

Reflection by Spherical Mirrors

Chapter 9: Light – Reflection and Refraction · Topic 1

Key Concept

The mirror formula, $1/v + 1/u = 1/f$ (where v is image distance, u is object distance, and f is focal length), allows precise calculation of image position and characteristics for any given object distance. Concave mirrors are used in torches and headlights (placing a light source at the focus produces a parallel reflected beam), shaving/makeup mirrors (object placed close, giving a magnified virtual image), and reflecting telescopes, while convex mirrors are used as vehicle side mirrors and in security systems for their wide field of view.

Quick Revision Notes

- Concave mirrors can form varying image types depending on object distance; convex mirrors always form virtual, upright, diminished images.
- Mirror formula: $1/v + 1/u = 1/f$.
- Concave mirror uses: torches/headlights, shaving mirrors, telescopes.
- Convex mirror uses: vehicle side mirrors, security mirrors (wide field of view).

Practice Questions

- 1 State one use of a concave mirror.
- 2 Use the mirror formula to find the image distance if object distance $u=15\text{cm}$ and focal length $f=10\text{cm}$.
- 3 Explain why convex mirrors are preferred for vehicle side/rear-view mirrors.