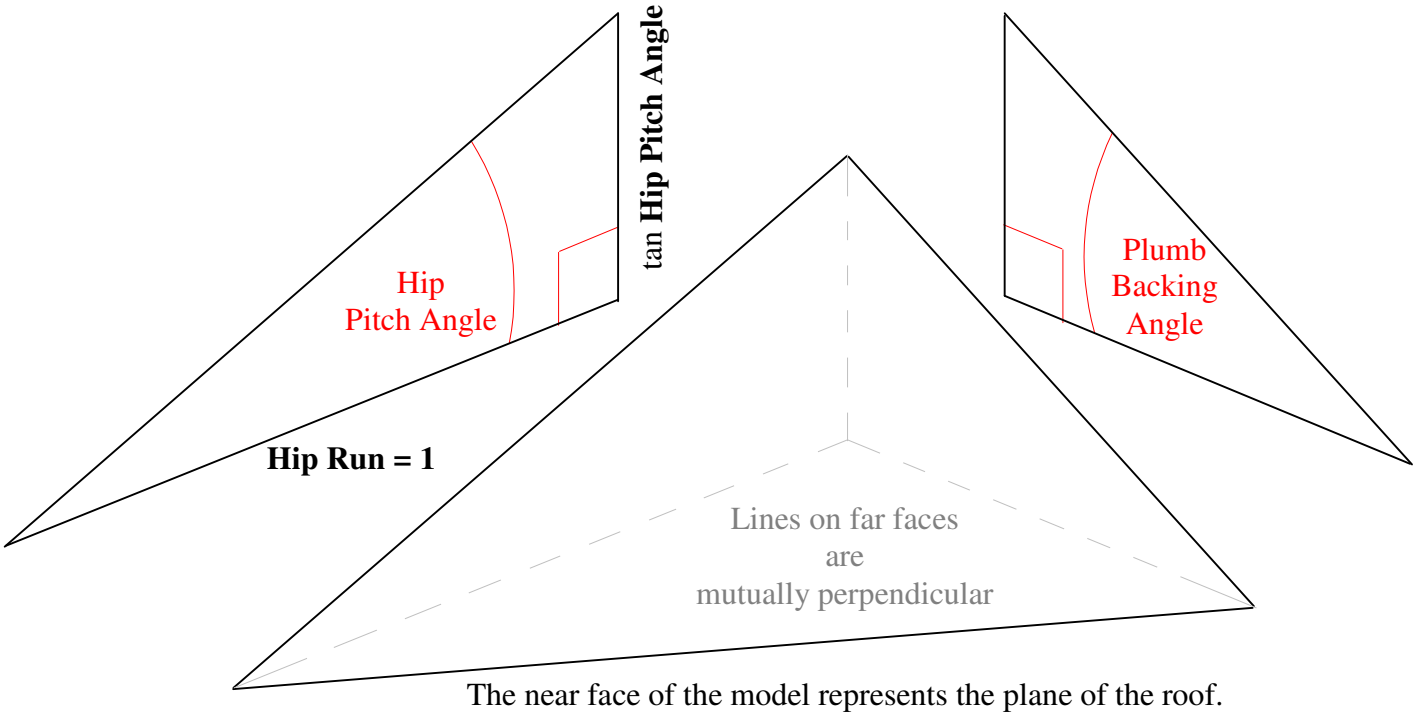
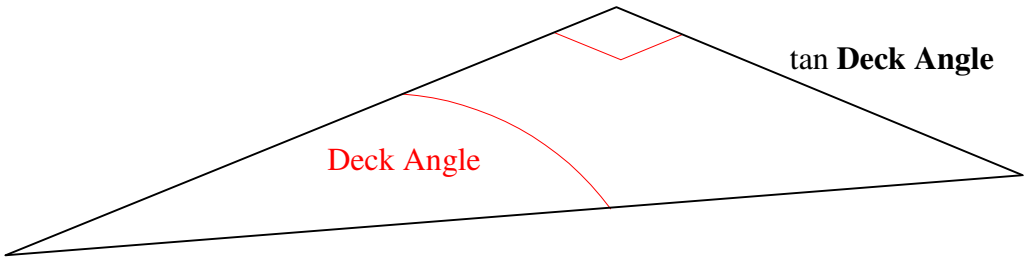
Backing Angle Formulas

Trigonometric Model
And
Exploded Views of Faces



The near face of the model represents the plane of the roof.



