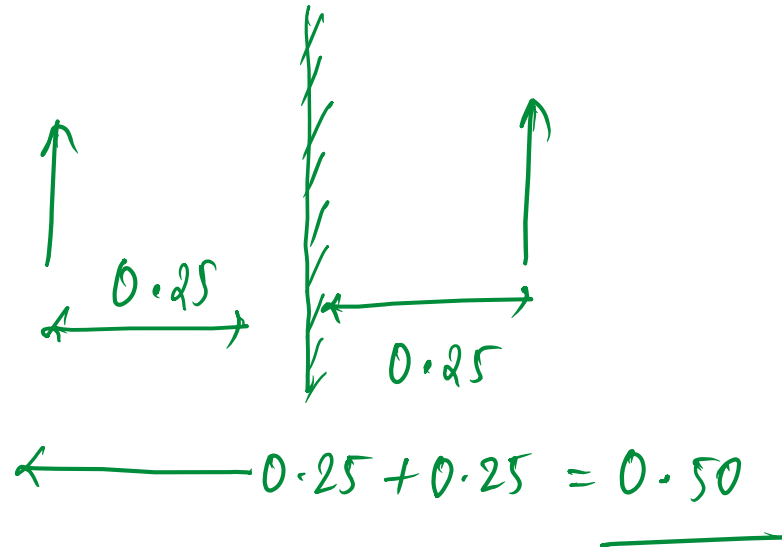


The Angle Between The Incident Ray And Normal Is Called

- 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



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- A. 0.25 m
- B. 1.0 m
- C. 0.5 m**
- D. 0.125 m

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

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- 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

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

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

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

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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

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

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

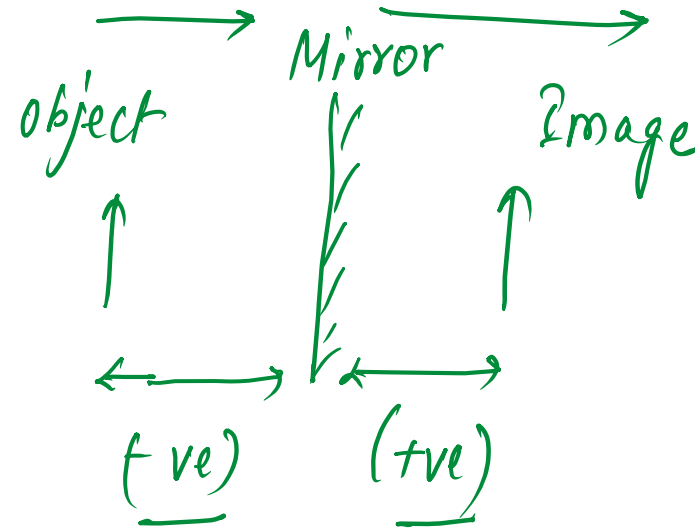
- A. Convex**
- B. Plane
- C. Concave
- D. None of the above

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.

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

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{v} = 0 \Rightarrow \underline{f \rightarrow \infty}$$



$$\underline{u = -v}$$

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

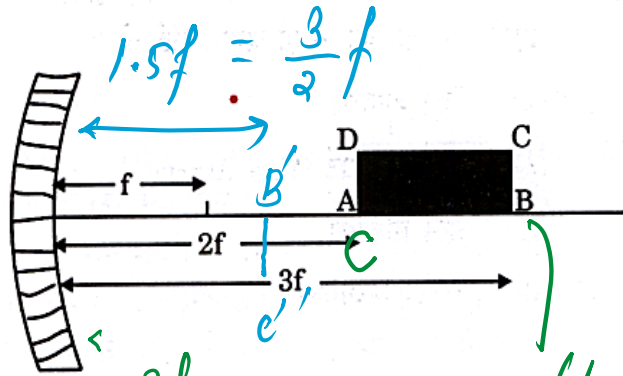
- (a) focal length goes to infinity.
- (b) focal length goes to zero.
- (c) image distance goes to zero.
- (d) image distance goes to infinity.

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 $A'D'$?



