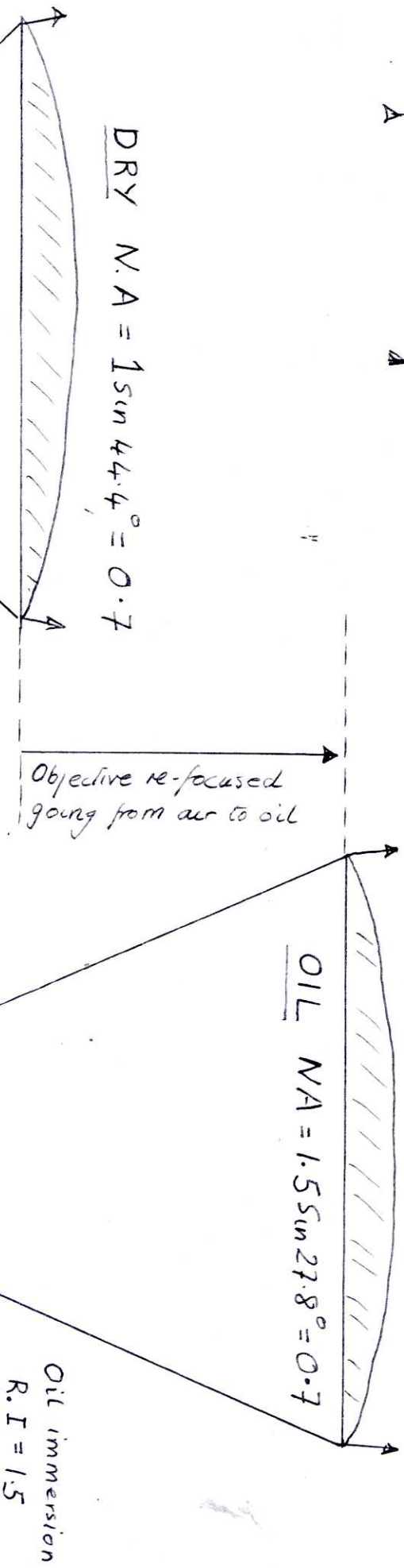


For constructive interference (1st order)

path difference = $AB = \lambda_{oil} = \lambda_{air} n$
 right-angled triangle $\frac{AB}{d} = \sin \alpha$

$$d = \frac{AB}{\sin \alpha} = \frac{\lambda_{air}}{n \sin \alpha} = \frac{\lambda_{air}}{NA}$$

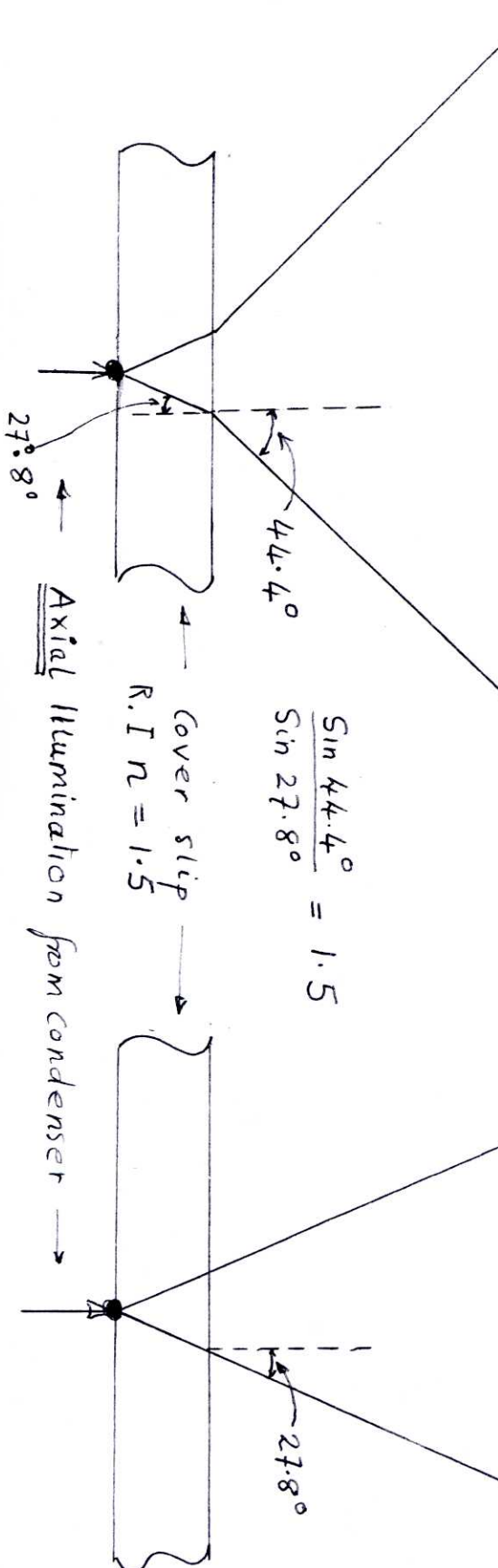
Abbe equation for limit of resolution, d



DRY $NA = 1 \sin 44.4^\circ = 0.7$

OIL $NA = 1.5 \sin 27.8^\circ = 0.7$

Oil immersion
 R.I = 1.5



$$\frac{\sin 44.4^\circ}{\sin 27.8^\circ} = 1.5$$