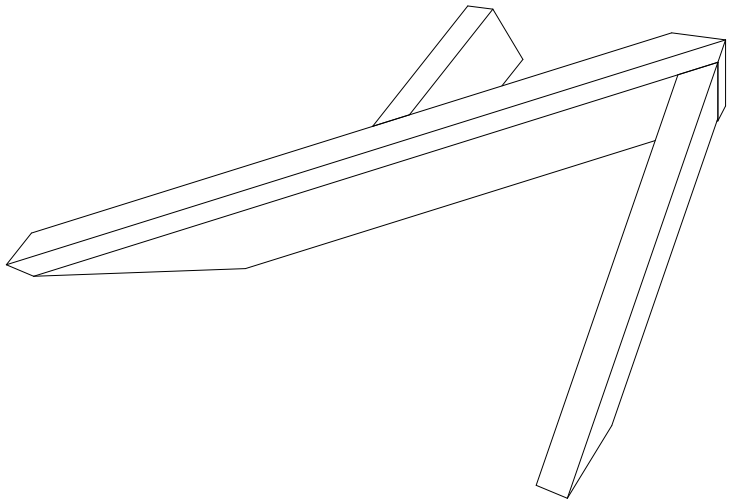
DEVELOPED DRAWINGS

Introduction

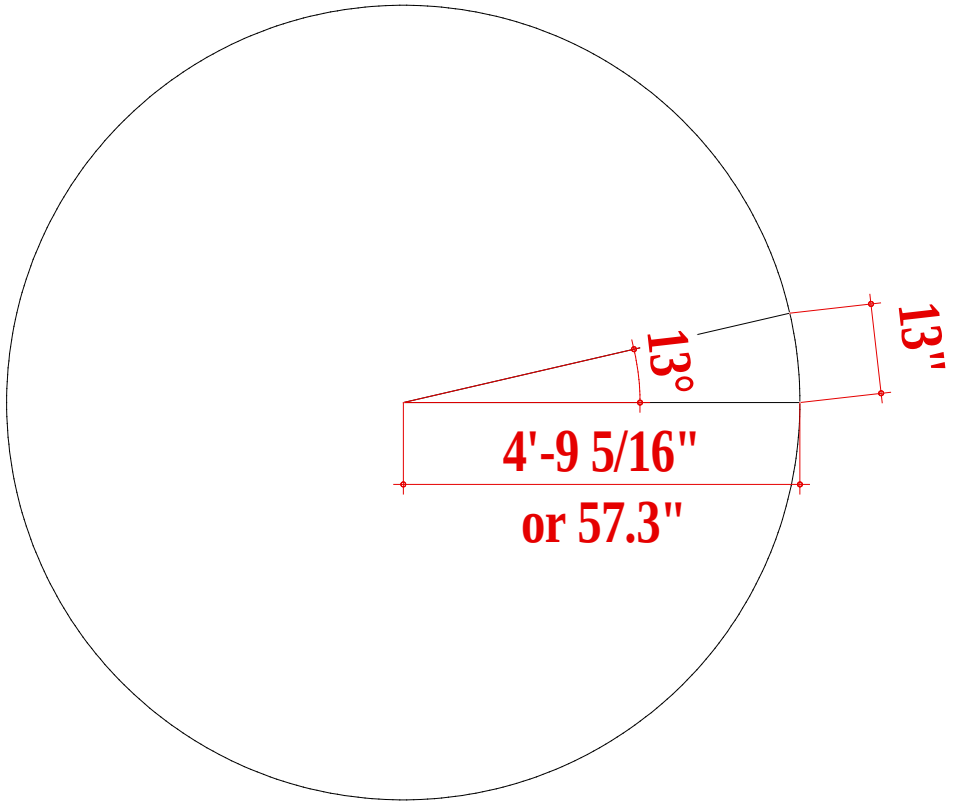


TFG Eastern Conference 2011

Basic geometrical layout

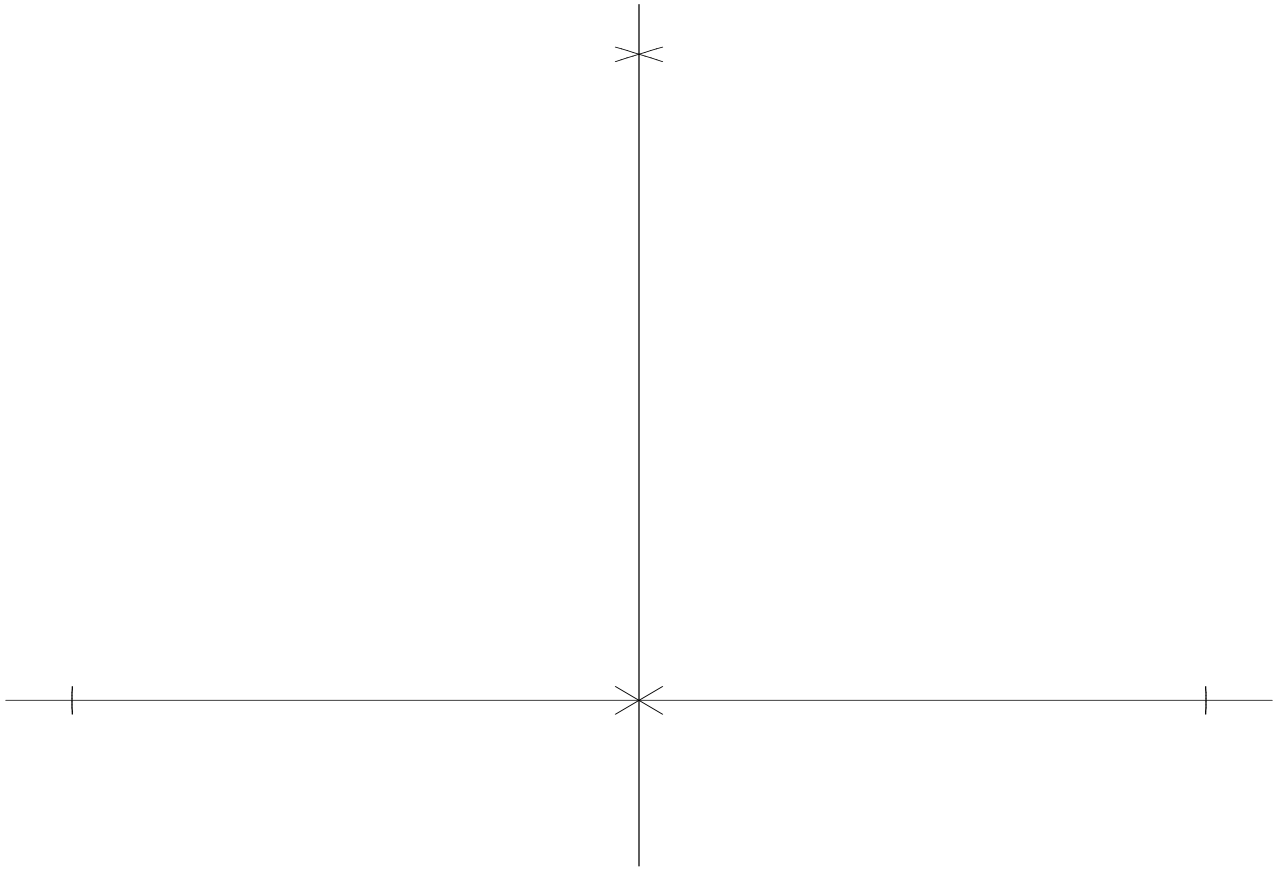
Layout a random angle in degrees.

Based and the ratio between the circumference and radius, if we layout a circle that has a 57.3” radius, every arc of a 1” value represents 1 degree.



