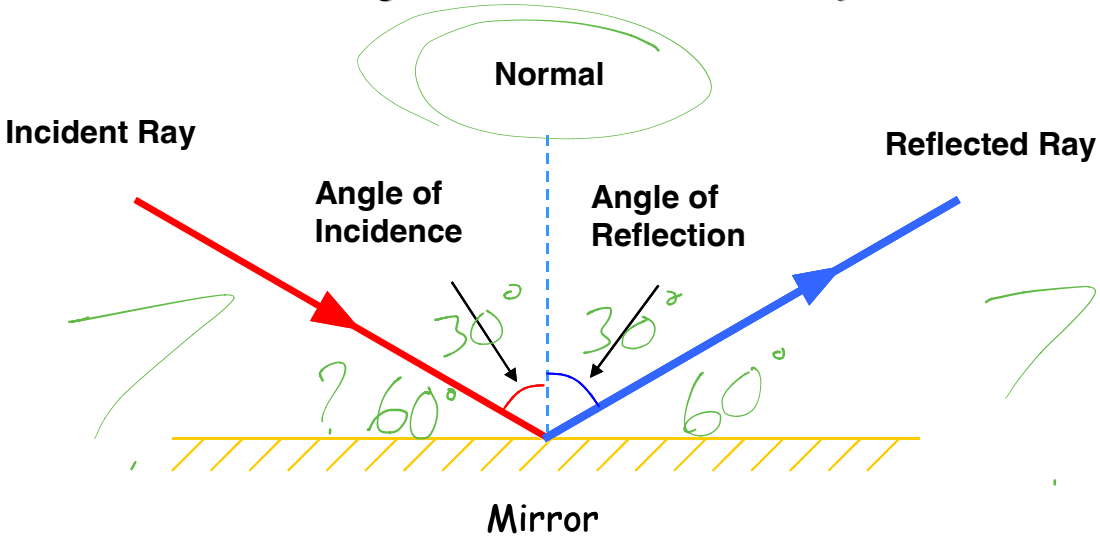
Mirrors & Reflection

Incident ray – light ray from a source to mirror or object.
Reflected ray – light ray that bounces off a mirror or an object
Point of Incidence – The point where the incident ray strikes the mirror.
Normal – a line perpendicular to the surface at the point of incidence.
Angle of incidence – the angle between the incident ray and the normal $< i$ or θ_i
Angle of reflection – the angle between the reflected ray and the normal $< r$ or θ_r

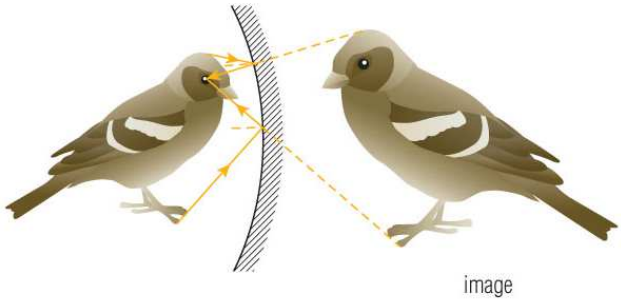


The Law of Reflection: Angle of incidence = Angle of reflection

Any mirror that has a flat reflective surface is called a **plane mirror**.

Characteristics of Images - SALT

Size – is the image larger, smaller or the same size as the object.
Attitude – is it upright or inverted compared to the object.
Location – is the image in front of or behind the mirror
Type — Real or Imaginary (Virtual)



Virtual images are images which are formed in locations where light does not actually reach. The image cannot be projected on a screen. **Real images** are formed on the same side of the mirror as the object and light passes through the actual image location. The image can be projected onto a screen.

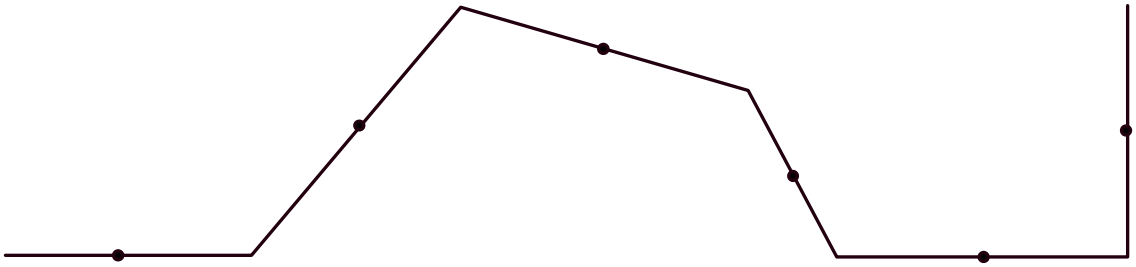
In **plane mirrors**, the image is always upright, same size, imaginary and behind.

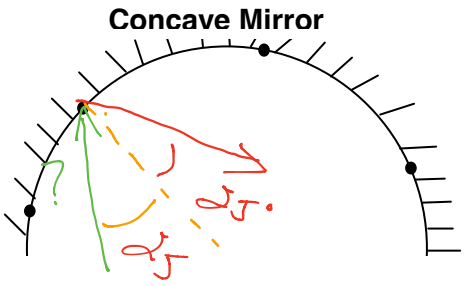
Demo – Laser in chalk dust.

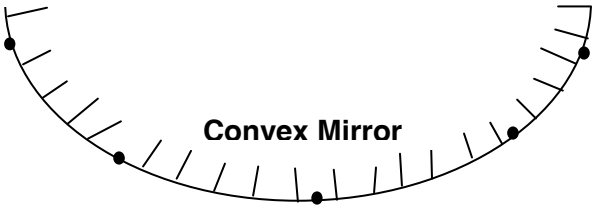
Quick Lab D12

Normals

Use a protractor to draw normals to the lines at each of the points shown.







Ray Diagrams for Plane Mirrors

- Pick an important point on the object.
- Step 1. Draw an incident light ray coming from that point to the mirror
- Step 2. Draw another ray and the reflected rays using < i = < r.
- Step 3. Extend the reflected rays back to behind the mirror.
  These extensions are imaginary light rays!
- Repeat steps 1 to 3 for another incident ray from the same point
- The crossing point in the imaginary lights rays is the point on the image
- Repeat for the other important points.