



PHYSICS

BOOKS - ICSE

LIGHT ENERGY

Exercise 5 1 Objective Type Questions A Fill In The Blank Spaces By Choosing The Correct Words From The List Given Below Br List Normal Real Incident Regular Same

1. The light falling on the mirror is called ____ ray.



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2. The perpendicular drawn at the point of incidence is called ____.



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3. The incident ray, the reflected ray and the normal lie.....



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4. Name the following

Image which cannot be obtained on a screen



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5. When all the parallel rays reflected from a smooth surface are parallel in one direction, is known as _____ reflection.



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Exercise 5 1 Objective Type Questions B
Statements Given Below Are Incorrect Write The
Correct Statements

1. The ray of light after striking the mirror moves in same direction.



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2. Virtual images cannot be obtained on a screen.



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3. Regular reflection is caused by the irregularities in the reflecting surface



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4. Images in the mirrors are formed by diffused reflection



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5. In periscope, the mirror surfaces are arranged perpendicular to each other.



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Exercise 5 1 Objective Type Questions C Write True Of False For The Following Statements

1. The angle formed by incident ray with normal is known as angle of incidence. _____



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2. The reflected ray leaves the mirror at not the same angle at which the incident ray strikes it. _____



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3. In the experiment of reflection of light, white sheet of paper acts as a plane. _____



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4. A real image is always erect.



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5. Laws of reflection are valid for every surface.



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Exercise 5 1 Objective Type Questions D Tick The Most Appropriate Answer

1. The image formed by a plane mirror is

- A. virtual
- B. laterally inverted
- C. erect
- D. all of these

Answer:



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2. The diffused reflection takes place from :

- A. plane mirror
- B. still water
- C. smooth polished surface
- D. trees

Answer:



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3. Regular reflection takes place from ____ surfaces. (rough/smooth)

A. stone

B. plane mirror

C. brick

D. book

Answer:



4. The angle which the reflected ray makes with the normal during the reflection is called :

- A. angle of reflection
- B. angle of incidence
- C. both (a) and (b)
- D. none of these

Answer:



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5. An image taken on the screen is :

A. virtual

B. laterally inverted

C. real

D. none of these

Answer:



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Exercise 5 1 Objective Type Questions E Match The Statements In Column A With Those In Column B

1. Match the following

	Column A	Column A
1.	The angle between incident ray and the normal.	(a) Real Image
2.	The angle between reflected ray and the normal.	(b) Virtual image
3.	The image taken on the screen.	(c) Lateral inversion
4.	The image cannot be taken on the screen.	(d) Angle of reflection
5.	The left appearing right and right appearing left on reflection on a plane mirror.	(e) Angle of incidence



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Exercise 5 1 Study Questions

1. Define the following :

(a) Angle of incidence (b) Angle of reflection

(c) Normal (d) Incident ray

(e) Reflected ray



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2. (a) What is meant by reflection ?

(b) State the laws of reflection



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3. (a) Define real and virtual images

(b) State the difference between real and virtual images.



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4. (a) Define plane mirror.

(b) State the characteristics of image formed by a plane mirror.

(c) State uses of plane mirroe.



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5. What do you mean by regular and diffused reflection ?



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6. Describe principle and working of the periscope.



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**Exercise 5 2 Objective Type Questions A Fill In
The Blank Spaces By Choosing The Correct**

Words From The List Given Below Br List Concave Principal Axis Spherical Convex Mirror Principal Focus

1. A curved mirror which was a part of hollow sphere is called a _____ mirror



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2. An imaginary line passing through the pole and the centre of curvature of a spherical mirror is called the _____



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3. A spherical mirror which is polished from hollow side, such that the reflecting surface is towards the outer side is called _____ .



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4. When the face is held close to a _____ mirror, it forms a virtual, erect and enlarged image.



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5. The point of the principal axis, when a beam of light travelling parallel to the principal axis, after reflection actually meets is called the ____ of concave mirror.



