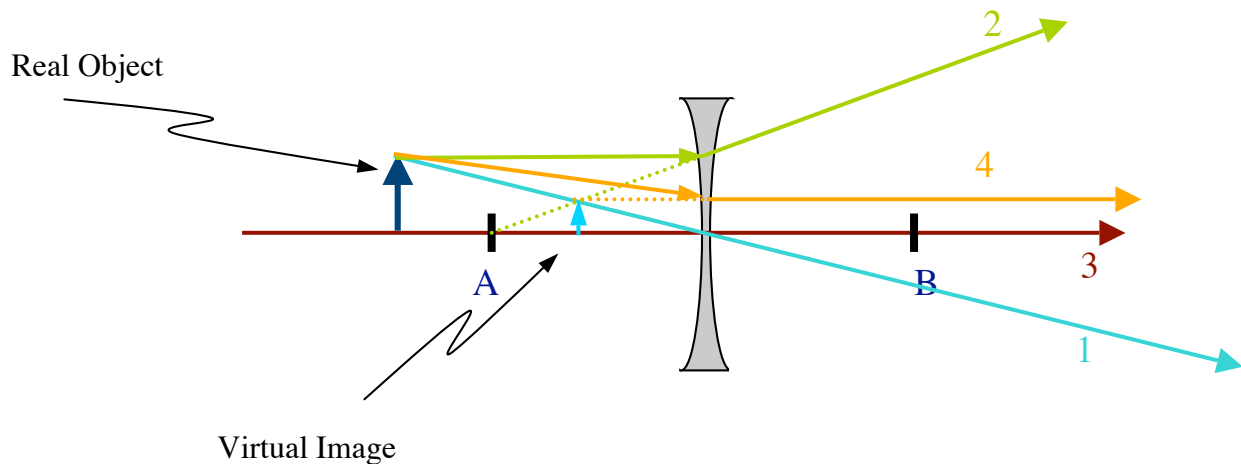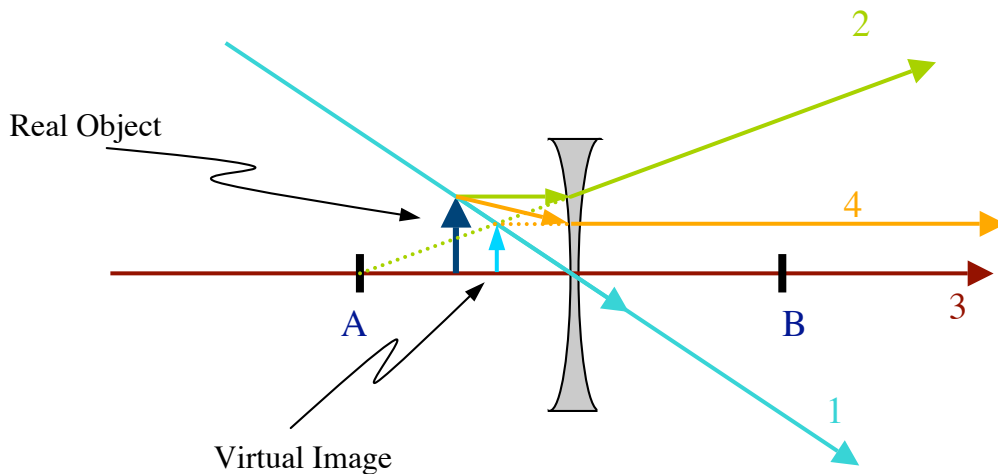# Ray Tracing - Lenses

Diverging Lens (focal lengths less than zero)

1. Draw a ray from (top of) object through center of lens. This ray is not bent.
2. Draw a ray from (top of) object parallel to axis. When the ray reaches the lens plane it bends (away from optical axis) so that the ray looks like it originates from the focal point (A).
3. Draw axial ray through lens. (The dotted line already shown)
4. Draw a ray from (top of) object towards the (secondary) focal point (B). When the ray reaches the lens plane it will bend (away from the optical axis) so that the ray becomes parallel to the axis.

Real Object

Virtual Image

Real Object

Virtual Image

Name _____

Converging Lens (focal lengths greater than zero)

1. Draw a ray from (top of) object through center of lens.
2. Draw a ray from (top of) object parallel to axis. When the ray reaches the lens plane it bends so that the ray passes through the focal point (A).
3. Draw axial ray through lens. (The dotted line already shown)
4. Draw a ray from (top of) object that either passes through or looks like it comes from the (secondary) focal point (B). When the ray reaches the lens plane it will bend (towards the optical axis) so that the ray becomes parallel to the axis.

Virtual Image

Real Object

Real Image

Real Object