

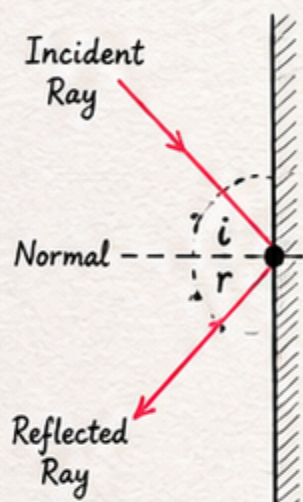
Physics
is all about
Understanding
the Nature
of the Universe

Chapter 9:

Light

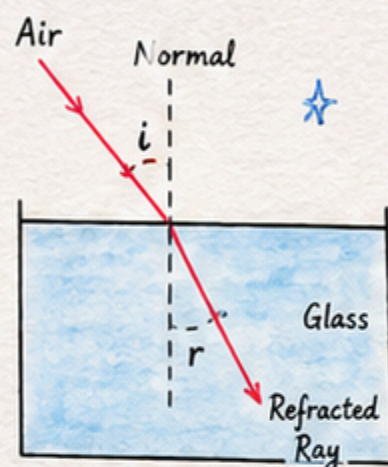
- Reflection and Refraction -

Plane Mirror



$$i = r$$

Refraction of Light



$$i \neq r$$

• Reflection of Light

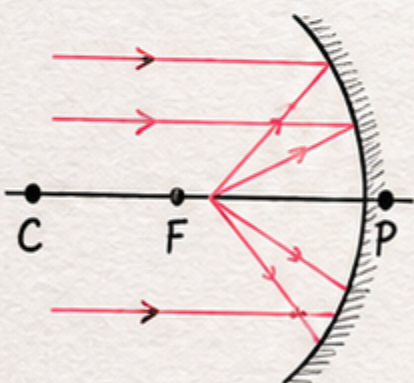
• Refraction of Light

• Spherical Mirrors

• Lenses

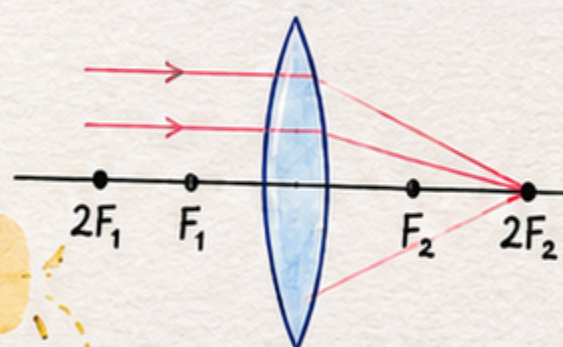
• Mirror Formula & Lens Formula

Concave Mirror



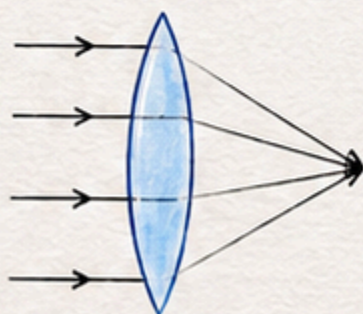
C = Centre of Curvature
F = Focus
P = Pole

Convex Lens



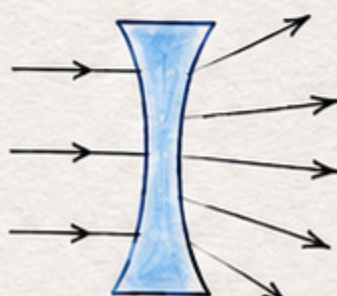
Types of Lenses

Convex Lens



Thicker at centre,
Thinner at edges

Concave Lens



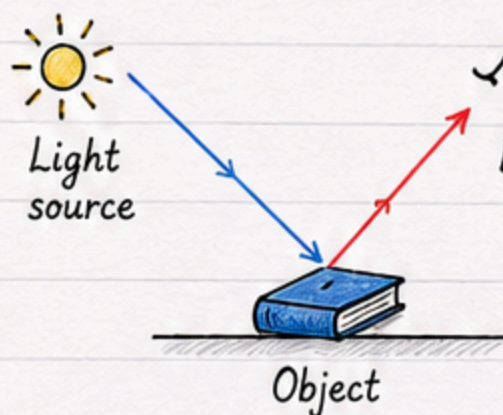
Thinner at centre,
Thicker at edges

"Light helps
us see the
world around
us"

