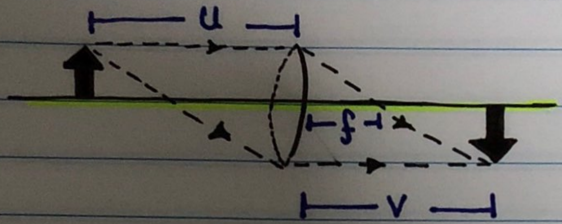
Experiment 5: Focal Length of a Convex Lens:



* The distance between The point of Convergence of The light rays coming from infinity. $(u = \infty)$ *

* u and v are related By:

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

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

slope

it's clear that the Graph of (1/V) vs (1/U) is a straight line with slope of (-1).

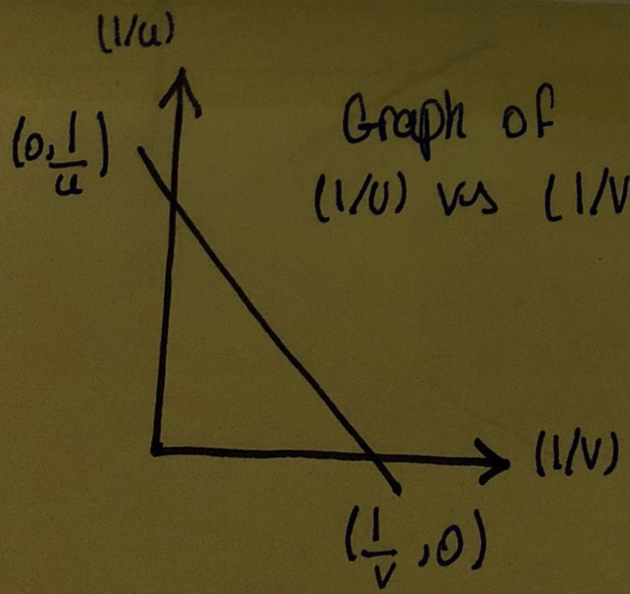
when $\frac{1}{v} = 0$ $\frac{1}{f} = \frac{1}{u}$

when $\frac{1}{u} = 0$ $\frac{1}{f} = \frac{1}{v}$

So Theo $f_y = f_x$

$(0, \frac{1}{u})$ intercept y-axis

$(\frac{1}{v}, 0)$ intercept x-axis



Graph of (1/U) vs (1/V)

$$f = \frac{f_x + f_y}{2}$$

Bcz: $f_{y\,\text{Theo}} = f_{x\,\text{Theo}}$

$$\boxed{\frac{\Delta f}{f^2} = \frac{\Delta v}{v^2} + \frac{\Delta u}{u^2}}$$