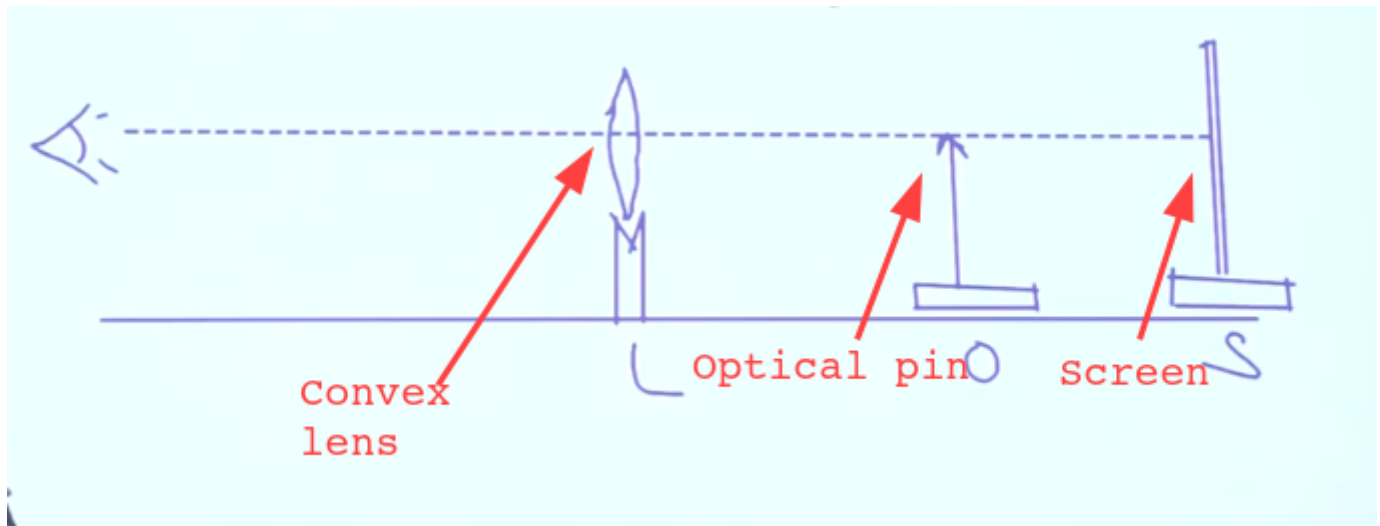
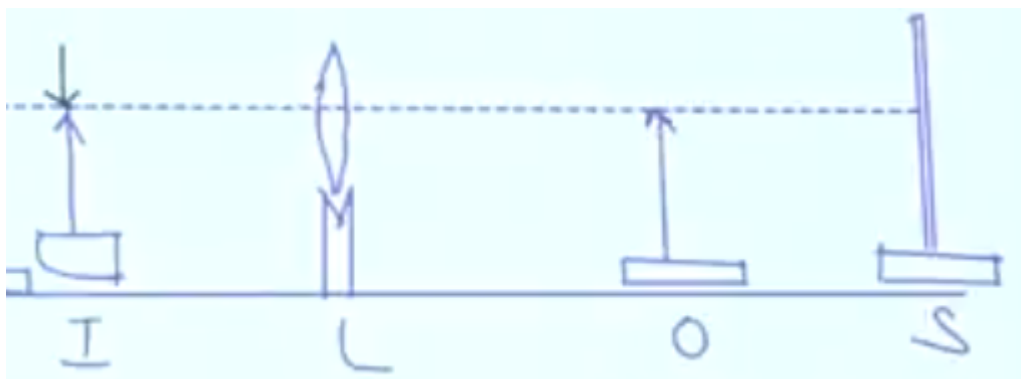


- Initial Setup



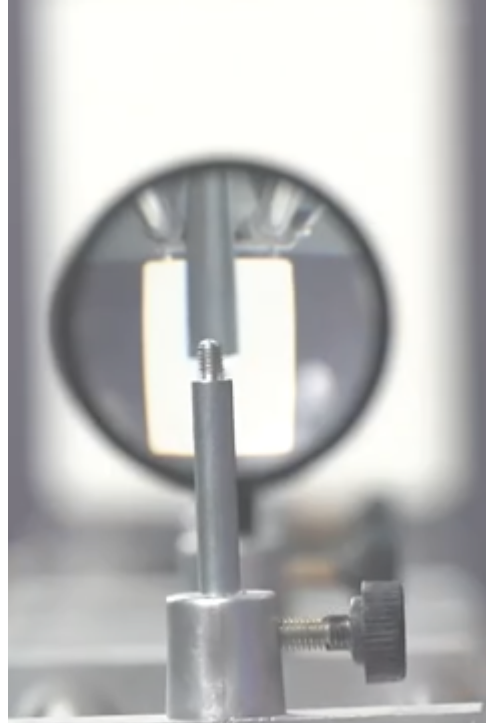
The distance L_0 should be greater than the focal length of the lens.