- (a) $1 \frac{3f}{2}$
- (b) 2
- (c) $\frac{1}{2}$
- (d) $\frac{2}{3}$

$$\underline{\underline{A'D'}} = \underline{\underline{-AD}} \text{ (same size but inverted)}$$

$$\frac{B'C'}{BC} = \frac{-v}{u} = \frac{-(-\frac{3}{2}f)}{-3f} = \underline{\underline{-\frac{1}{2}}}$$

$$\frac{B'C'}{AD} = \frac{B'C'}{-A'D'} = \underline{\underline{-\frac{1}{2}}}$$

(beyond c) — image formed between f and c.

$$\underline{\underline{\frac{B'C'}{A'D'} = \frac{1}{2}}}$$

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

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- (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.

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- (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
- (d) The image will be erect

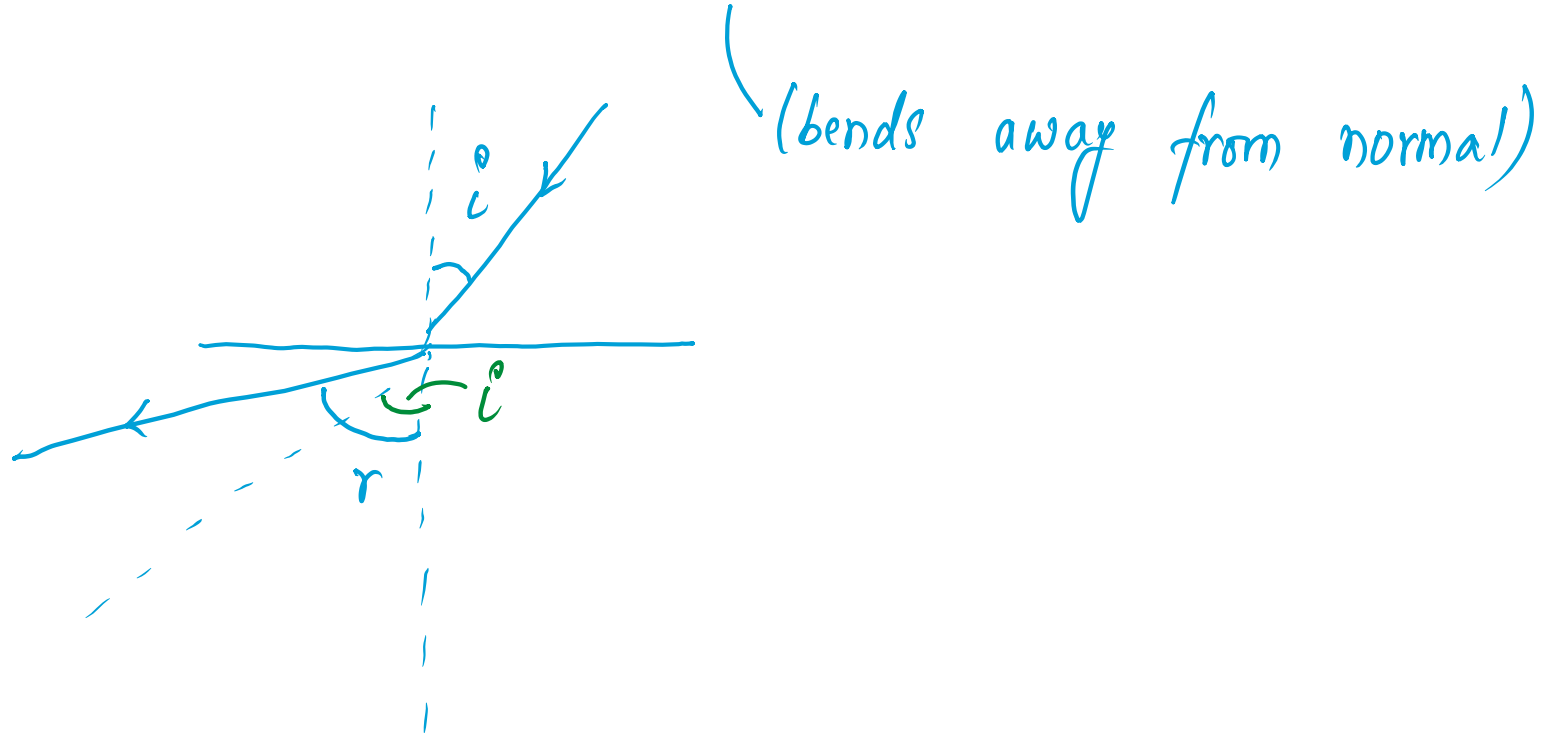
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- (b) The image will be enlarged or magnified
- (c) The image will be formed at infinity
- (d) The image will be erect

Answer : C

When A Light Ray Passes From A Denser Medium To A Rarer Medium , Which Angle Is Greater ?

