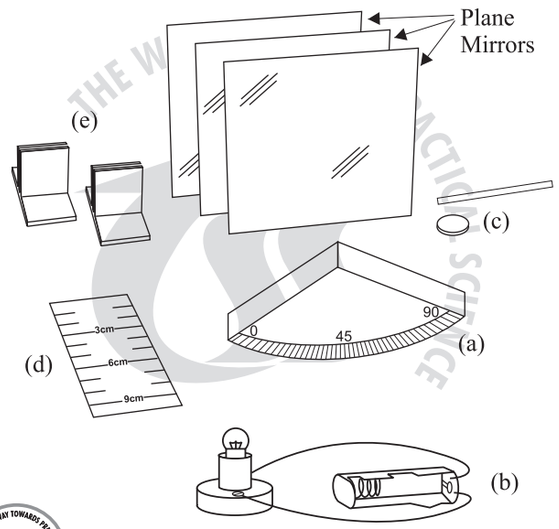
MIRROR KIT

Experiments related to plane mirrors :

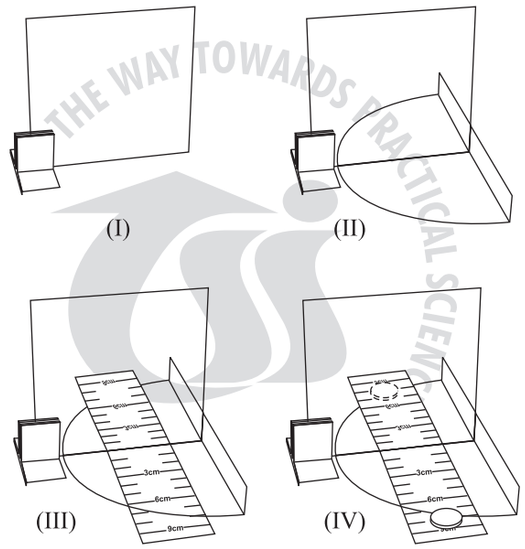
Assembly :

The kit consist of 3 plane mirrors of acryllic (size 4"x4"). Out of 3 one mirror is having a hole at the centre.

a) A blue coloured metal plate which (is one fourth of a circle in size) cut in arc shape and bent at two sides serves as base for placing mirrors. It is calibrated to read the angles (0-90^0) .
b) A double cell holder soldered with wire and connected to a bulb holder with a bulb of 3V. (comes with kit)
c) A plastic coin of blue color, a plastic rod of 3" length (red color).
d) An acryllic strip pasted with a sticker having scale marks printed on it.
e) Two mirror holder stands (one red & another blue).

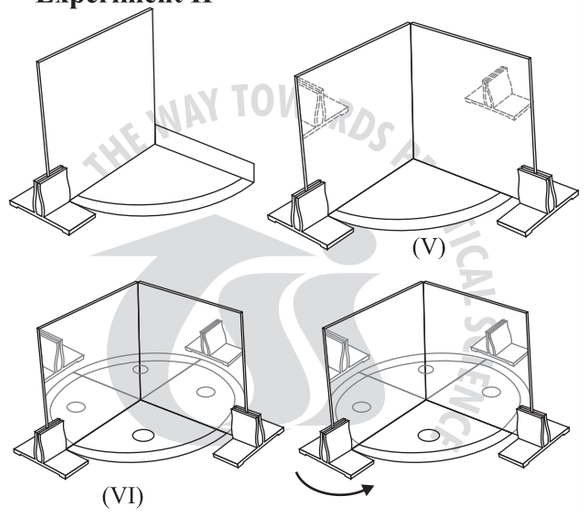


To do and observe - Experiment I



Step 1) : Take one plane mirror and insert it in the mirror holder stand as shown in fig. I
Step 2) : Arrange the mirror on the protractor base plate at 0^0 mark as shown in fig. II
Step 3) : Place the scale strip infront of the mirror (Fig.III)
Step 4) : Now place the blue coloured plastic coin on the 9 cm mark on the scale (fig. IV) (this will be the distance of the object from plane mirror). You will observe that the image of the plastic coin will also be at 9cm behind the mirror. This shows that object and image distances are same in case of plain mirror.
Step 5): Go on changing the position of the coin on the scale in front of the mirror and also notice the corresponding change in the image distance.