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Exercise 5 2 Objective Type Questions B
Statements Given Below Are Inccorect Write The
Correct Statements

1. The hollow surface of a concave mirror is silvered, such that its outer surface acts as reflecting surface.



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2. When the object is at infinity in front of a convex mirror, it forms a real, erect and highly diminished image.



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3. A convex mirror is used as a



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4. Any ray of light which initially passes through the principal focus of a spherical mirror, after reflection passes through centre of curvature.



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5. A convex mirror is used as street light reflector.



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Exercise 5 2 Objective Type Questions C Write True Of False For The Following Statements

1. Geometric centre of a spherical mirror is called its centre of curvature. _____



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2. A convex mirror always forms virtual and diminished images. _____



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3. When the object is at centre of curvature of a concave mirror, its image is formed at the centre of curvature. _____



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4. Concave reflectors are used in street lights.



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5. A concave mirror can be used for close make up or shaving glass. -----



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Exercise 5 2 Objective Type Questions D Tick The Most Appropriate Answer

1. The geometric centre of a spherical mirror is called

A. centre of curvature

B. principal focus

C. pole

D. none of these

Answer:



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2. A parallel beam of light, parallel to the principal axis of a concave mirror, on reflection meets at the :



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3. A mirror which always forms a virtual, diminished and erect image of an object is :

A. plane mirror

B. concave mirror

C. convex mirror

D. none of these

Answer:



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4. A mirror which is always used as a rear view mirror for vehicles is :

A. plane mirror

B. concave mirror

C. convex mirror

D. none of these

Answer:



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5. An object is between the principal focus and the centre of curvature of a concave mirror.

The image formed is real and :

A. same size as an object

B. smaller than object

C. bigger than object

D. none of these

Answer:



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**Exercise 5 2 Objective Type Questions E Match
The Statements In Column A With Those In
Column B**

1. Match the following

Column A	Column B
1. An imaginary line passing through the pole and the centre of curvature of a spherical mirror.	(a) Principal focus
2. A point on the principal axis of a concave mirror, where parallel beam of light after reflection meets.	(b) Convex mirror
3. The centre of the sphere of which spherical mirror is a part.	(c) Principal axis
4. A spherical mirror which always forms a virtual, erect and diminished image.	(d) Concave mirror
5. A spherical mirror, which can form a virtual, erect and enlarged image.	(e) Centre of curvature



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Exercise 5 2 Study Questions

1. Define the following : (a) Principal axis,
(b) Focal length, (c) Pole (d) Centre of curvature.



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2. State two uses of

(a) concave mirror, (b) convex mirror



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3. State two differences between a real image and a virtual image.



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4. You are provided with (a) a plane mirror, (b) a convex mirror and (c) a concave mirror.

How will you distinguish between them, without touching them?



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Exercise 5.3 Objective Type Questions A Fill In The Blank Spaces By Choosing The Correct Words From The List Given Below List Refractive Index Refracted Normally Deviates Less

1. The phenomenon due to which a ray of light _____ from its path while travelling from one optical medium to another optical medium is called refraction.



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2. The incident ray, the _____ ray and the normal lie in the same plane during refraction.



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3. When a ray of light strike the surface of seperation of two optical media _____ it does not suffer any refraction.



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4. The ratio of velocity of light in vacuum to the velocity of light in a given media is called _____.



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5. When a ray of light travels from an optically more denser medium to an optically less denser medium, the angle of incidence is always _____ than the angle of refraction.



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Exercise 5 3 Objective Type Questions B
Statements Given Below Are Incorrect Write The Correct Statements

1. When a ray of light travels from optically denser medium to optically rarer medium, it

always bends towards the normal.



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2. A ray of light is incident perpendicularly on a glass slab. The angle of incidence is 90^0 .



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3. The ratio between the velocity of light in a given optical medium to the velocity of light in vacuum is called refractive index.



