



Roof Surface Geometric Development

Jack Rafter Side Cut Angle

Roof Sheathing Angle

Jack Rafter Length

Jack Rafter Run

Tetrahedron Angles
for 8:12 Octagon

D Angle = 67.50000
 A Angle = 33.69000
 C Angle = 31.62967
 E Angle = 19.01635
 B Angle = 12.25566

90-D Angle = 22.50000
 90-A Angle = 56.31000
 90-C Angle = 58.37033
 90-E Angle = 70.98365
 90-B Angle = 77.74434

Equal Sided Octagon Geometric & Trigonometric Roof Framing Development Pitch Angle = 33.69° Plan Angle = 67.5°

Hip Rafter Pitch Angle = $\arctan(\tan(\text{Pitch Angle}) * \sin(\text{Plan Angle})) = 31.63^\circ$
 Hip Rafter Backing Angle = $\arctan(\sin(\text{Hip Rafter Pitch Angle}) \div \tan(\text{Plan Angle})) = 12.26^\circ$
 Hip Rafter Side Cut Angle = $\arctan(\cos(\text{Hip Rafter Pitch Angle}) \div \tan(\text{Plan Angle})) = 19.43^\circ$

Jack Rafter Side Cut = $\arctan(\cos(\text{Pitch Angle}) \div \tan(\text{Plan Angle})) = 19.01^\circ$
 Roof Sheathing Angle = $\arccos(\cos(\text{Plan Angle}) * \cos(\text{Hip Rafter Pitch Angle})) = 70.98^\circ$

Roof Sheathing Cut Measurement = Plywood Width $\div \tan(\text{Roof Sheathing Angle}) = 16.54"$
 Jack Rafter Difference = $\tan(\text{Roof Sheathing Angle}) * \text{Jack Rafter Spacing} = 69.62"$

Frieze Block Saw Miter Angle = $\arctan(\sin(\text{Pitch Angle}) \div \tan(\text{Plan Angle})) = 12.94^\circ$
 Frieze Block Saw Blade Bevel Angle = $\arctan(\sin(\text{Frieze Block Saw Miter Angle}) \div \tan(\text{Pitch Angle})) = 18.57^\circ$

Common Rafter Rise = $\text{Run} * \tan(\text{Pitch Angle})$
 Common Rafter Length = $\text{Run} \div \cos(\text{Pitch Angle})$
 Common JackRafter Run = $\text{Jack Rafter Spacing} * \tan(\text{Plan Angle})$
 Common JackRafter Length = $\text{Jack Rafter Run} \div \cos(\text{Pitch Angle})$

Hip Rafter Run = $\text{Run} \div \cos(\text{Plan Angle})$
 Hip Rafter Length = $\text{Hip Rafter Run} \div \cos(\text{Hip Rafter Pitch Angle})$