



## COMPETENCY BASED QUESTIONS

### Class 10 – Chapter 10

### Light- Reflection and Refraction

The pictures show four ray diagrams of images formed by concave mirrors.

P is the pole or centre of the reflecting surface of the mirror.

C is the centre of curvature of the mirror.

F is the focus of the mirror. AB is the object and A'B' is the image of the object.

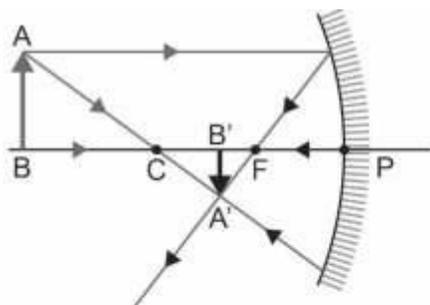


diagram 1

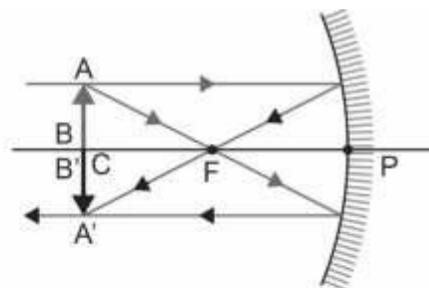


diagram 2

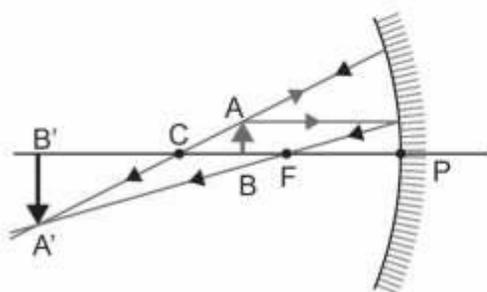


diagram 3

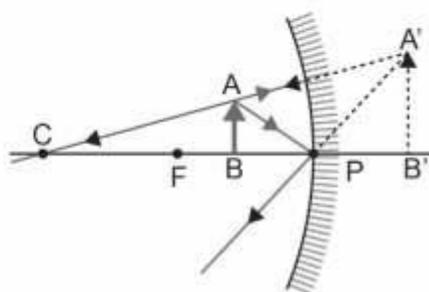


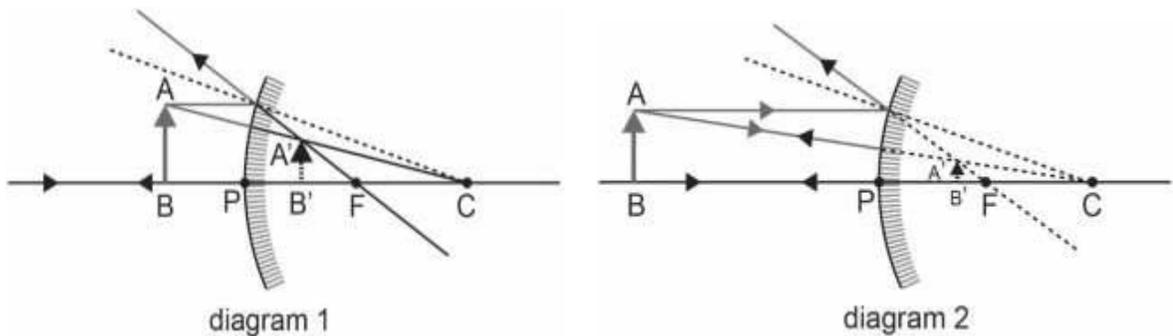
diagram 4

1. Which of these can be concluded from diagram 1?
  - a. Image is formed at the focus.
  - b. Size of the image is equal to the size of the object.
  - c. Distance between pole and centre of curvature is twice the focal length.
  - d. Distance between the image and focus is half the distance between the object and focus.
2. Which diagram shows a real, inverted and enlarged image formed by the mirror?
  - a. Diagram 1
  - b. Diagram 2
  - c. Diagram 3

- d. Diagram 4
3. In which condition does a concave mirror produce a virtual image?
- When object is located within the focal length
  - When object is located at the centre of curvature
  - C. When object is located in between infinity and center of curvature
  - When object is located in between the centre of curvature and the focus
4. Solar cookers contain a concave mirror. How does the concave mirror help in heating the food? Circle 'Yes' or 'No' for the correct response.

How does the concave mirror heat the food?	
Sun's rays are absorbed by the mirror	Yes or No
Sun's rays reflected by the mirror converge at a point.	Yes or No
Sun's rays diverge out when reflected by the mirror.	Yes or No

The pictures show the ray diagrams of images formed by convex mirrors. P is the pole or centre of the reflecting surface of the mirror. C is the centre of curvature of the mirror. F is the focus of the mirror. AB is the object and A'B' is the image of the object.



5. Which statement is supported by the two diagrams?  
Circle 'Yes' or 'No' for each statement.

Is the statement supported by the two diagrams?	
Convex mirrors produce virtual images	Yes or No
Convex mirrors produce erect images	Yes or No
Convex mirrors have their focus behind the mirrors	Yes or No

6. Which of these is a convex mirror?
- Shaving mirror
  - Dentist's mirror
  - Headlight mirror of a bike

- d. Rear-view mirror of a car
7. A mirror magnifies the image of an object by minus 1.5 times.  
Which of the following is true about the image produced by the mirror?
- The image is real and larger than the object.
  - The image is real and smaller than the object.
  - The image is virtual and larger than the object.
  - The image is virtual and smaller than the object.

The table below shows the refractive index of different materials.

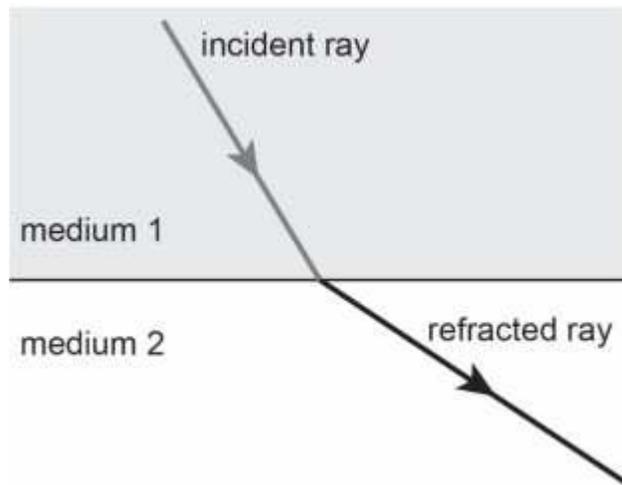
	Water	Kerosene	Flint glass	Diamond
Refractive index of the material	1.33	1.44	1.65	2.42

The formula for calculating the refractive index ( $n_m$ ) of a material is,

$$n_m = \frac{\text{Speed of light in X}}{\text{Speed of light in the medium}}$$

8. What does X stand for?
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The picture shows the path of light as it travels from one medium to another.



9. What is medium 1 and medium 2?

	Medium 1	Medium 2
a	Water	Kerosene
b	Kerosene	Diamond
c	Flint Glass	Water
d	Kerosene	Flint Glass

10. The power of a lens (P) is calculated by the formula,

$$P = 1/f$$

where f is the focal length of the lens.

A lens has a focal length of  $-0.25$  m.

Is it a convex lens or a concave lens? Explain your answer.

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