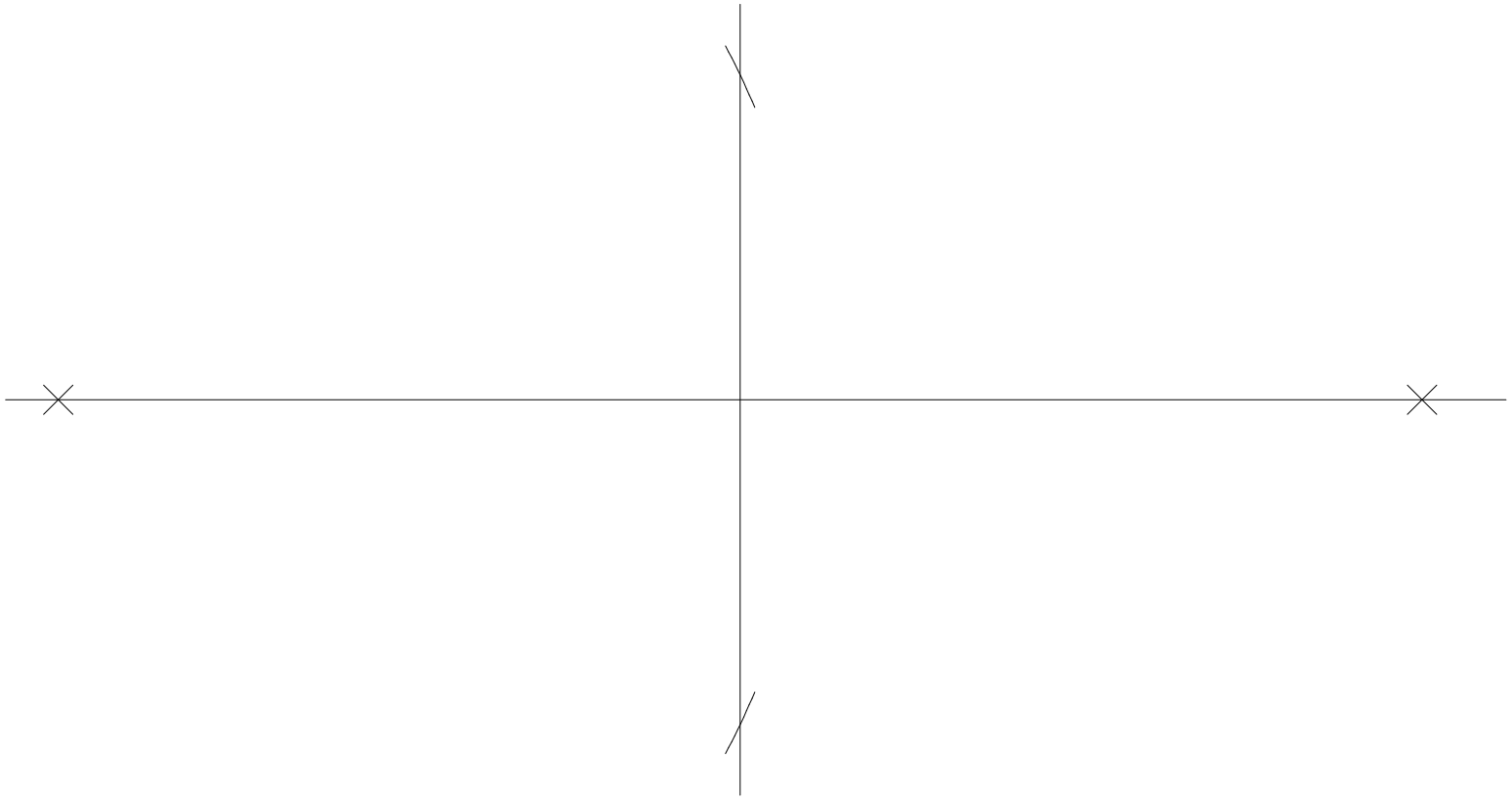
Layout a line square to another one through a given point on this line.

Draw an arc from this point to either side of it on the line. Through those points draw a longer arc two intersect each other. Draw a line through the intersections and the first point. This line is square to the first one.



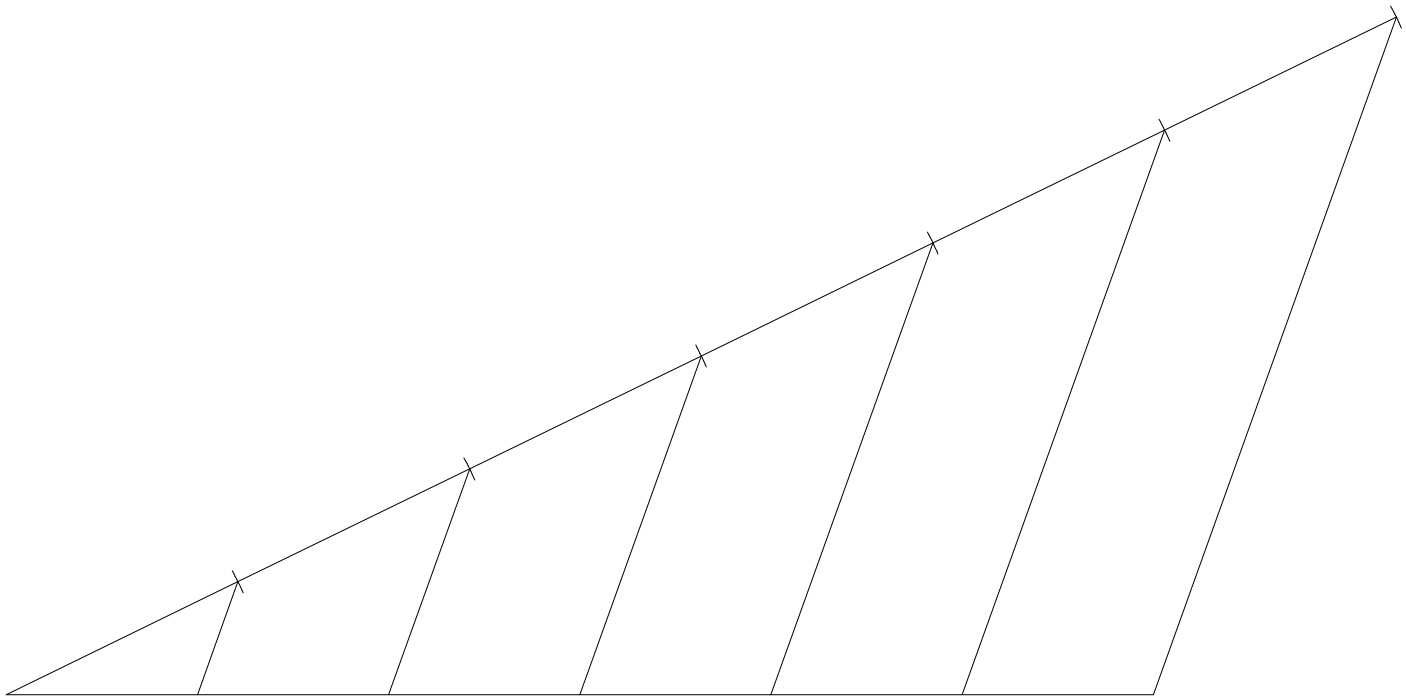
Layout a line square to another one through a point outside the line

