

Direction Cosines of Vectors Perpendicular to Planes:			
Plane:	x	y	z
Cross-section of Common Rafter = Purlin Face Perpendicular to Roof Plane	0	$\cos SS$	$\sin SS$
Side Face of Common Rafter	1	0	0
Roof Plane = Backing Plane	0	$\sin SS$	$-\cos SS$
Cross- Section of Hip / Valley	$\cos DD \cos R1$	$\sin DD \cos R1$	$\sin R1$
Side Face of Hip / Valley	$\sin DD$	$-\cos DD$	0
Bottom Face of Hip / Valley	$\cos DD \sin R1$	$\sin DD \sin R1$	$-\cos R1$
Deck Plane	0	0	1
Plumb Plane thru Eave or Ridge	0	1	0
Square Cut on Jack Rafter	$\cos DD$	$\sin DD$	0
Square Cut on Jack Purlin	$\cos DD \cos (R1 + R2)$	$\sin DD \cos (R1 + R2)$	$\sin (R1 + R2)$

To evaluate the dihedral angle, θ , between two planes, substitute values from the table in the equation:

$$\text{or } \cos \pm (x_1 x_2 + y_1 y_2 + z_1 z_2)$$

Required blade angle setting, β :

If $\theta < 90^\circ$, $\beta = 90^\circ - \theta$; if $\theta > 90^\circ$, $\beta = \theta - 90^\circ$