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4. When a ray of light travels from an optically less denser medium to an optically more denser medium, the angle of incidence is always less than angle of refraction.



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5. During refraction through a glass block, with the increase in angle of incidence, the

angle of refraction decreases.



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Exercise 5 3 Objective Type Questions C Write True Of False For The Following Statements

1. When a ray of light strike the surface of seperation of two optical media _____ it does not suffer any refraction.



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2. The angle of incidence is always smaller than angle of refraction when a ray travels from air to glass. _____



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3. The ratio between velocity of light in vacuum to velocity of light in air is called refractive index. _____



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4. A ray travelling from glass to air, bends away from the normal. ____



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5. A pencil held obliquely in water appears bent and longer. ____



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Exercise 5 3 Objective Type Questions D Tick The Most Appropriate Answer

1. A ray of light travelling in air strikes the surface of glass at angle of 45° . The angle of refraction in the glass will be :

A. less than 45°

B. more than 45°

C. zero

D. none of these

Answer:



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2. A ray of light incident on glass slab finally emerges out of it. The ray which emerges out is called :

- A. incident ray
- B. refracted ray
- C. emergent ray
- D. none of these

Answer:



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3. A ray of light travelling obliquely from glass to air :

- A. bends towards the normal
- B. bends away from the normal
- C. does not deviate from its path
- D. none of these

Answer:



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4. When a coin placed in a bowl of water and seen from above, it appears :

- A. raised from its position
- B. below its position
- C. at the same position
- D. none of these

Answer:



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5. When a ray of light strikes the glass slab at 90° , it is seen that it does not deviate from its path. In such a situation :

A. angle of incidence is zero

B. angle of refraction is zero

C. both (a) and (b)

D. none of these

Answer:



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Exercise 5 3 Objective Type Questions E Match The Statements In Column A With Those In Column B

1. Match the following

Column A	Column B
1. The deviation of rays of light from their path on passing from one medium to another.	(a) Incident ray
2. The name of ray which travels along a different path on passing through a glass slab.	(b) Refraction of light
3. The name of the ray which travels toward an optical medium of a different nature.	(c) Angle of refraction
4. The ratio of speed of light in vacuum to speed of light in a given optical medium.	(d) Refracted ray
5. The angle which a refracted ray makes with normal.	(e) Refractive index



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Exercise 5 3 Study Questions

1. What do you understand by the term 'refraction of light'?



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2. Why is a coin placed in a bowl of water appears raised?



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3. Define the following with reference to refraction of light.

(a) incident ray, (b) refracted ray (c) normal,

(d) emergent ray, (e) angle of incidence, (br>

(f) angle of refraction.



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4. State the laws of refraction of light. State at least three examples of refraction of light.



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5. How are the angle of incidence and angle of refraction related to each other when :

(a) a ray of light travels from rare to dense medium,

(b) a ray of light travels from dense to rare medium ?



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6. (a) What do you understand by the term refractive index?

(b) If the velocity of light in vacuum is $3 \times 10^8 \text{ms}^{-1}$ and in another medium M is $0.75 \times 10^8 \text{ms}^{-1}$, what is the refractive index of M?



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Exercise 5 4 Objective Type Questions A Fill In The Blank Spaces By Choosing The Correct Words From The List Given Below List Two Base Dispersion Prism Deviation

1. When the refraction takes place through a glass prism the emergent ray always bends towards the _____ of prism.



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2. The phenomenon due to which white light splits up into seven colours, on passing through an equilateral prism is called _____ of light.



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3. A prism is a piece of transparent material having three rectangular surfaces and _____ triangular surfaces.



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4. The angle between the incident ray and emergent ray, when the ray is passing through an equilateral prism is called angle of _____.



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5. The angle between the two refracting surface of a prism is called angle of _____.



