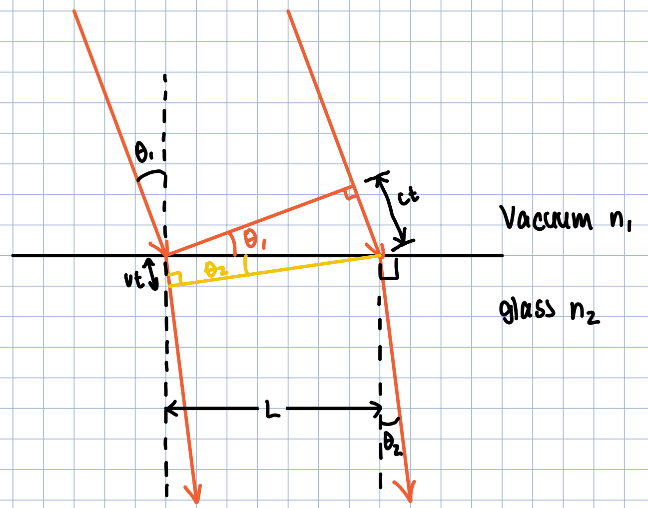


$$\sin\theta_1 = \frac{ct}{L}$$

$$\sin\theta_2 = \frac{vt}{L}$$

$$L = \frac{ct}{\sin\theta_1} = \frac{vt}{\sin\theta_2}$$

$$\frac{ct}{\sin\theta_1} = \frac{vt}{\sin\theta_2}$$

$$\frac{c}{\sin\theta_1} = \frac{v}{\sin\theta_2}$$

$$\sin\theta_1 = \frac{c\sin\theta_2}{v}$$

$$n = \frac{c}{v}$$

$$\sin\theta_1 = n_2\sin\theta_2$$

If you consider the common situation where light passes between two substances, such as air and glass or air and water, then the following relationship, called Snell's Law, is true:

$$n_1\sin\theta_1 = n_2\sin\theta_2$$

The following eq'n can be derived

$$n = \frac{c}{v}$$

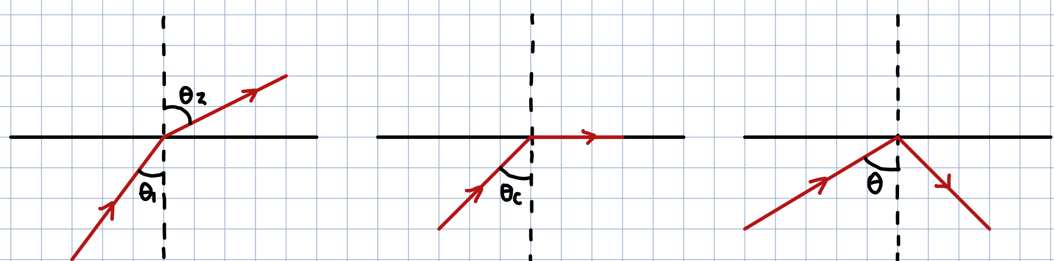
$$= \frac{\cancel{f}\lambda_1}{\cancel{f}\lambda_2}$$

$$n = \frac{\lambda_1}{\lambda_2}$$

When the first medium is not a vacuum and has IOR n_1, the eq'n is

$$\frac{n_1}{n_2} = \frac{\lambda_1}{\lambda_2} = \frac{\sin\theta_1}{\sin\theta_2} = \frac{v_1}{v_2}$$

The angle of refraction depends on the angle of incidence, however for some values of the angle, there is no refracted ray.



By applying Snell's law, you can determine the θ_c since $\theta_1 = \theta_c$ and
$\theta_2 = 90°$

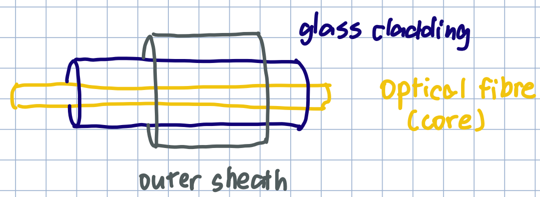
$n_1 \sin\theta_c = n_2 \sin 90° = n_2$

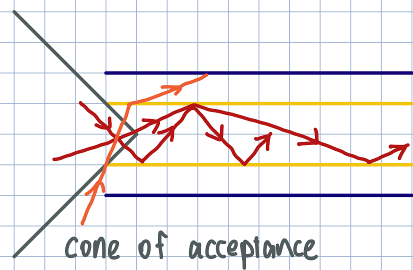
Therefore

$$\sin\theta_c = \frac{n_2}{n_1}$$

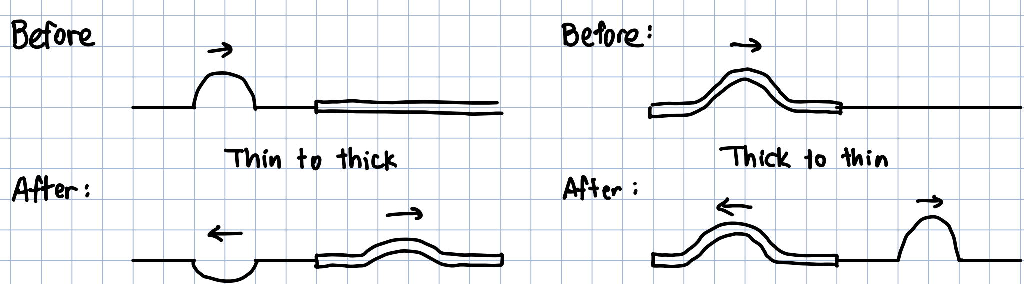
Fibre Optics

Fibre Optics is a technology that uses flexible strands of glass to conduct and transmit light.





Reflection and Transmission



	Reflected	Transmitted	Reflected	Transmitted
A :	smaller	smaller	smaller	larger
v :	same	slower	same	faster
f :	same	same	same	same
λ :	same	shorter	same	longer
phase shift :	180°	0°	0°	0°