@DiagramDidi

Introduction to Light

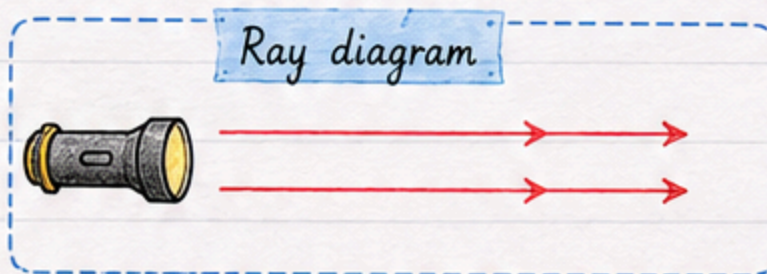
- We see objects because they **reflect** light.



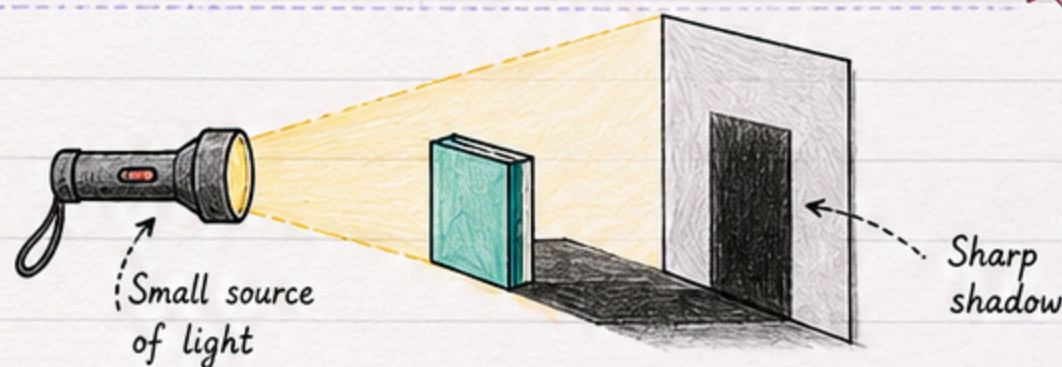
Our eyes receive reflected light! ♥

Reflected light received by eyes enables vision.

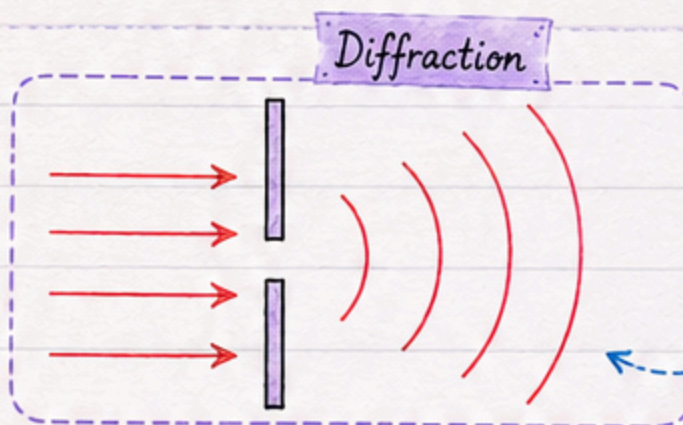
- Light seems to travel in **straight lines**.



- Small source of light produces **sharp shadows**.



- **Diffraction of light:** light bends around very small opaque objects.



Light bends around! ♥

- Modern **quantum theory:** light is neither only a wave nor only a particle.

Light shows both wave nature and particle nature.