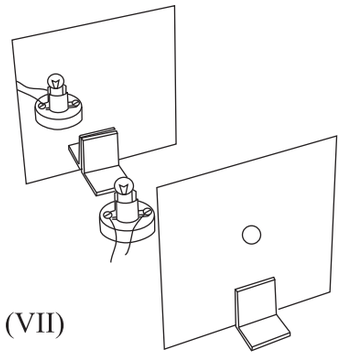
Experiment II



Step 1) : Now remove the scale strip and coin from protractor plate. Place another mirror inserted in stand at 90^0 mark on the protractor plate as shown in fig V. Now the two mirrors will be at an angle of 90^0 to each other.
Step 2) : Place plastic coin on the protractor plate between the mirrors (fig.VI). You will find images formed in the mirrors. Count the number of images formed and verify it by using the relation $n = \left(\frac{360^0}{\theta}\right) - 1$

Where 'n' is no. of images formed and θ is angle between mirrors
Step 3) Reduce the angle between two mirrors by moving the mirror which is on 90^0 mark such that the angle becomes 60^0. Again observe the no. of images formed and verify the above relation.
Step 4 : Now repeat the experiment with still smaller angles & verify the law.

Experiment 3 :

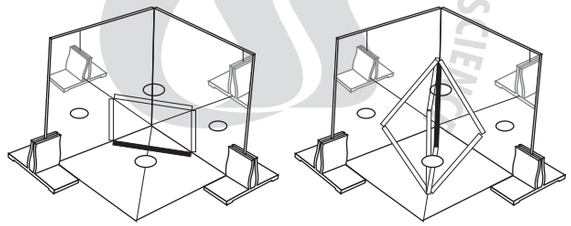


(VII)

Step 1 : Take the 3rd mirror which is having hole at the centre and replace it with any one of the mirror in the stand.

* Arrange these two mirror such that they are parallel to each other. i.e their reflecting faces are parallel to each other with some gap between them. (Fig. VII)
* Insert two pencil cells in the cell holder assembly. You will see that the bulb glows.
* Place the glowing bulb between two parallel mirrors and observe through the peep-hole. Can you count the images formed?

Experiment 4 :



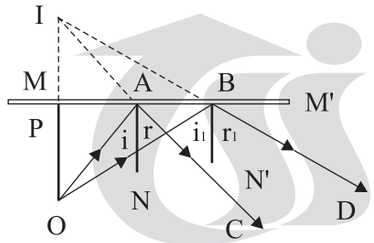
(VIII) (IX)

Step 1 : Replace the mirror with hole from the stand with the one without hole, and arrange all the three mirrors on the protractor plate as shown in the diagram. Now place the red colored plastic rod on the mirror as shown in the figure and observe the image formed. (VIII).

* Repeat the experiment with rod in different position. (fig. IX)

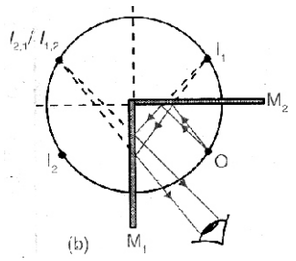
What is going on :

Image formation in Experiment I



MM' - Mirror
OP - Object
MI - Image
i - Angle of incidence
r - angle of reflection

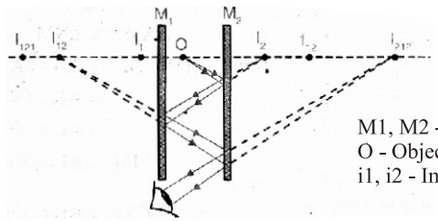
Image formation in Experiment II



M1, M2 - Mirrors
O - Object
i1, i2, i3 - Images

Images 1 & 2 are formed as usual images in plane mirror and the 3rd image is as per this ray diagram.

Image formation in Experiment III



M1, M2 - Mirrors
O - Object
i1, i2 - Images

THE WAY TOWARDS PRACTICAL SCIENCE

MIRROR KIT

TARANG SCIENTIFIC INSTRUMENTS
DHARWAD
Phone : 0836–2775204
Cell : 94482 31960