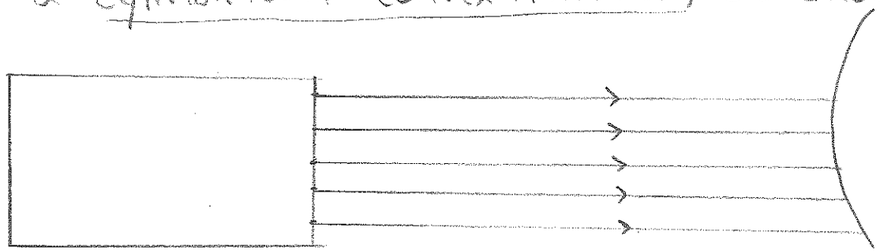
Method

Part a

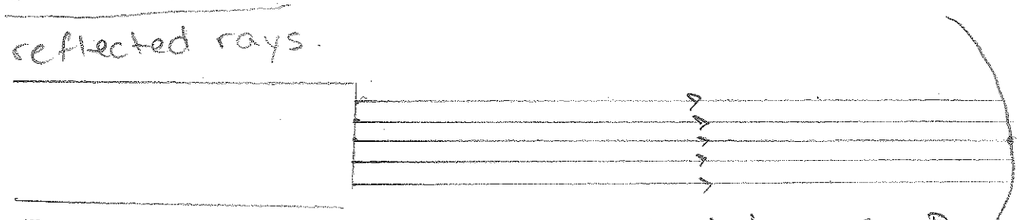
1. Set up a ray box and adjust the position so that all beams are parallel. Aim the beams at a cylindrical convex mirror, as shown



2. Mark the position of one of the incident rays and its corresponding reflected ray. Trace the outline of the mirror. Pull the paper out. Draw a normal to the mirror at point of reflection (perpendicular). Measure angle of incidence and angle of reflection.
3. Look into a convex mirror and describe the image. Is it right-side up or inverted? Is it larger, the same or smaller than your face?

Part b

1. Aim parallel rays from a ray box at a cylindrical concave mirror as shown. Sketch all incident and reflected rays.



2. Block the two outermost incidental rays. Do you notice an improvement in focussing? Sketch the incident and reflected rays again
3. Measure the distance from vertex to the point where the reflected rays come together. This is the focal length

Lab: Introduction to Curved Mirrors

Introduction:

You use many optical devices in daily life, including eyeglasses, cameras, binoculars, microscope, telescope, and your own eyes

The images you see in curved mirrors are quite different than what you are accustomed to in plane mirror.

If you stand close to a large concave mirror you will see yourself "right-side up" and magnified. If you walk backwards away from the mirror your image will invert and shrink. Convex mirrors always makes you look smaller and right side up, regardless of your distance from it.

Much use is made of ray diagrams when explaining how light behaves when passing through or into optical components. A ray is a line drawn to show the path that light takes. A ray is simply a mathematical convenience and not a physical reality.

Purpose:

To observe how light reflects from concave and convex mirrors.

Materials

- ray box
- concave mirrors
- convex mirrors
- paper
- pencil

Part b Questions (1-3)

Conclusion. (2-3 sentences summarizing what you learned)

Results

Part a

i See attached sketch

ii Description of image in spherical convex mirror.

Part b

i See attached two sketches

ii Focal length of the concave mirror

f = _____

Discussion Questions

Part a Questions (1-3)