- A. Angle Of Incidence
- B. Angle Of Refraction
- C. Both
- D. None Of The Above

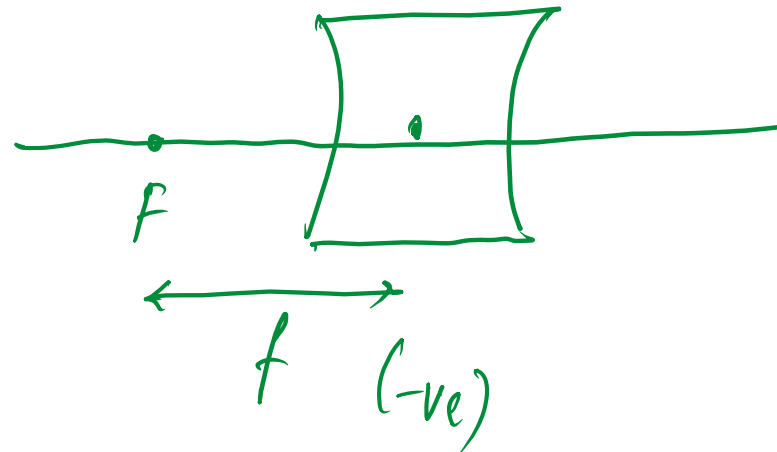
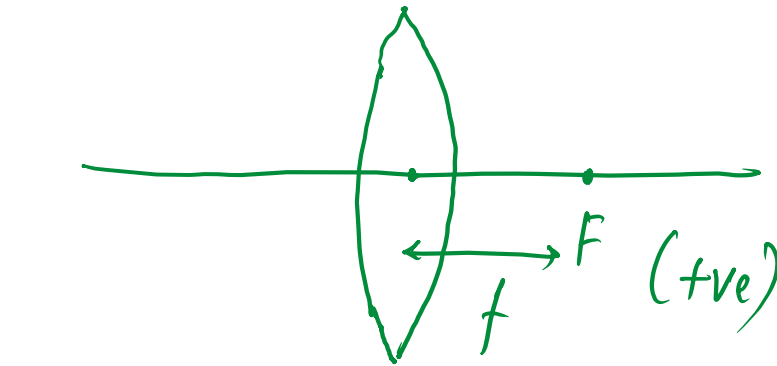


When A Light Ray Passes From A Denser Medium To A Rarer Medium , Which Angle Is Greater ?

- A. Angle Of Incidence
- B. Angle Of Refraction**
- C. Both
- D. None Of The Above

The Power Of A Lens Is - 4.0 D. Which Lens Is It ?

- A. Convex
- B. Concave
- C. Both
- D. None Of The Above



$$\text{Power} = \frac{1}{f}$$

-ve power means

-ve focal length.

The Power Of A Lens Is -4.0 D. Which Lens Is It ?

A. Convex

B. Concave

C. Both

D. None Of The Above

A Lens That Is Thinner At The Middle Than Edges Is

- A. Concave
- B. Convex
- C. Plano-concave
- D. Plano-convex

A Lens That Is Thinner At The Middle Than Edges Is

A. Concave

B. Convex

C. Plano-concave

D. Plano-convex

Formula To Find The Refractive Index Of A Medium Is

- A. $n = \text{Speed Of Light In Medium} / \text{Speed Of Light In Air}$
- B. $n = 1 / \text{Speed Of Light In Medium}$
- C. $n = \text{Speed Of Light In Air} / \text{Speed Of Light In Medium}$
- D. $n = 1 / \text{Speed Of Light In Air}$

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- B. $n = 1 / \text{Speed Of Light In Medium}$
- C. $n = \text{Speed Of Light In Air} / \text{Speed Of Light In Medium}$**
- D. $n = 1 / \text{Speed Of Light In Air}$

If A Light Ray Passes From Glass Into Air

- A. It Does Not Bend
- B. It Bends Away From The Normal
- C. It Continues Along The Normal
- D. It Bends Towards The Normal

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- A. It Does Not Bend
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What Is The Unit Of Refractive Index ?