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Exercise 5 4 Objective Type Questions B
Statements Given Below Are Incorrect Write The
Correct Statements

1. A prism is a piece of transparent material having three triangular surfaces and two rectangular surfaces.



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2. For an equilateral prism

$$\angle A + \angle i = \angle e + \angle D$$



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3. The angle between the incident ray and the refracted ray of a prism is called angle of deviation.



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4. The phenomenon due to which white light splits into seven colours on passing through a prism is called spectrum.



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5. During dispersion of white light by a prism, the red colour deviates most.



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Exercise 5 4 Objective Type Questions C Write True Of False For The Following Statements

1. The band of seven colours obtained on a screen when white light passes through a prism is called spectrum. ____



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2. It is first face of a prism which disperses white light.



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3. During refraction through prism a ray bends away from its base.



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4. For a prism $\angle A + \angle D = \angle i + \angle e = \text{-----}$



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5. The angle between the incident ray and the emergent ray in case of a prism is called angle of prism. _____



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Exercise 5 4 Objective Type Questions D Tick The Most Appropriate Answer

1. When the white light is passed through an equilateral prism it splits into seven colours.

The phenomenon of splitting of white light is called :

A. refraction

B. spectrum

C. dispersion

D. none of these

Answer:



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2. During dispersion of light, the least dispersed colour is :

A. violet

B. green

C. yellow

D. red

Answer:



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3. When the refraction takes place through an equilateral prism.

A. $\angle A + \angle i = \angle D + \angle e$

B. $\angle A + \angle e = \angle D + \angle i$

C. $\angle A + \angle D = \angle i + \angle e$

D. none of these

Answer:



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4. The angle between two refracting surfaces of a prism is called :

A. angle of prism

B. refraction

C. spectrum

D. refractive index

Answer:



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5. The band of seven colours obtained on a screen when white light passes through a prism is called spectrum. ____

A. 1.dispersion

B. 2.refraction

C. 3.spectrum

D. 4.refractive index

Answer:



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Exercise 5 4 Objective Type Questions E Match The Statements In Column A With Those In Column B

1. Match the following

Column A	Column B
1. A transparent piece of glass used for the dispersion of white light.	(a) Angle of prism
2. The angle between incident ray and emergent ray, when refraction takes place through a prism.	(b) Spectrum
3. The angle between two refracting surfaces of a prism.	(c) Dispersion
4. A band of colours formed on the screen when white light passes through prism.	(d) Prism
5. The phenomenon due to which white light splits into seven colours on passing through the prism.	(e) Angle of deviation



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Exercise 5 4 Study Questions

1. Draw a neat diagram for the passage of a ray of light through an equilateral glass prism, showing clearly

(a) angle of incidence (b) angle of emergence (c) angle of deviation (d) angle of prism



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2. (a) Define the following when refraction takes place through an equilateral glass prism

(i) angle of incidence (ii) prism (iii) refracting

angle of prism (iv) angle of emergence (v)

angle of deviation

(b) How are angle of incidence, angle of prism, angle of emergence and angle of deviation related to each other?



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3. Draw a neat and labelled diagram, when a ray of white light passes through an equilateral prism.



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4. A ray of white light is passed through a glass prism and a spectrum is obtained on a screen.

(a) Name the seven colours of the spectrum in order.

(b) Do the colours have the same width in the spectrum ?

(c) Which colour of the spectrum of white light deviates (i) the most, (ii) the least?



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5. During dispersion of white light, which colour

(a) deviates least, (b) deviates most?



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Theme Assignment Objective Type Questions A Fill In The Blank Spaces

1. A convex mirror always forms _____ and diminished image. (real/virtual)



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2. Regular reflection takes place from ___
surfaces. (rough/smooth)



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3. A mirror whose reflecting surface is towards
the hollow side is called _____ mirror.
(concave/convex)



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Theme Assignment B Write True Of False For The Following Statements

1. A concave can be used to obtain a real and magnified image.



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2. A real image is always erect.



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3. A convex mirror is used as street light reflector.