Once you see the image of the pin 1 through the lens, keep another pin on the left side (the side you are watching from) and make sure they are colinear.

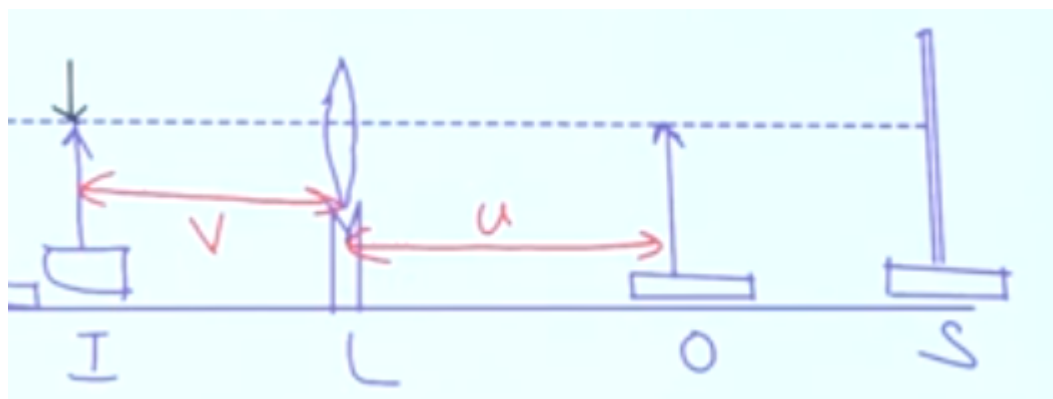


The way we do it is by moving our eyes laterally with the pin and the image and seeing if they move together, if so they are colinear.

If they are not colinear, when you move your eyes, they will have relative motion to the opposite directions (when image goes right, the pin will go left). In that case we need to change the length of the pin 2 to the lens till that condition is true.

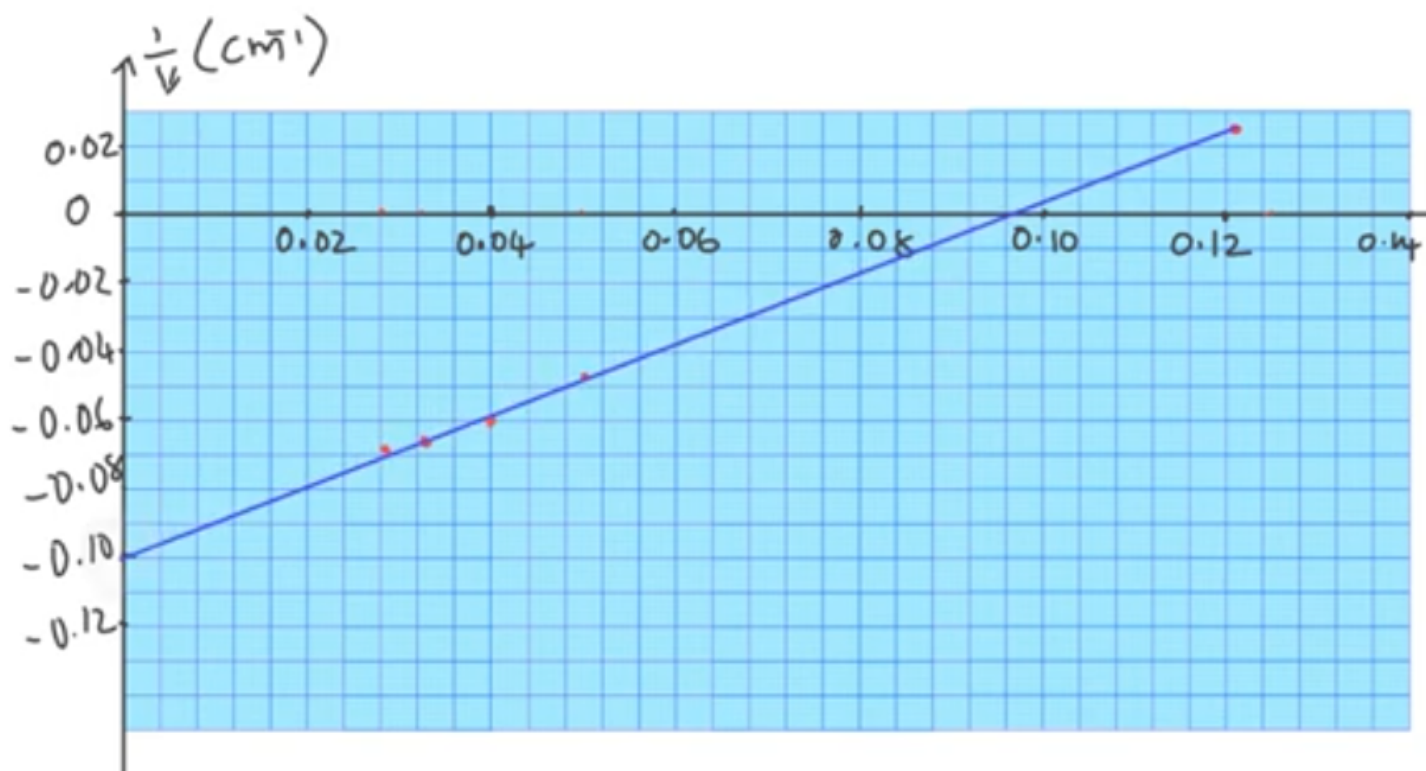


Once this is achieved, we can make sure these 2 are colinear.



