

1 – Determine the chip length in Orthogonal cutting can be obtained by following equation?
(Altintas book Eq. 2.33).

$$l_t = \frac{h \sin(\varphi_c + \beta_a - \alpha_r)}{\sin \varphi_c \cos \beta_a}$$

2 – Prove that the shear strain in orthogonal cutting can be obtained by following equation
(Altintas book Eq. 2.20)

$$\gamma_s = \frac{\cos \alpha_r}{\sin \varphi_c \cos (\varphi_c - \alpha_r)}$$