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Theme Assignment C Tick The Most Appropriate Answer

1. A mirror which always forms virtual, diminished and erect image of an object is

A. plane mirror

B. concave mirror

C. convex mirror

D. none of these

Answer:



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2. The geometric centre of a spherical mirror is called

A. pole

B. centre of curvature

C. aperture

D. principal focus

Answer:



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3. When a ray of light strikes a plane mirror along the normal, the angle of incidence is :

A. 90^0

B. zero

C. 45^0

D. none of these

Answer:



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**Theme Assignment D Statements Given Below
Are Incorrect Write The Correct Statements**

1. Reflecting periscope is used by the barbers to show the back of head.



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2. A ray which bounces off the surface of a mirror is called incident ray.



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3. The image formed in a convex mirror is always erect and enlarged.



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4. Define the following terms related to curved mirrors :

(A) Focus (b) Principal axis (c) Centre of curvature (d) Radius of curvature



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5. State at least three differences between real and virtual images.



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6. (a) Define refraction and state at least three examples of refraction.

(b) Describe dispersion of white light into its constituent colours.



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7. By drawing a neat diagram show the formation of an image in a concave mirror when the object is between the pole and the principal focus of the mirror. State the characteristics of the image.



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Solved Example

1. The speed of light in air is 3×10^8 m/s. Find its speed in diamond if the refractive index of

diamond is 2.42 .



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Questions Choose The Correct Option To Fill In The Blank

1. A pencil appears to be bent when partially immersed in a beaker of water due to
(reflection/refraction) of light.



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2. Glass is optically (denser/rarer) than water.



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3. The speed of light in water is
 $(2.25 \times 10^8 / 1.8 \times 10^8)$ m/s



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4. A swimming pool appears
(deeper/shallower) than its actual depth.



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5. A ray of light travelling parallel to the principal axis, passes through the
(principal focus/centre of curvature) after reflection, in case of a concave mirror.



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6. A ray of light incident at the
(focus/pole) is reflected at the same angle
with the principal axis



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7. A virtual image is always
(inverted/erect) and is formed behind the
mirror.



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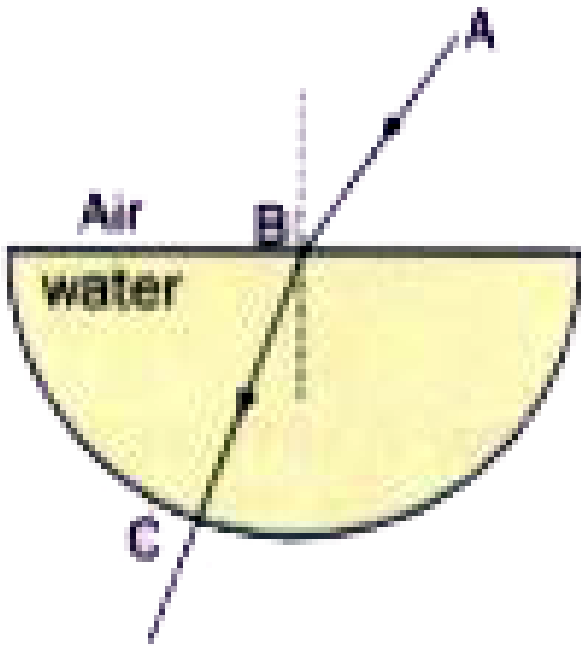
8. When the object is placed far off, the image will be formed at the (focus, centre of curvature)



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Questions Observe The Figures And Answer The Questions

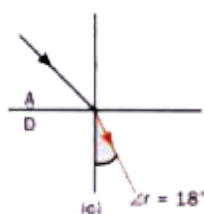
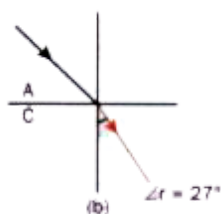
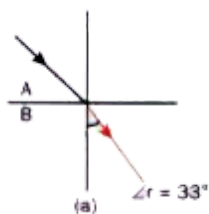
1. In Fig. A, can you tell why there is no refraction at C.



