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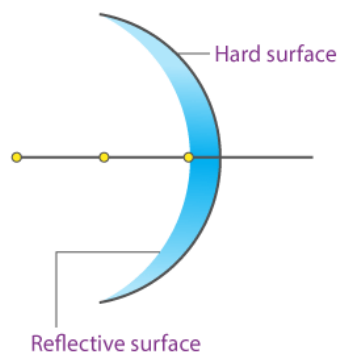
Concave Mirrors And Convex Mirrors

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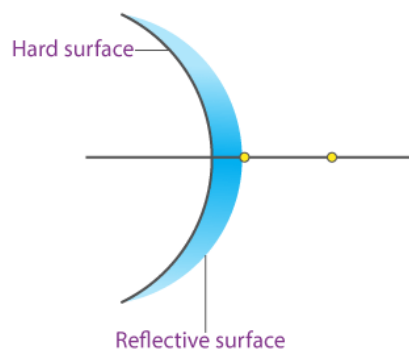
A mirror is a surface that reflects a clear image. Images can be of two types: Real image and Virtual image. An image that can be formed on the screen is known as a real image and the one which cannot be formed on the screen is known as a virtual image. These images are formed when light falls on a mirror from the object and is reflected back by the mirror on the screen. There can be two types of mirror: Curved mirror and plane mirror. If a curved mirror is a part of a sphere then it is known as a spherical mirror. The image formed by a plane mirror is always a virtual image as it cannot be obtained on a screen. The image formed by the spherical mirror can be either real or virtual. Spherical mirrors are of two types:

- Convex mirrors
- Concave mirrors

CONCAVE MIRRORS AND CONVEX MIRRORS



Concave mirror



Convex mirror



Concave Mirror

If a hollow sphere is cut into parts and the outer surface of the cut part is painted, then it becomes a mirror with its inner surface as the reflecting surface. This kind of mirror is known as a concave mirror. Light converges at a point when it strikes and reflects back from the reflecting surface of the concave mirror. Hence, it is also known as a converging mirror. When the concave mirror is placed very close to the object, a magnified and virtual image is obtained. However, if we increase the distance between the object and the mirror then the size of the image reduces and a real image is formed. So, the image formed by the concave mirror can be small or large and it can also be real or virtual.

Convex Mirror

If the other cut part of the hollow sphere is painted from inside, then its outer surface becomes the reflecting surface. This kind of mirror is known as a convex mirror (<https://byjus.com/physics/convex-mirror/>). A convex mirror is also known as a diverging mirror as this mirror diverges light when they strike on its reflecting surface. Virtual, erect, and diminished images are always formed with convex mirrors, irrespective of the distance between the object and the mirror. Apart from other applications, the convex mirror is mostly used as a rearview mirror in vehicles.

Spherical mirrors are the mirrors having curved surfaces that are painted on one of the sides. Spherical mirrors in which inward surfaces are painted are known as concave mirrors, while the spherical mirrors in which outward surfaces are painted are known as convex mirrors. Concave mirrors are also known as a converging mirror since the rays converge after falling on the concave mirror, while the convex mirrors are known as diverging mirrors as the rays diverge after falling on the convex mirror. In this article, we will learn about image formation by concave and convex mirrors.

! Test your Knowledge on Concave Mirrors And Convex Mirrors!



Put your understanding of this concept to test by answering a few MCQs. Click 'Start Quiz' to begin!

Select the correct answer and click on the "Finish" button

Check your score and answers at the end of the quiz

Start Quiz

Guidelines for Rays Falling on the Concave and Convex Mirrors

1. When a ray strikes concave or convex mirrors obliquely at its pole, it is reflected obliquely.
2. When a ray, parallel to principal axis strikes concave or convex mirrors, the reflected ray passes through the focus on the principal axis.
3. When a ray, passing through focus strikes concave or convex mirrors, the reflected ray will pass parallel to the principal axis.
4. A ray passing through the center of curvature of the spherical mirror will retrace its path after reflection.

Image Formation By Concave Mirror

By changing the position of the object from the concave mirror, different types of images can be formed. Different types of images are formed when the object is placed:

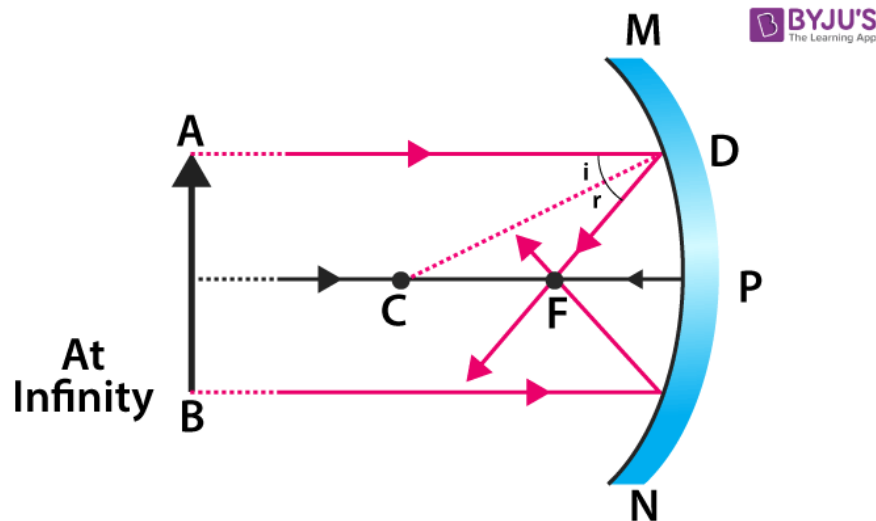
1. At the infinity
2. Beyond the center of curvature
3. At the center of curvature
4. Between the center of curvature and principal focus