This means ♥

- Wave → interference, diffraction
- Particle → energy packets (photons) ♥

★ Quick Revision Box ★



Summary

- ♥ Light helps us see.
- ♥ It travels in straight lines.
- ♥ It can bend and behave in amazing ways! ☆

9.1 Reflection of Light

Definition:

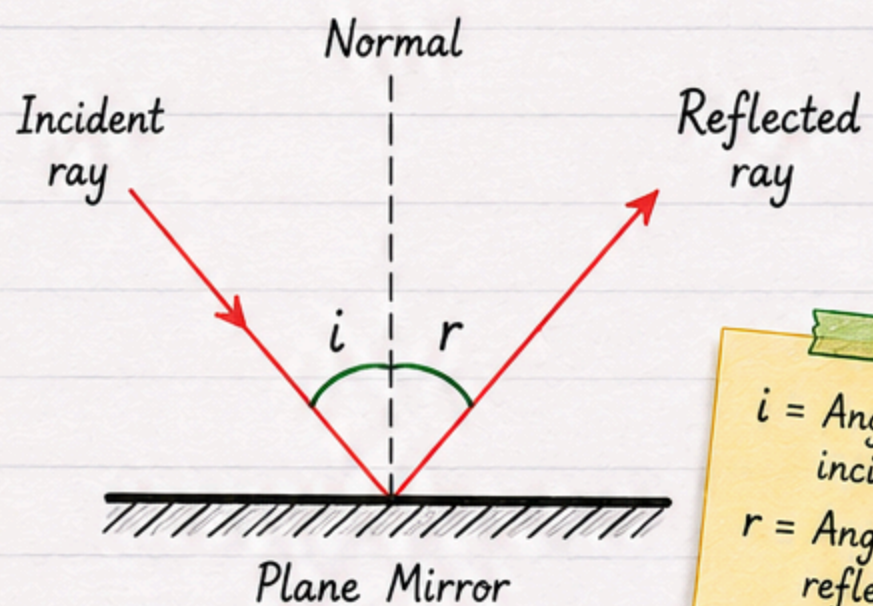
A highly polished surface reflects most of the light falling on it.



Laws of Reflection

1. Angle of incidence = Angle of reflection

2. Incident ray, reflected ray, and normal lie in the same plane.

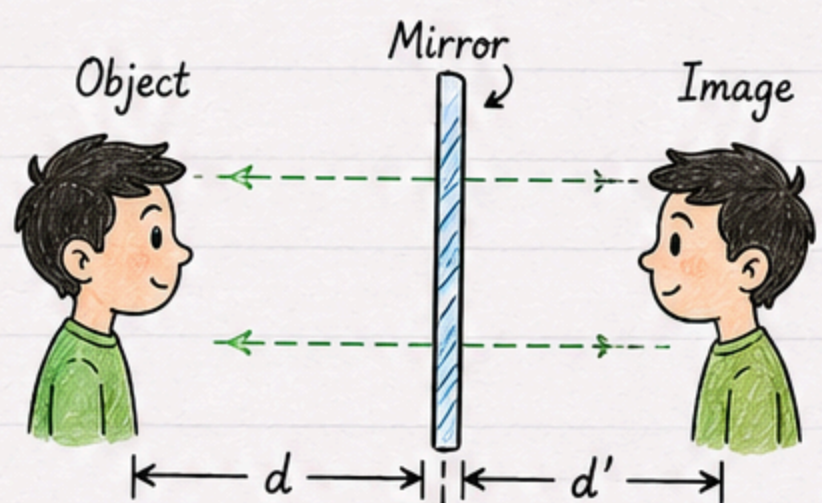


i = Angle of incidence
 r = Angle of reflection

$$\angle i = \angle r$$

Properties of Image Formed by Plane Mirror

- ✓ Virtual and erect
- ✓ Same size as object
- ✓ Equal distance behind mirror
- ✓ Laterally inverted



$$d = d'$$

When you smile at the mirror, it smiles back!