

CONVEX and CONCAVE MIRRORS: USING THE LIGHT BOX AND OPTICAL SET

NAME _____

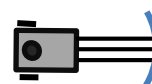
AIM: To observe and record how curved mirrors reflect light beams.

METHOD:

This practical activity involves **ray tracing** the path of three light rays which strike curved mirrors.

CONCAVE MIRRORS: Experiment 1A

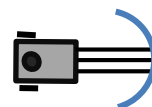
1. Collect a light box and a power supply. Check that everything is present in the box. Plug the power supply in, connect the light box, and switch on the power.
2. Place the triple-ray-forming plate into the slot and adjust the box to ensure that the three rays being emitted are parallel.
3. Position the light box at the edge of this paper.
4. Place the less curvy concave mirror about 10cm from the front of the light box and align it so that the central ray reflects back on itself.
5. Trace the curve of the mirror.
6. Place two small dots on each incident ray and two on each reflected ray.
7. Place a dot at the point where the reflected light rays focus.
8. Remove the light box and then, using a ruler, draw in where the light rays were, using your dots as a guide. Make sure the rays you draw extend all the way to the mirror.
9. Note where the reflected rays meet. This spot is called the **FOCAL POINT** of the mirror.
Label the focal point.



How far is the Focal Point from the mirror? _____ (This distance is called the **Focal Length** of the mirror.)

CONCAVE MIRRORS: Experiment 1B

Repeat the above procedure for the more curvy concave mirror. Mark in the focal point.

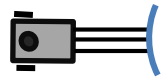


What is the focal length of the second concave mirror? _____

Why do satellite dishes use concave reflectors?

CONVEX MIRRORS: Experiment 2A

- (a) Position the light box on the edge of this paper. Place the less curvy convex mirror (the concave mirror in reverse) about 10cm from the front of the light box and align it so that the central ray reflects back on itself. Trace the incident and reflected rays.

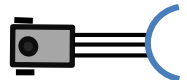


Once you have drawn the rays, **trace** the reflected light rays (which should all be spreading out) back behind the mirror. Use dotted lines. They should all meet at the same spot, which is called the “virtual focus”. **Mark in the virtual focus.**

How far is the Virtual Focal Point from the mirror (the Focal Length)? _____

CONVEX MIRRORS: Experiment 2B

- (b) Repeat the above procedure for the more curvy convex mirror.



Mark in the virtual focus.

How far is the Virtual Focal Point from the mirror (the Focal Length)? _____