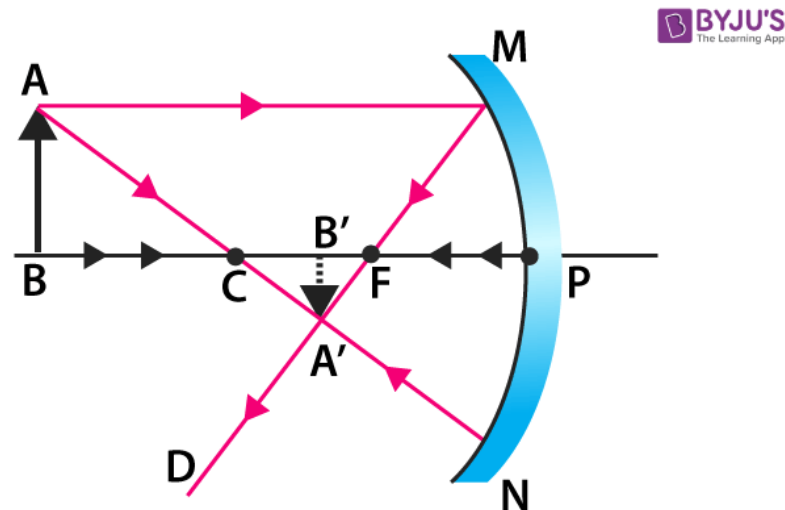
5. At the principal focus
6. Between the principal focus and pole

Concave Mirror Ray Diagram

- When an object is placed at infinity, a real image is formed at the focus. The size of the image is much smaller than compared to that of the object.

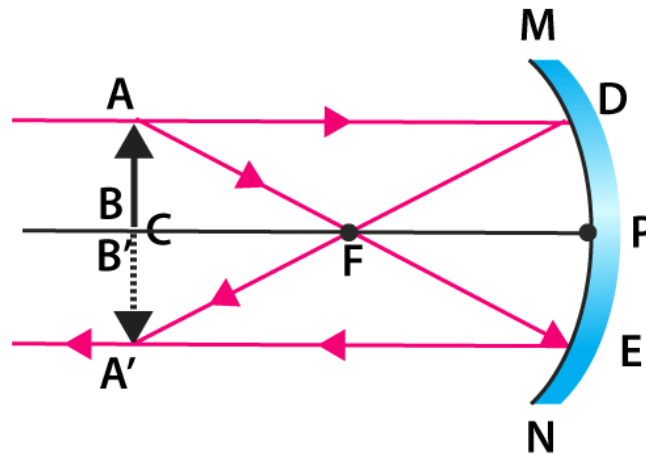


- When an object is placed behind the center of curvature, a real image is formed between the center of curvature and focus. The size of the image is smaller than compared to that of the object.

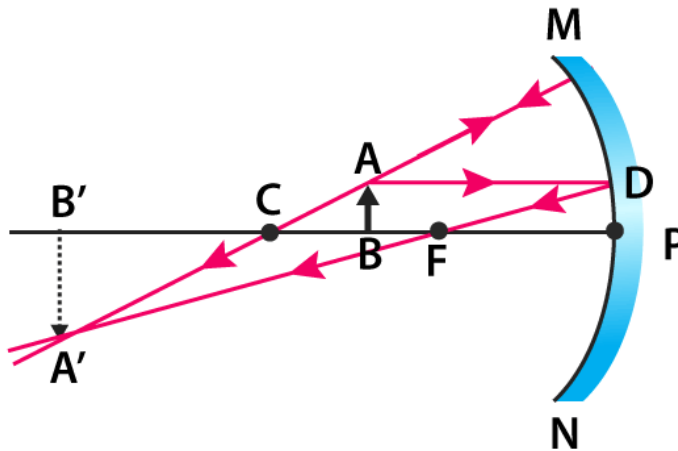


- When an object is placed at the center of curvature and focus, the real image is formed at the center of curvature. The size of the image is the same as compared to that of the object.

