

Image formation by a convex mirror

Principle and equipment

Principle

Using parallel and midpoint rays, demonstrate the formation of images by convex mirror. At the same time show the properties of the images.

Equipment

Position No.	Material	Order No.	Quantity
1	Demo Physics board with stand	02150-00	1
2	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
3	Lamp, halogen, mag. held, 12V/50W	08270-20	1
4	Concave/convex mirror, magnet held	08270-12	1
Additional material:			
	Ruler		
	Circular template (see master) or a drawing compass		
	Water-soluble white board pen		

Set-up and procedure

Set-up and equipment

- Draw the optical axis.
- Using the circular template or a drawing compass, draw a circle with radius $r = 200$ mm on the magnet optics panel.
- Place the mirror on the circular arc.
- Mark the centre of curvature and the focal point ($r = 200$ mm $f = 100$ mm).
- Draw equal-sized object arrows, e.g., at distances of 50 mm, 100 mm, 200 mm from the mirror's vertex.
- Position the magnet-held lamp with a one-slit diaphragm so that it generates a parallel beam which passes through all the arrow heads.
- Draw all the light beams as completely as possible during the experiment.
- Move the magnet-held lamp so that it successively generates midpoint beams passing through each of the arrow heads in turn.
- Remove the lamp and the convex mirror. Draw the light paths in front of the mirror and the extensions of the reflected beams behind the mirror up to their intersection point (Fig. 1 shows two examples). Draw in the image arrows.

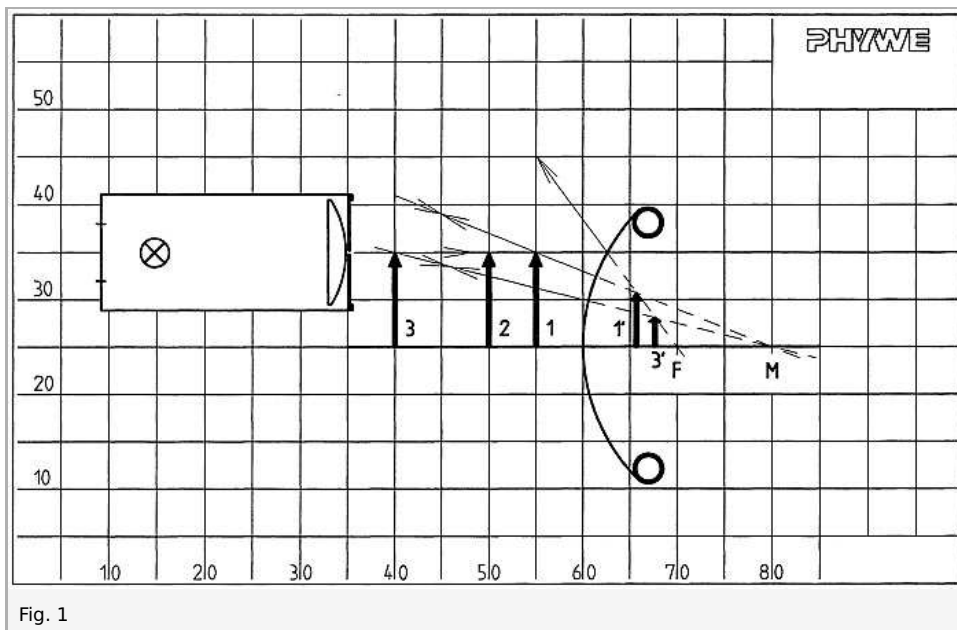


Fig. 1

Observation and evaluation

The convex mirror generates only upright, reduced, virtual images. The further the object from the mirror, the smaller the image.

Remark

To make a circular template, the master copy (see Fig. 1 in the Foreword) can be copied, pasted on thin cardboard and cut to size.