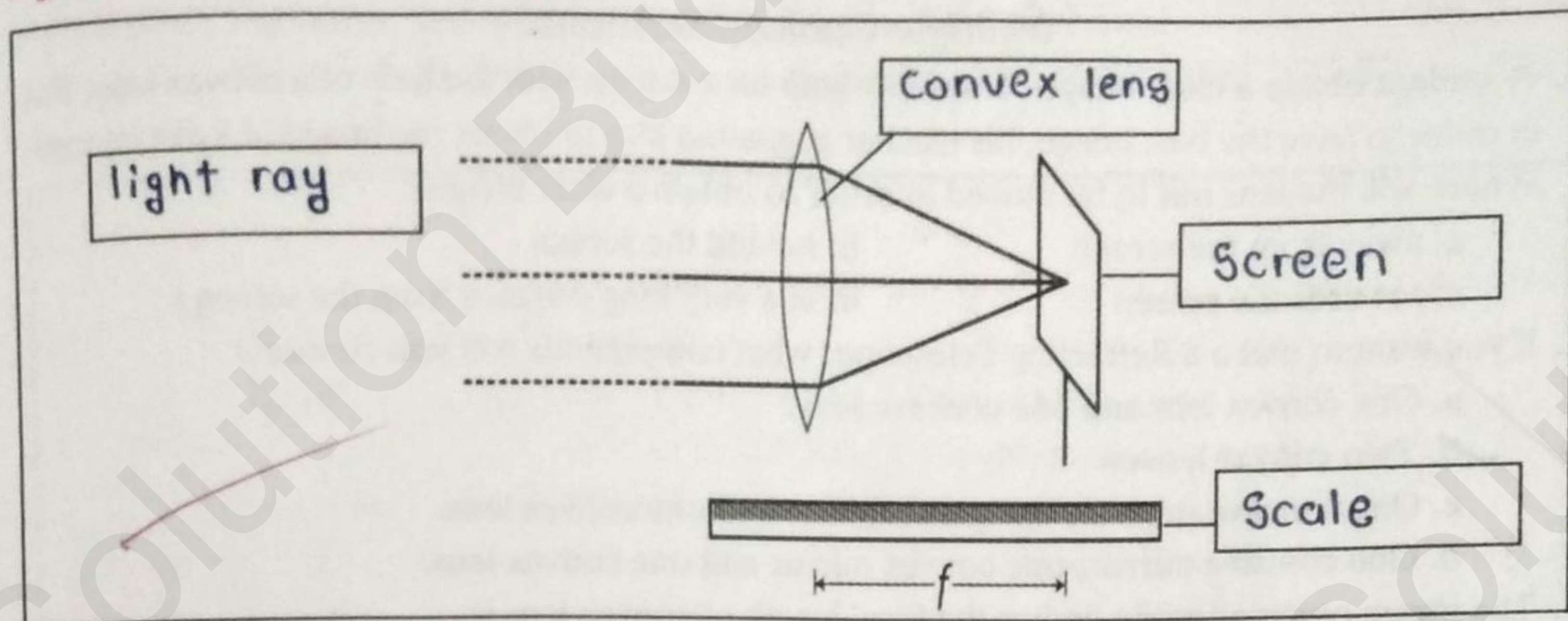


## Practical No. 10

**Aim :** To obtain the focal length of a convex lens.

**Apparatus :** Convex lens, lens holder, meter scale, screen with a stand, etc.

**Figure :** (Label the following diagram.)



### Procedure :

1. Fit a convex lens in the lens holder.
2. Spot a distant object such as electric pole, a tree or a building.
3. Fit the screen on the stand and place it on the other side of the lens (opposite to object side.)
4. Move the screen back and forth to obtain a clear image of the chosen object on it.
5. Measure the distance between the lens and the screen.
6. Repeat the above steps two more times.
7. Now rotate the lens by  $180^\circ$  and repeat the above procedure.

### Observation :

Least count of the meter scale = ..... mm

#### Observation Table 1

Convex lens front surface facing the object

No.	Distant Object	Distance between lens center and screen
1	Building	20.5 cm
2	Tree	20.5 / 25 cm
3	Pole	20.5 / 25 cm
Average F1		

#### Observation Table 2

Convex lens back surface facing the object

No.	Distant Object	Distance between lens center and screen
1	Building	28
2	Tree	26
3	Temple	27
Average F2		26 cm



### Inference / Conclusion :

1. First focal length of the convex lens ( $F_1$ ) .....cm
2. Second focal length of the convex lens ( $F_2$ ).....cm
3. From 1 and 2 above, is the lens used in this experiment a symmetric lens? (Yes / No)  
If  $F_1 = F_2$ , then the lens is symmetric.

### Multiple Choice Questions

1. A student obtain a clear image of window bars on a screen with the help of a convex lens. But in order to have the best image, his teacher suggested him to obtain the image of a distant tree. Where will the lens has to be moved in order to obtain a clear image?  
a. away from the screen  
b. behind the screen  
c. towards the screen  
d. at a very long distance from the screen
2. If you want to make a Refracting Telescope, what components will you choose ?  
a. One convex lens and one concave lens.  
✓ b. Two convex lenses.  
c. One concave mirror, one plane mirror and one convex lens.  
d. One concave mirror, one convex mirror and one convex lens.
3. The image obtained while finding the focal length of convex lens is .....  
a. a real and erect. b. virtual and erect. c. real and inverted. d. virtual and inverted.
4. For the same thickness of the lens, if the radius of curvature is increased, the focal length will .....  
a. reduced. b. remain unchanged. ✓ c. increased. d. be imposible to estimate.
5. At what distance a watch maker must hold his lens from the watch?  
a. at the focal length  
b. at less than focal length  
c. at more than the focal length d. at zero distance

### : Exercise :

1. Explain the working of compound microscope by focal length of convex lens.  
Compound microscope is made by 2 convex lens, one of them worked as objective while another eye piece. The object is placed between focus and centre to get image behind the focus. This image worked as object for another lens.....
2. When would virtual image produced by convex lens? Why doesn't virtual image drawn on a screen?  
The When the object is placed between focal length then the image is virtual, virtual image can't drawn on a screen because it is not made from two rays of light.
3. Give your opinion about radius of curvature of a convex lens having different  $F_1$  and  $F_2$ ? What would the lens called having equal  $F_1$  and  $F_2$ ?  
The lenses is the optical device which converge the light ray before transmitting the parallel ray and concave lens from the point is called focus of the lens.

Remark and Signature