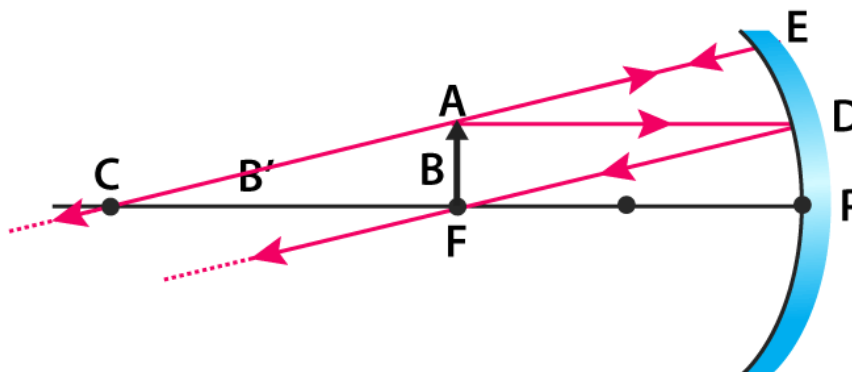




- When an object is placed in between the center of curvature and focus, the real image is formed behind the center of curvature. The size of the image is smaller than compared to that of the object.

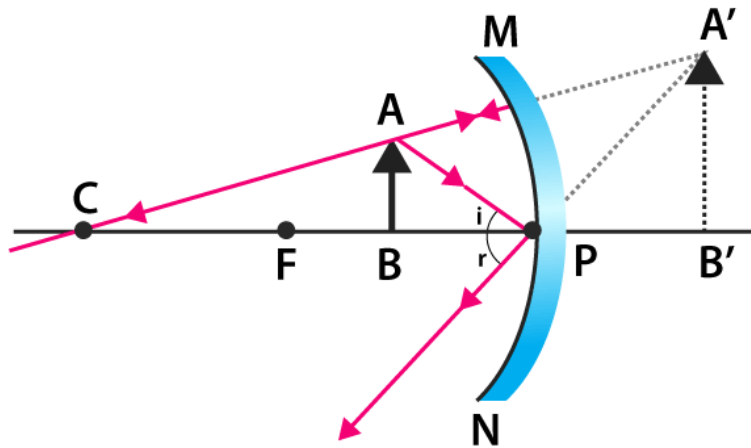


- When an object is placed at the focus, the real image is formed at infinity. The size of the image is much larger than compared to that of the object.



- When an object is placed in between focus and pole, a virtual and erect image is formed. The size of the image is larger than compared to that of the object.





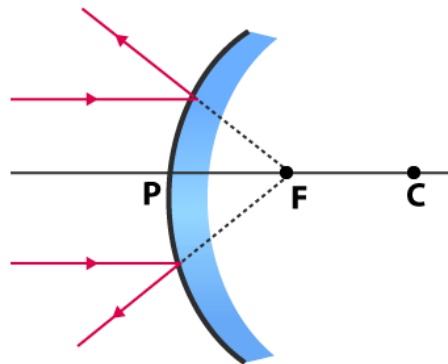
Summary

S. No	Position of Object	Position of Image Swipe left	Size of Image	Nature of Image
1	At infinity	At the focus	Highly Diminished	Real and Inverted
2	Beyond the center of curvature C	Between F and C	Diminished	Real and Inverted
3	At the center of curvature C	At C	Same Size	Real and Inverted
4	Between C and F	Beyond C	Enlarged	Real and Inverted
5	At focus F	At Infinity	Highly Enlarged	Real and Inverted

Image Formation By Convex Mirror

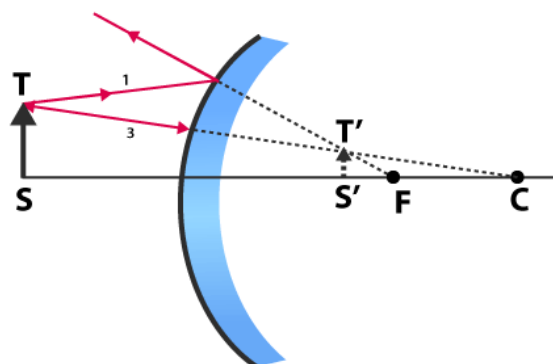
The image formed in a convex mirror is always virtual and erect, whatever be the position of the object. In this section, let us look at the types of images formed by a convex mirror.

- When an object is placed at infinity, a virtual image is formed at the focus. The size of the image is much smaller than compared to that of the object.



- When an object is placed at a finite distance from the mirror, a virtual image is formed between the pole and the focus of the convex mirror. The size of the image is smaller than compared to that of the object.





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Summary

S. No	Position Of Object	Position of Image	Size of Image	Nature of Image
1	At Infinity	At the focus F, behind the mirror	Highly diminished	Virtual and Erect
2	Between Infinity and the Pole	Between P and F, behind the mirror	Diminished	Virtual and Erect

Stay tuned with BYJU'S to know more about concave-convex mirrors, plane mirrors (<https://byjus.com/physics/plane-mirrors/>), and much more.

Related Articles

Convex Mirror (https://byjus.com/physics/convex-mirror/)	Spherical Mirror (https://byjus.com/physics/concave-and-convex-mirrors-spherical-mirrors/)
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