

AL MUSTAQBAL UNIVERSITY.

Medical physics sciences.

Optics laboratory.

second Stage.



بصريات عملي

الكورس الاول

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*-The focal length of the
convex lens*

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EXPERIMENT:-The focal length of the convex lens

Objective:-

This work is used to find the focal length of the convex lens.

Apparatus:-

Laser He-Ne,

Convex lens (L),

Illuminated object (P)

., Optical bench

Theory:-

A lens is a piece of glass or other transparent material shaped so that it can produce an image by refracting light that comes from an object. Lenses are used for many purposes (in eye glasses to improve vision, in cameras to record scenes).

Lenses are of two kinds, converging and diverging, a converging lens is thicker in the middle than at its ends; a diverging lens is thinner in the middle as shown in Fig. (1(a,b)), a converging lens brings a parallel beam of light to a single focal point (F), here F is called a real focal point because the light rays pass through it and the distance from the lens to F is called the focal length of the lens.

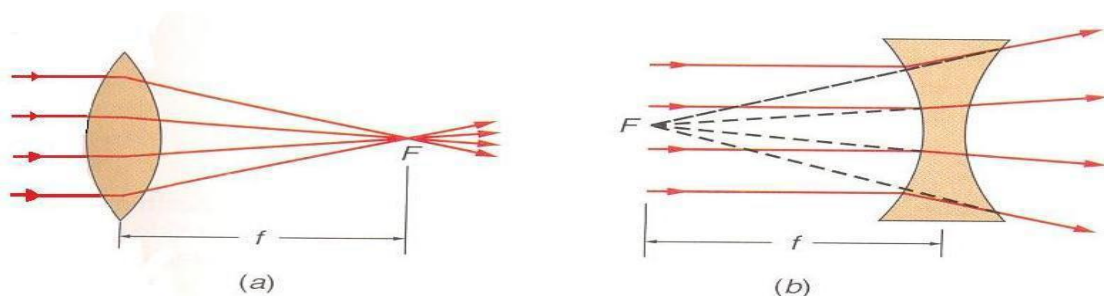
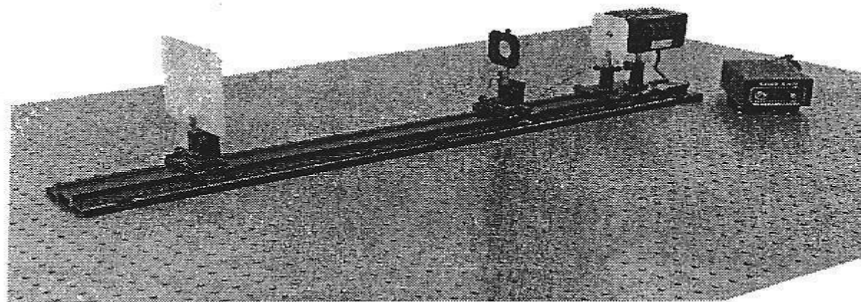


Fig. 1:- a) Convex Lens, b) Concave Lens

Procedure:-

1. To find the focal length (f) for the convex lens align all components in same height as shown in Fig. (2).



2. Move lens (L) back and forth till a clear image of the object on (P) is observed on the screen (H).

3. Measure the distance between the object and lens also the distance between the lens and screen (u and v respectively).

4. Move the lens to obtain another clear image and record the results.

5. Repeat step (4) for three times.

6. Arrange your results as shown in table below

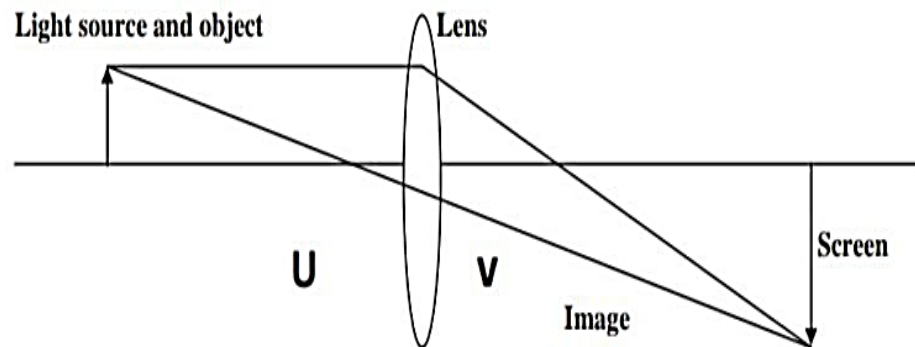
u	v	1/u	1/v	1/u+1/v=1/f

Where:

u: is the distance between the object and the lens.

v: is the distance between the image and the lens.

f: is the focal length of lens.

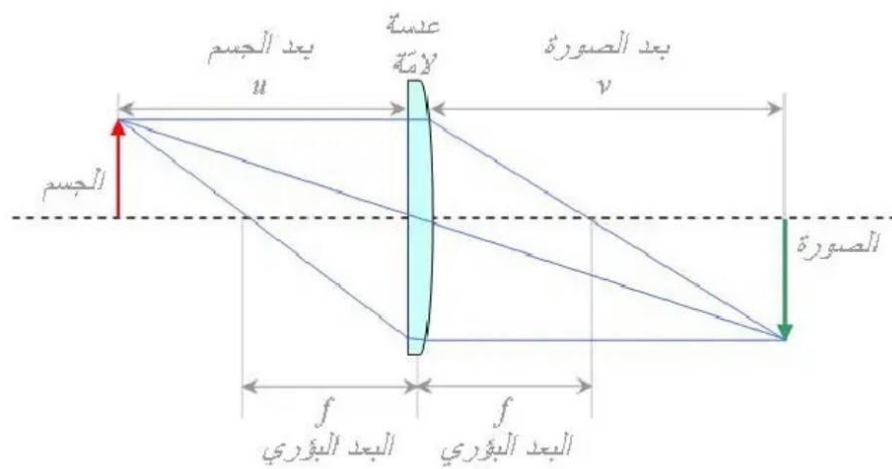


7. Plot a graph of $1/v$ as a function of $1/u$. then find focal length (f).

$$f = 1/u + 1/v \dots (1)$$

$$r = v - d \dots (2)$$

$$f = r/2 \dots (3)$$



GOOD LUCK

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