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2. Looking at the angle of refraction in the figures given Fig. B, which medium will have the maximum value of refractive index and in

which medium will the speed of light be the least?
least?



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**Questions Write T For True And F For False
Correct The False Statements**

1. When a ray of light travels obliquely from a rarer medium to a denser medium, it bends

away from the normal.



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2. Consider a ray of light passing from one medium to another. If the angle of refraction is less than the angle of incidence, will the speed of light in the second medium be less or more than that in the first medium?



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3. The angle which the reflected ray makes with the normal during the reflection is called :



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4. When the white light is passed through an equilateral prism it splits into seven colours. The phenomenon of splitting of white light is called :



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5. What is the nature of the image formed by a convex mirror?



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6. The image by a convex mirror is always formed in front of the mirror.



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7. In solar cooker, we use concave mirrors.



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8. We use concave mirrors as rear view mirrors.



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Questions Name The Following

1. Curved mirrors where the reflecting surface is on the bulged side



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2. The geometrical centre of a spherical mirror



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3. An imaginary line passing through the pole and the centre of curvature of the spherical

mirror



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4. Another name for diverging mirror



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5. The distance between the focus and pole of the mirror



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Exercises Section I Name The Following

1. The phenomenon in which when a ray of light travels from one medium to another, bends at the boundary between the two medium



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2. Name the following

The angle between the incident ray and the normal



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3. The ratio of the speed of light in air to the speed of light in another medium



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4. An optical phenomena which causes an illusion of puddles of water on a hot road



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5. The angle between the incident ray and emergent ray, when the ray is passing through an equilateral prism is called angle of _____.



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6. The phenomenon due to which white light splits into seven colours on passing through a prism is called spectrum.



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7. The geometrical centre of a spherical mirror



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8. Curved mirrors where the reflecting surface is on the bulged side



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9. An imaginary line passing through the pole and the centre of curvature of the spherical mirror



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10. The general name of the image that can be obtained on a screen



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Exercises Section I Choose The Correct Option

1. Water is optically rarer than

A. air

B. glass

C. diamond

D. both b and c

Answer:



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2. The speed of light slows down in a medium whose refractive index is

A. lower

B. higher

C. same

D. None of these

Answer:



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3. The speed of light in air is :

A. $343 \frac{m}{s}$

B. $2.25 \times 10^8 \frac{m}{s}$

C. $3 \times 10^8 \frac{m}{s}$

D. $3 \times 10^5 \frac{m}{s}$

Answer:



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4. When a ray of light travels obliquely from a rarer medium to a denser medium, it bends away from the normal.

A. without deviation

B. towards normal

C. away from normal

D. parallel to the normal

Answer:



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5. If the radius of curvature is R , then the focal length is given by

A. $R/2$

B. $2R$

C. $2+R$

D. $2-R$

Answer:



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6. A ray of light passing through the focus, after reflection from a concave mirror travels

.....

A. parallel to the principal focus

B. parallel to the principal axis

C. parallel to the pole

D. through the pole

Answer:



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7. The image formed by a concave mirror is of the same size as the object if the object is placed

A. between pole and focus

B. at the focus

C. between focus and centre of curvature

D. at the centre of curvature

Answer:



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8. A convex mirror is used as a

A. shaving mirror

B. rear view mirror

C. reflector in street lamps

D. Both b and c

Answer:



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Exercises Section I Write T For True And F For False Correct The False Statements

1. Light travels with different speeds in different mediums.



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2. Light always takes the path that requires the shortest distance.



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3. The perpendicular line drawn on the surface of a mirror at the point of incidence is called the incident ray.



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4. The refractive index of a medium tells you how much the speed of light has reduced.



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5. The angle between any two refracting surfaces in a prism is called the angle of prism.



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6. A ray of light incident at the pole at angle 25° will be reflected at an angle 25°



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7. A real image is always erect.