- A. m/s
- B. cm/s
- C. No units
- D. None of the above

What Is The Unit Of Refractive Index ?

A. m/s

B. cm/s

C. No units

D. None of the above

The refractive indices of two media are denoted by n_1 and n_2 , and the velocities of light in these two media are respectively v_1 and v_2 . If n_2/n_1 is 1.5, which one of the following statements is correct?

- (a) v_1 is 1.5 times v_2 .
- (b) v_2 is 1.5 times v_1 .
- (c) v_1 is equal to v_2 .
- (d) v_1 is 3 times v_2 .

$$\left\{ \frac{n_2}{n_1} = 1.5 \right\} \rightarrow \frac{v_1}{v_2} = 1.5$$

AS ref. index (n) of medium is inversely related to speed of light in that medium.

$$\left(\frac{c}{v_2} \right) = 1.5$$

$$\left(\frac{c}{v_1} \right)$$

$$\frac{v_1}{v_2} = 1.5 \quad \left(n \propto \frac{1}{v} \right)$$

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- (b) v_2 is 1.5 times v_1 .
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- (d) v_1 is 3 times v_2 .

ANSWER : (A)

Which one of the following statements about the refractive index of a material medium with respect to air is correct?

- (a) It can be either positive or negative
- (b) It can have zero value
- (c) It is unity for all materials
- (d) It is always greater than one

$$n = \frac{c}{v} >$$

$$\text{As } v < c$$

$$c > v$$

$$\frac{c}{v} > 1$$

$$n > 1 \text{ (for any medium)}$$

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- (b) It can have zero value
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- (d) It is always greater than one

ANSWER : (D)

If the focal length of a convex lens is 50 cm, which one of the following is its power?

- (a) +2 dioptre
- (b) +0.02 dioptre
- (c) -0.5 dioptre
- (d) +0.5 dioptre

$$f = +50 \text{ cm}$$

$$P = \frac{1}{f \text{ (in m)}} = \frac{100}{f \text{ (in cm)}} = \frac{100}{+50 \text{ cm}}$$

$$= \underline{\underline{+2 \text{ D}}}$$

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(c) -0.5 dioptre

(d) +0.5 dioptre

ANSWER : (A)

The Sun is seen little before it rises and for a short while after it sets. This is because of

- (a) total internal reflection
- (b) atmospheric refraction
- (c) apparent shift in the direction of Sun
- (d) dispersion

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ANSWER : (B)

Which one of the following statements regarding lenses is *not* correct ?

- (a) A convex lens produces both real and virtual images.
- (b) A concave lens produces both real and virtual images.
- (c) A convex lens can produce images equal, greater and smaller than the size of the object.
- (d) A concave lens always produces images smaller than the size of the object.

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- (d) A concave lens always produces images smaller than the size of the object.

ANSWER : (B)

12. Light rays move in straight lines. But through an optical fibre, they can move in any type of zigzag path because

- (a) the holes through the fibre are extremely fine.
- (b) light rays are absorbed at the entry end and relieved at the exit end of the fibre.
- (c) scattering of light occurs inside the fibre.
- (d) successive total internal reflections occur as a ray moves through the fibre.

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- (c) scattering of light occurs inside the fibre.
- (d) successive total internal reflections occur as a ray moves through the fibre.

ANSWER : (D)

A lemon kept in water in a glass tumbler appears to be larger than its actual size. It is because of

- (a) reflection of light
- (b) scattering of light
- (c) refraction of light
- (d) polarization of light

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- (b) scattering of light
- (c) refraction of light
- (d) polarization of light

ANSWER : (C)

A lens has a power of +2.0 Dioptr. Which one of the following statements about the lens is true ?

