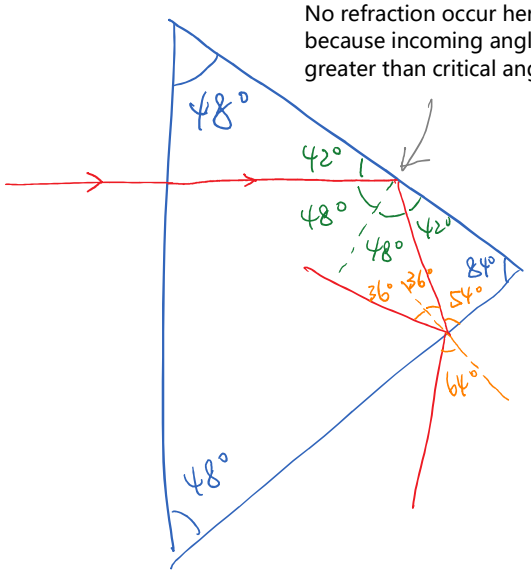
$$n_{air}\sin(90^\circ) = n_{prism}\sin(\theta_{prism})$$

$$\theta_{prism} = \sin^{-1}\left(\frac{n_{air}}{n_{prism}}\right)$$

$$\theta_{prism} = \sin^{-1}\left(\frac{2}{3}\right)$$

$$\theta_{prism} = 41.81^\circ$$

So critical angle from prism to air is $\boxed{41.81^\circ}$



$$n_{air}\sin(\theta_{air}) = n_{prism}\sin(\theta_{prism})$$

$$\sin(\theta_{air}) = 1.5\ \sin(36^\circ)$$

$$\theta_{air} = \sin^{-1}(0.8816)$$

$$\theta_{air} = 61.84^\circ$$

So $\theta_{air} = \boxed{61.84^\circ}$

light first exits the prism with an angle 61.84 degrees