

## 7.2) Snell's Law

$$\frac{\sin i}{\sin r} = \frac{n_r}{n_i}$$

1.  $i = 70^\circ$

$r = ?$

$n_i = 1.0$

$n_r = 1.33$

$$\frac{\sin r}{\sin i} = \frac{n_i}{n_r}$$

$$\sin r = \frac{1.0 \times \sin 70^\circ}{1.33}$$

$$\sin r = 0.7065$$

$$r = \sin^{-1} 0.7065 = 44.95^\circ$$

2.  $i = 50^\circ$

$r = 33^\circ$

$n_i = 1.0$

$n_r = ?$

$$\frac{n_r}{n_i} = \frac{\sin i}{\sin r}$$

$$n_r = \frac{\sin 50^\circ}{\sin 33^\circ} \times 1.0$$

$$= 1.4065$$

3.  $n_i = 1.33$

$n_r = 1.00$

$i = ?$

$r = 36^\circ$

$$\sin i = \frac{n_r}{n_i} \times \sin r$$

$$= \frac{1.0}{1.33} \times \sin 36^\circ$$

$$\sin i = 0.442$$

$$\therefore i = 26.23^\circ$$

4.  $i = 15^\circ$

$n_i = 1.33$

$r = 17^\circ$

$n_r = ?$

~~$$\frac{n_i}{n_r} = \frac{\sin r}{\sin i}$$~~

~~$$n_i = \frac{\sin 17^\circ}{\sin 15^\circ} \times n_r$$~~

$$\frac{n_r}{n_i} = \frac{\sin i}{\sin r}$$

$$n_r = \frac{\sin i}{\sin r} \times n_i$$

$$= \frac{\sin 15^\circ}{\sin 17^\circ} \times 1.33$$

$$= 1.177$$