- (a) The lens is concave and has a focal length of 0.5 metre
- (b) The lens is convex and has a focal length of 2.0 metre
- (c) The lens is convex and has a focal length of 0.5 metre
- (d) The lens is concave and has a focal length of 2.0 metre

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- (c) The lens is convex and has a focal length of 0.5 metre
- (d) The lens is concave and has a focal length of 2.0 metre

ANSWER : (C)

The refractive index of fused quartz is 1.46 and that of sapphire is 1.77. If v_q is the speed of light in quartz and v_s is the speed of light in sapphire, then which one of the following relations is correct ?

(a) $v_q > v_s$

(b) $v_s > v_q$

(c) $v_s = v_q$

(d) $v_s = \frac{v_q}{2}$

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(a) $v_q > v_s$

(b) $v_s > v_q$

(c) $v_s = v_q$

(d) $v_s = \frac{v_q}{2}$

ANSWER : (A)

Twinkling of stars is due to

- (a) particular frequencies of the starlight.
- (b) reflection of starlight from the oceanic surface.
- (c) atmospheric refraction of starlight.
- (d) magnetic field of Earth.

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- (d) magnetic field of Earth.

ANSWER : (C)

18. When A Ray Of Light Enters From One Medium To Another , Which Of The Following Does Not Change ?

- A. Speed
- B. Frequency ✓
- C. Both
- D. None Of The Above

18. When A Ray Of Light Enters From One Medium To Another , Which Of The Following Does Not Change ?

A. Speed

B. Frequency

C. Both

D. None Of The Above

Which of the following materials cannot be used to make a lens ?

- A. Glass
- B. Water
- C. Clay
- D. Plastic

Which of the following materials cannot be used to make a lens ?

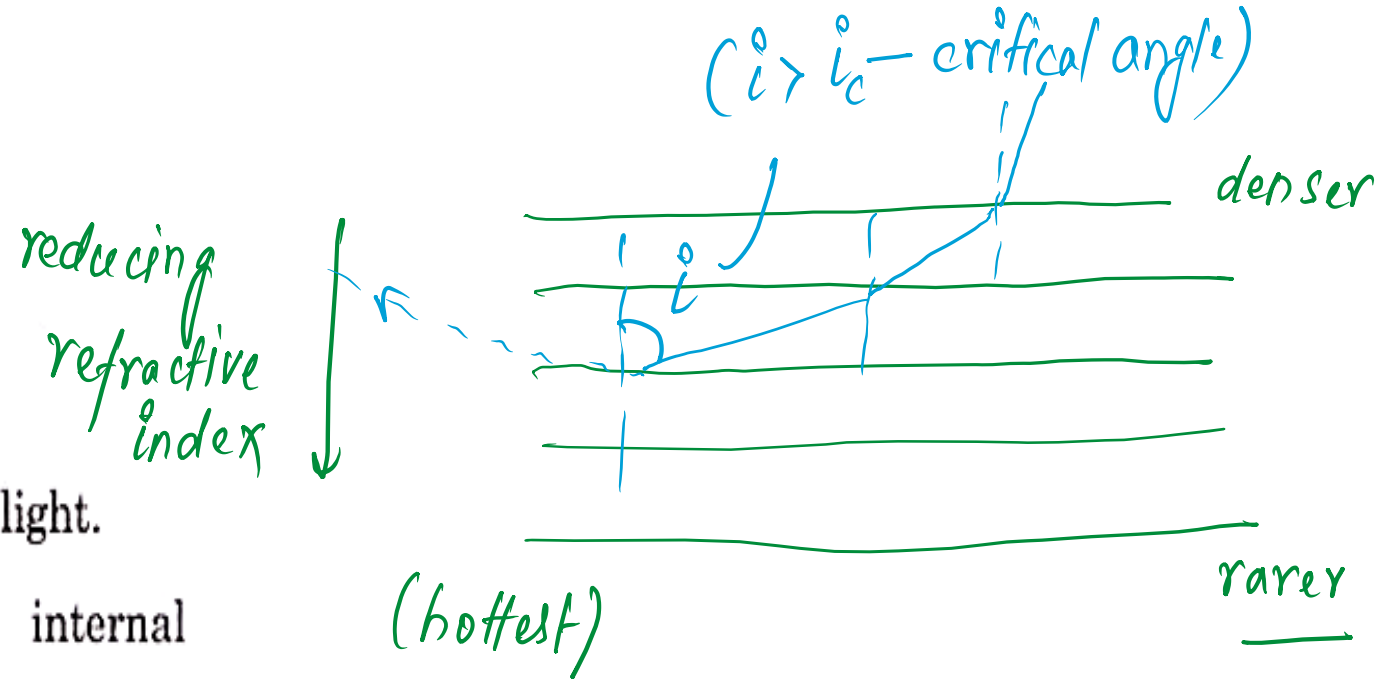
- A. Glass
- B. Water
- C. Clay**
- D. Plastic

Mirage is an illustration of

- (a) only dispersion of light.
- (b) only reflection of light.
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- (d) both refraction and total internal reflection of light.

