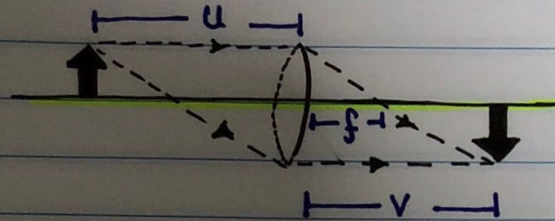# experiment 5: Focal Length of a Convex Lens:

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

* u and v are related By:

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

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

$$\frac{1}{v} = \underset{\text{slope}}{-1}\frac{1}{u} + \frac{1}{f}$$

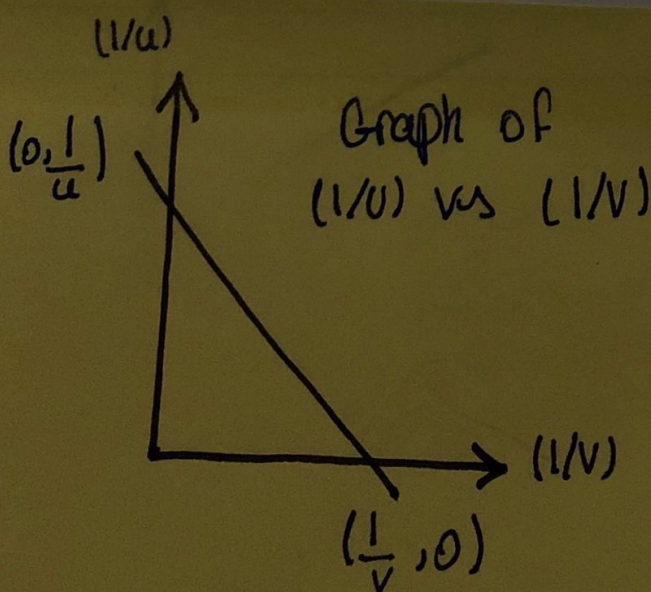when $\frac{1}{v} = 0$ $\quad \frac{1}{f} = \frac{1}{u}$ $\quad$ So Theo $f_y = f_x$

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

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

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

$(1/u)$

$(0, \frac{1}{u})$

Graph of $(1/u)$ vs $(1/v)$

$(1/v)$

$(\frac{1}{v}, 0)$

Bee:

$$f = \frac{f_x + f_y}{2} \left.\right] \begin{array}{l} f_y \text{ theo} = f_x \text{ The} \end{array}$$

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