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Exercises Section I Choose The Correct Option To Fill In The Blank

1. When the speed of light slows down in a medium, that medium is said to be optically (rarer/denser).



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2. The ray of light after changing its direction in the second medium after refraction is called (reflected ray/refracted ray).



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3. The angle of refraction is the angle between the refracted ray and (incident ray/normal).



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4. When a ray of light travels perpendicular to the surface of separation of the two mediums, there is (maximum/no) refraction.



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5. The SI unit of refractive index is (no unit/m).



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6. The perpendicular distance between the incident ray and the emergent ray in a glass slab is called the (angle of emergence/lateral displacement).



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7. Which colour of the white light is deviated by a glass prism (i) the most, and (ii) the least?



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8. A ray of light passing through the
(focus/centre of curvature) travels back along
its original path after reflection.



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Exercises Section II Give Reasons For The Following

1. Ray of light bends as light travels from one
medium to another.



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2. How does refraction take place in the atmosphere? Why do stars twinkle but not the planets?



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3. Why is it difficult to aim and hit targets under water, such as fish?



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4. Diamond is optically denser than glass and water.



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5. Why is a coin placed in a bowl of water appears raised?



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6. Explain the cause of dispersion of white light through a prism.



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7. Concave mirror is called a converging mirror



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Exercises Section II Distinguish Between The Following

1. A light ray suffers reflection and refraction at the boundary in passing from air to water.

Draw a neat labelled ray diagram to show it.



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2. Physical density and optical density



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3. Draw suitable diagrams to illustrate the action of (i) concave mirror, and (ii) convex

mirror, on a beam of light incident parallel to the principal axis.



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4. Focus and pole



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5. Define the principal focus of a concave mirror.



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6. Define: Radius of curvature and centre of curvature



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Exercises Section II Short Answer Questions

1. What do you mean by refraction? Give an example.



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2. What do you mean by optically rarer medium?



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3. What happens to the direction of ray of light if it travels from (a) a denser medium to a rarer medium (b) a rarer to a denser medium (c) perpendicular to the surface of separation of two mediums?



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4. What is the principle of reversibility?

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5. The refractive index of diamond is 2.42, whereas for air it is 1.0. What does it tell you about optical density and speed of light in air and in diamond?

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6. What do you mean by lateral displacement?



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7. What do you mean by dispersion of light?



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8. Define the principal focus of a concave mirror.



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9. Write any two rules for making ray diagrams for spherical mirrors.



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Exercises Section II Long Answer Questions

1. Explain refraction. Draw a diagram and explain incident ray, refracted ray, angle of incidence, and angle of refraction.



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2. State the laws of refraction of light. State at least three examples of refraction of light.



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3. Draw a diagram to show refraction through a glass slab and label the following: (a) incident ray (b) refracted ray (c) emergent ray (d) angle of incidence (e) angle of refraction at

the first boundary of two mediums (f) angle of emergence and (g) lateral displacement



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4. Draw a diagram to show refraction through a prism and mark angle i , angle r_1 , angle r_2 angle d , and angle of emergence.



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5. Draw a concave mirror and a convex mirror and mark the reflecting surfaces on both.



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6. Write the position and nature of the image formed in a concave mirror if the object is kept (a) at infinity (b) at F (c) between F and C (d) at (e) beyond C (f) between F and P.



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7. Draw the image formed by a convex mirror when the object is kept in front of the mirror and write the characteristics of the image.



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8. List the uses of concave mirrors and convex mirrors.



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1. If the focal length of a concave mirror is 14 cm, what would be its radius of curvature?



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2. If the radius of curvature of a concave mirror is 22 cm, what would be its focal length?



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3. If the focal length of a convex mirror is 12 cm, what would be its radius of curvature?



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4. If the radius of curvature of a convex mirror is 30 cm, what would be its focal length?



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5. The speed of light in air is 3×10^8 m/s and the speed of light in glass is 2×10^8 m/s.

