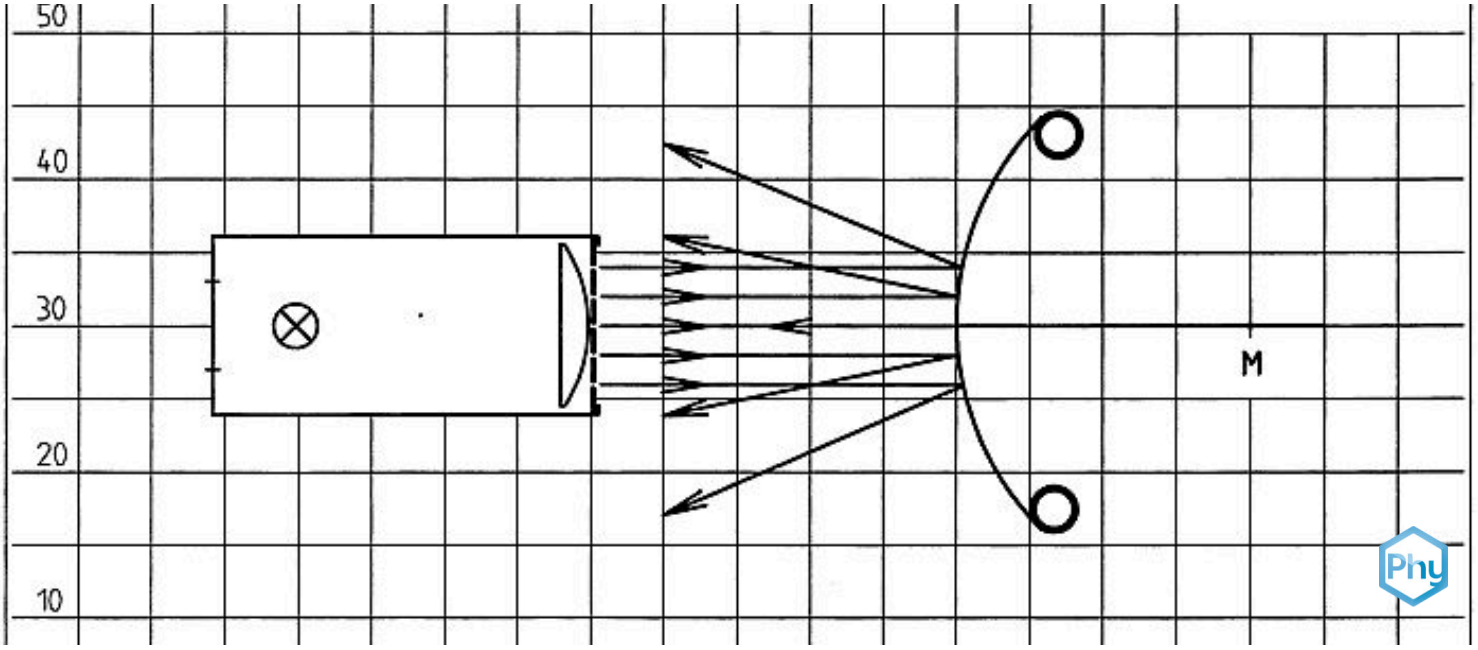
Reflection of light by a convex mirror



Physics > Light & Optics > Reflection & refraction of light

Difficulty level	Group size	Preparation time	Execution time
easy	-	10 minutes	10 minutes

This content can also be found online at:

http://localhost:1337/c/64283c585e30a7000275ea4e

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Teacher information

Application

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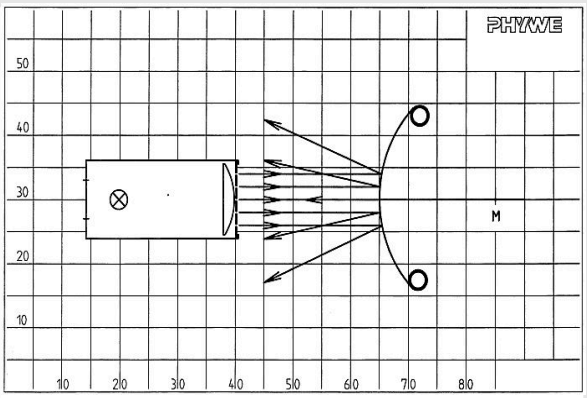

Experimental set-up:

Domed mirror

Light propagates in a straight line. If a light beam hits a reflecting object, the light beam also spreads out in a straight line from there.

With a concave mirror, the surface of the mirror is curved. The radius is similar to that of a concave mirror.

Therefore, a convex mirror reflects the rays exactly as if plane mirrors were aligned tangentially to the circular arc.