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ANSWER : (D)

NDA-CDS 2 2024

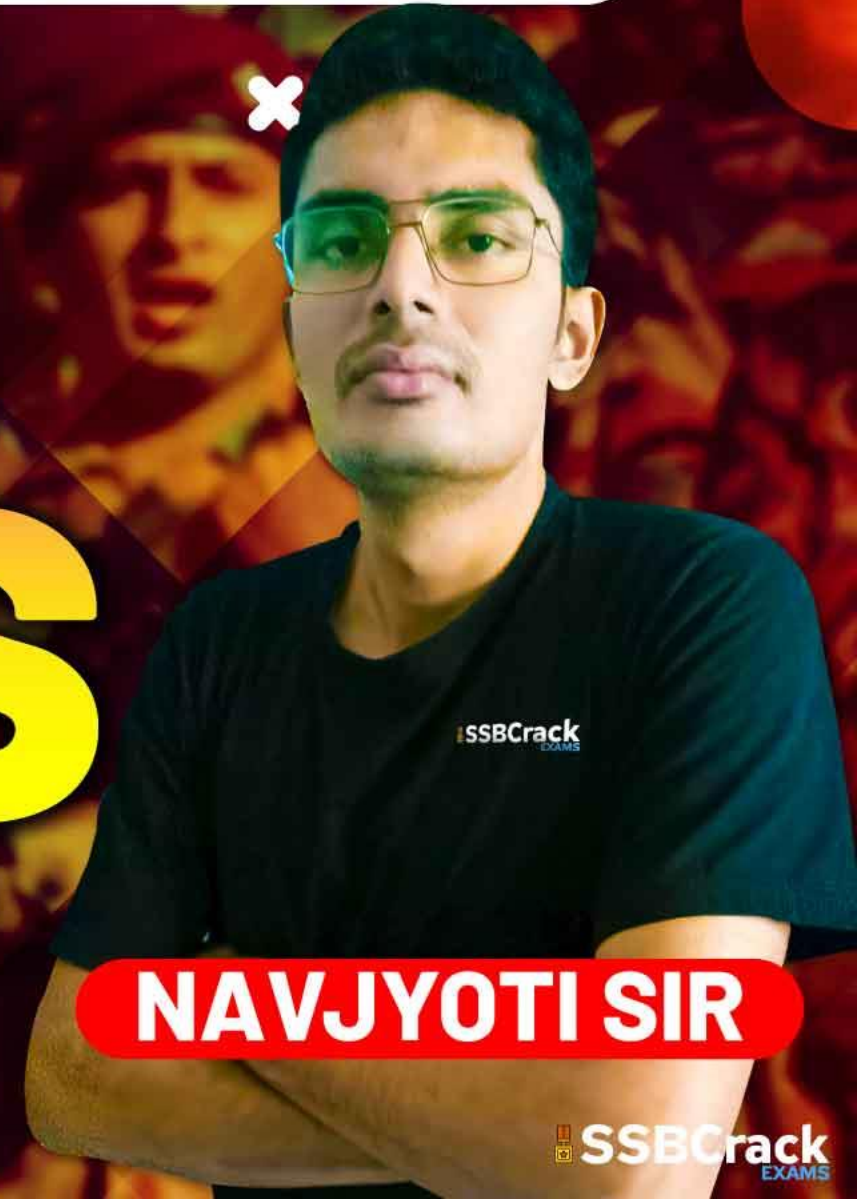
GS

LIVE

PHYSICS

REVISION

CLASS 3



NAVJYOTI SIR

SSBCrack
EXAMS

REVISION TOPICS :

- **Human Eye and Colourful World**
- **Waves and Sound**