Trigonometric Scaling

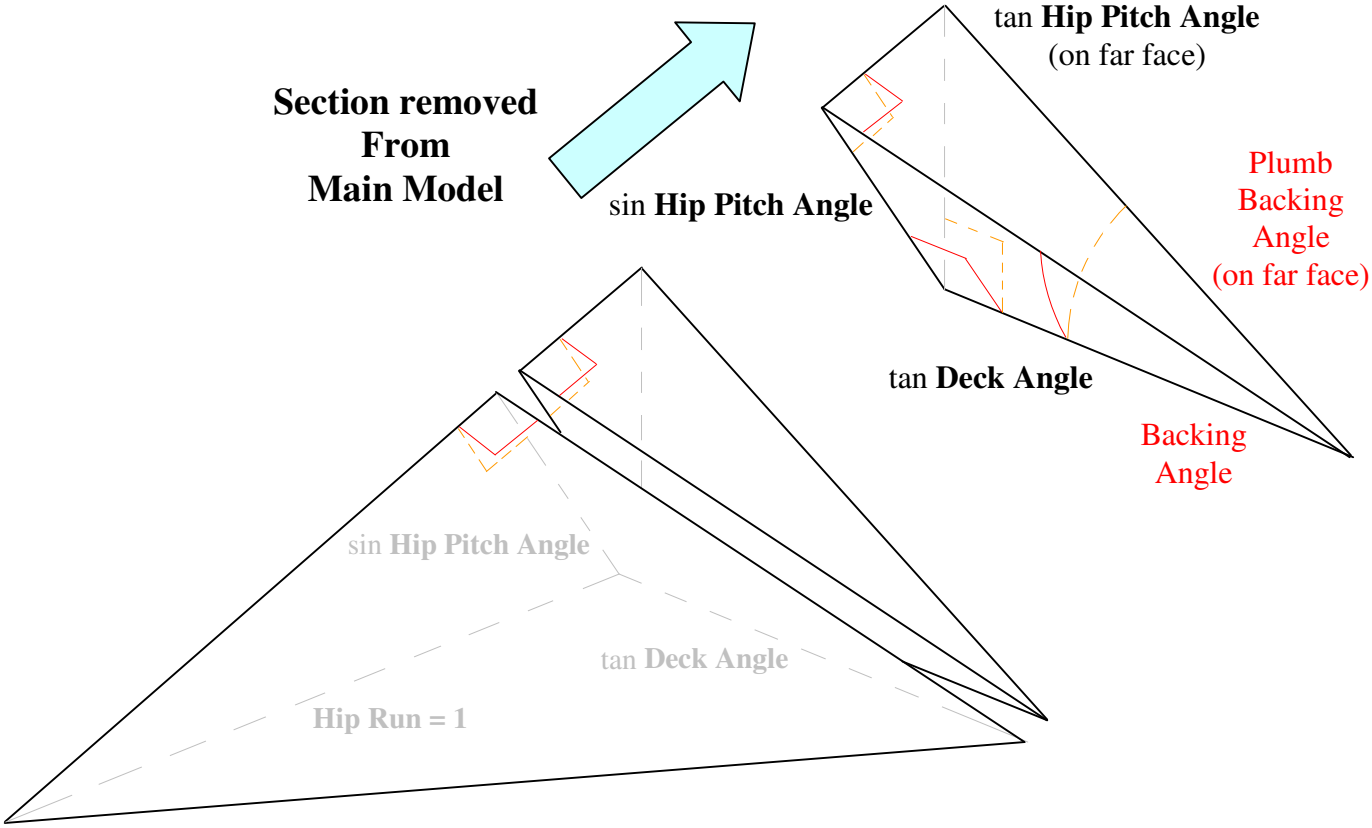
Models representing a Hip-Valley roof may be drawn to any convenient scale; the lines and planes remain proportional. Setting the **Hip Run = 1** results in dimensions which are trig functions of the angles of interest.

Hip Rise = tan **Hip Pitch Angle**

The length of a perpendicular to the plane of the **Hip Pitch Angle** = tan **Deck Angle**.

Backing Angle Formulas

The plane of the Backing Angle follows a cross-section through the Hip rafter at right angles to the long axis or length of the rafter. Revolving the plane of the Backing Angle to plumb creates the Plumb Backing Angle.



The dihedral angle between the plane of the side face of the Hip rafter and the plane of the roof is 90 ± **Backing Angle**.

$$\tan \textbf{Backing Angle} = \frac{\sin \textbf{Hip Pitch Angle}}{\tan \textbf{Deck Angle}}$$

$$\tan \textbf{Plumb Backing Angle} = \frac{\tan \textbf{Hip Pitch Angle}}{\tan \textbf{Deck Angle}}$$