What is the refractive index of glass?



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6. If the speed of light in air is 3×10^8 m/s, and the refractive index of water is 1.33, find the speed of light in water.



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7. What is the refractive index in a medium where the speed of light is 1.5×10^8 m/s ?



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8. If the speed of light in diamond is 1.24×10^8 m/s, find its refractive index.



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9. If the refractive index of alcohol is 1.36, what will be the speed of light in it?



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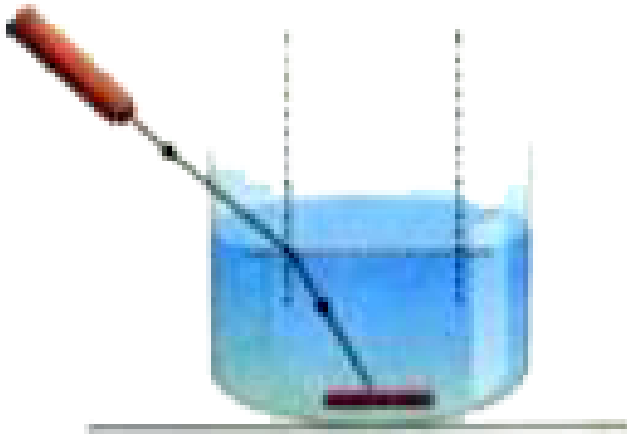
10. If the refractive index of ice is 1.31, what will be the speed of light in it?



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Picture Study

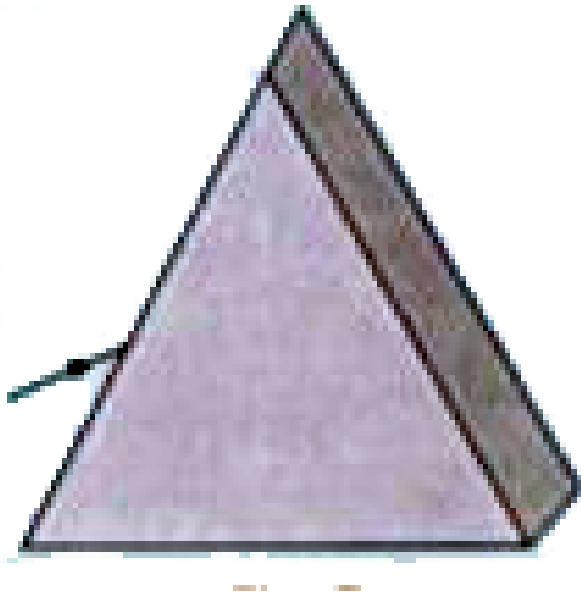
1. In Figure A, draw the reflected ray from the mirror and refracted ray into the air.



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2. If a glass prism is kept in a liquid of the same refractive index as that of glass, will the

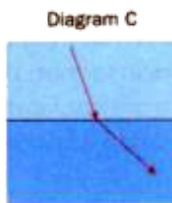
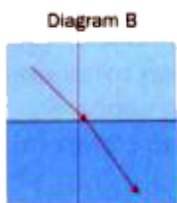
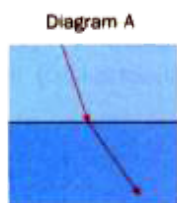
ray of light bend (Fig. B)? Complete the path of the ray of light.



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3. In the diagrams given in Figure C, draw the angle of incidence and the angle of refraction.

Identify which medium is rarer and which medium is denser.



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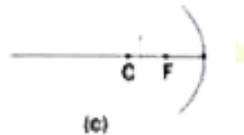
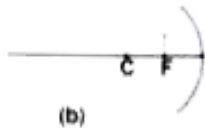
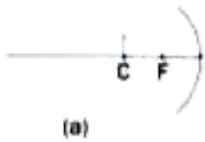
4. Complete Figure D and determine where the image would be and write its characteristics.





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5. In Figure E, draw the reflected rays and find out where the image would be.



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