

Refraction by Lenses

Chapter 10: Light: Mirrors and Lenses · Topic 2

Key Concept

Convex lenses are used in magnifying glasses (to enlarge close objects), cameras, and to correct long-sightedness (hypermetropia), while concave lenses are used to correct short-sightedness (myopia) by diverging light before it enters the eye. The power of a lens, measured in dioptres (D), indicates how strongly it converges or diverges light — calculated as the reciprocal of its focal length in metres (Power = $1/\text{focal length}$), with convex lenses having positive power and concave lenses having negative power.

Quick Revision Notes

- Convex lens: thicker in the middle, converges light; can form real or virtual images.
- Concave lens: thinner in the middle, diverges light; always forms a virtual, diminished image.
- Convex lenses used in magnifying glasses, cameras; correct long-sightedness.
- Lens power (in dioptres) = $1/\text{focal length (metres)}$; convex is positive, concave is negative.

Practice Questions

- 1 Calculate the power of a lens with focal length 0.5m.
- 2 Explain the difference between a convex and concave lens.
- 3 Which type of lens would correct long-sightedness, and why?