Then measure the v and u distances using a meter ruler.

Repeat this 4-5 times, get the value pairs and draw the graph.



We get negative values because of the sign convention.

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{v} = \frac{1}{u} + \frac{1}{f}$$

$$y = mx + c$$

$$\text{intercept} = \frac{1}{f} = c$$

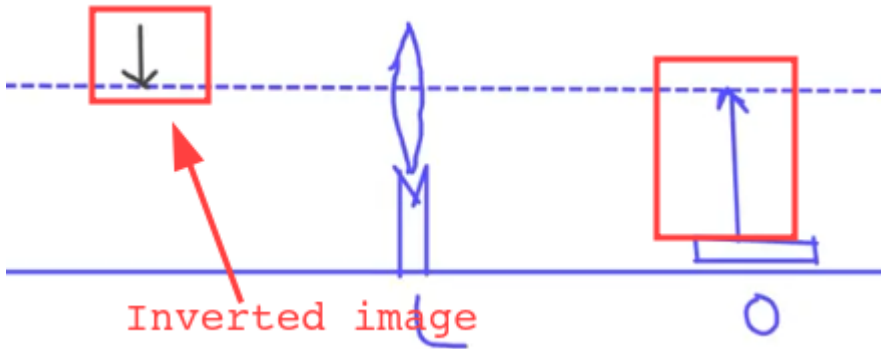
$$\therefore f = \frac{1}{c}$$

This f will be a negative value (as the convex lens has a negative focal length)

Important points

- What type of image will you see in the experiment?

An inverted image



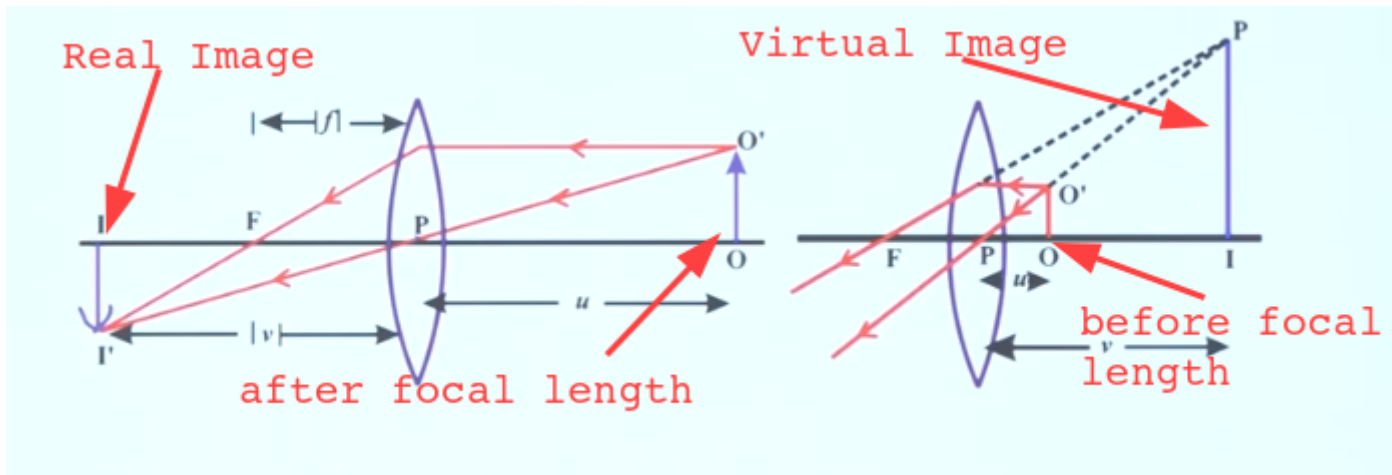
- What do we use a white blank screen here for?

To keep it behind the optical pins and make sure no interruptions of light are happening from the behind so that we can observe the pin through the lens clearly.

- Why should we keep the pin in a greater distance from the lens than its approximate focal length?

Because for us to see a real image the object should be of a distance greater than the lens's focal length.

Otherwise we will be getting a virtual image.



- Once we have this setup, what are the reasons why we wouldn't see the image of the pin?

Maybe our eye, the lens and the pin aren't in the same straight line.

Maybe the lense is not perpendicular to the floor (the ground that this is kept in)