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Other teacher information (1/2)

Prior knowledge

The students need theoretical knowledge about the straight-line, ray-shaped propagation of light and that objects reflect light rays.

Principle

The aim is to investigate how parallel and divergent light rays are reflected at the camber mirror.

Other teacher information (1/2)

Prior knowledge

The students need theoretical knowledge about the straight-line, ray-shaped propagation of light and that objects reflect light rays.

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The aim is to investigate how parallel and divergent light rays are reflected at the camber mirror.

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Other teacher information (2/2)

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Learning objective

The students should gain knowledge about the principles of light reflection. This experiment is about the reflection behaviour of a convex mirror.

Tasks

Ask the students to observe how a convex mirror reflects the different rays that fall on it.

Additional teacher information

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Note

The distance between luminaire and mirror should not be too large. The course of the reflected light rays can be observed particularly well when the light falls at an angle. To make the circle template, the pattern can be copied, glued onto thin cardboard and cut to size.

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Safety instructions

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- The general instructions for safe experimentation in science lessons apply to this experiment.

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Student information

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Equipment

Position	Material	Item No.	Quantity
1	PHYWE Demo Physics board with stand	02150-00	1
2	Halogen lamp for experiments, 12V/50W, with magnetic base	08270-20	1
3	Opt. block,planoconcave,magn.held	08270-03	1
4	Concave/convex mirror,magnet held	08270-12	1
5	PHYWE Multitap transformer DC: 2/4/6/8/10/12 V, 5 A / AC: 2/4/6/8/10/12/14 V, 5 A	13533-93	1
6	G-clamp	02014-00	2

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Set-up and Procedure (1/2)

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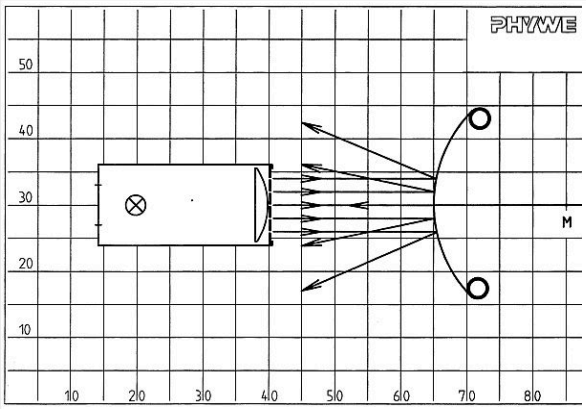

Fig.1:

Convex mirror with 5-slit aperture

- Draw optical axis
- Draw an arc of a circle with radius r = 200 mm on the board using a template or compass.
- Set mirror on circular arc

  Mark centre of curvature (r = 200 mm)
- Position the luminaire with the 5-slit aperture so that the light beams run in the direction of the optical axis.

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Set-up and Procedure (2/2)

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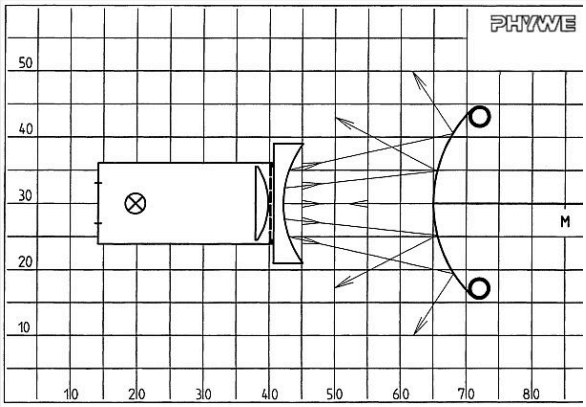

Fig.2:

Convex mirror with 5-slit aperture

- Change the position of the luminaire so that the light beams fall on the convex mirror from different directions; observe the course of the beams.
- Move the adhesive luminaire to its original position and place the plane-concave model body in front of the luminaire ; cover the slit openings above the model body.
- Allow divergent beams from different positions and also from different distances of the luminaire to strike the convex mirror; observe the course of the beams.

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Report

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Task 1

Write down your observations of the different experimental set-ups.

Task 1

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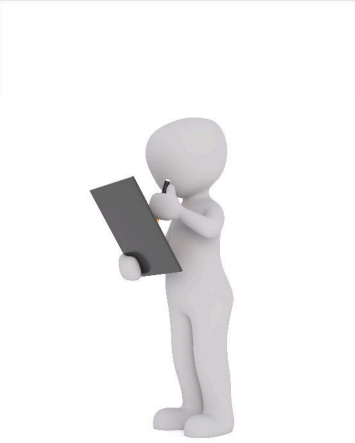

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