Draw an arc from this point to either side of it on the line. Through those points draw another longer arc to the other side of the line. Draw a line through the point previously obtained and the first point. This line is square to the first one.



Divide a line in equal distances.

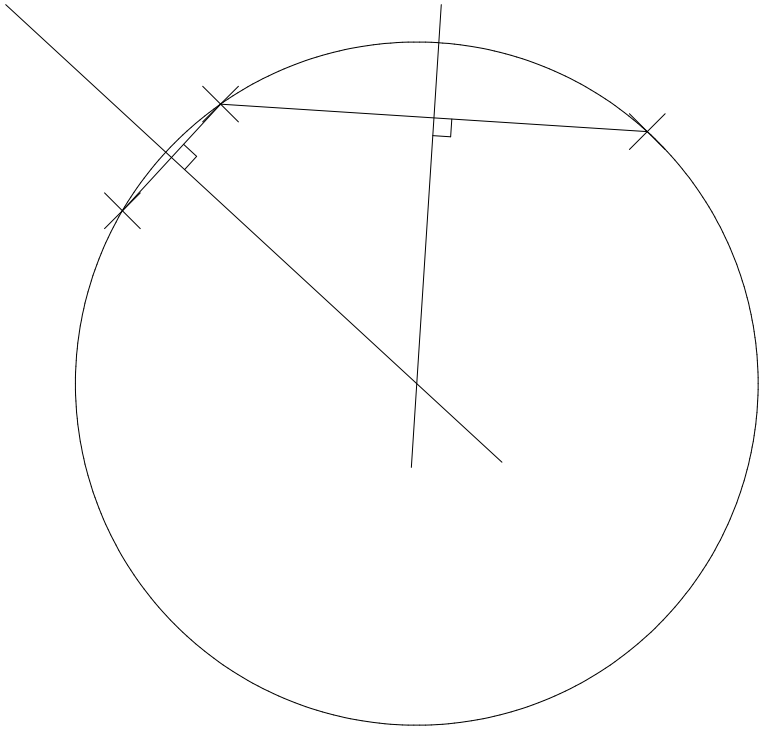
From one end of the line, draw another line at a random angle. On this line, draw some equal segments, as many as you want to divide the first line into. From the last point, draw a line to the other end of the first line. Draw a line parallel to the last one obtained through every given segment. Where they intersect the first line, it will give equal segments.



Find the center of a circle through 3 points..

Draw two lines, each connecting two points. Draw a line square to each line.

Where the two lines intersect gives you the centre of the circle. Useful when you want to draw an arched braced and you do not have the centre.



Definition of the different lines and planes for compound roof layout.

Eave line:

Line representing the outline of a roof system. Defines a plane in plan view that is the lowest point on the top of the rafter.

Gutter line:

Line representing the eave line or plane in elevation. It will be a line that goes through the lowest point of the common rafter on the top of the rafter. It will be the height reference for every elevation.

Level line:

Line representing a level plane other than the plan view. It represents a level plane on any elevation.

Centre line:

Represents the centre of a piece of wood but also an imaginary rafter or piece of wood.

Construction lines:

Usually doted lines, not representing any material, just used to transfer lines between plan view and elevation.

Common rafter:

A common rafter is an imaginary rafter that is square to the eave line in plan view and would the longest rafter on a roof. It may be an actual rafter. It is represented by a triangle in elevation and a line in the plan view.

Backing angle or view:

Represents the view of a given piece of wood through a plane square to it. In other words it is the cross section of a given beam.

Ground line:

Represents a hinge line when a given plane intersects the plan view. For example it is the gutter line on a rafter elevation.

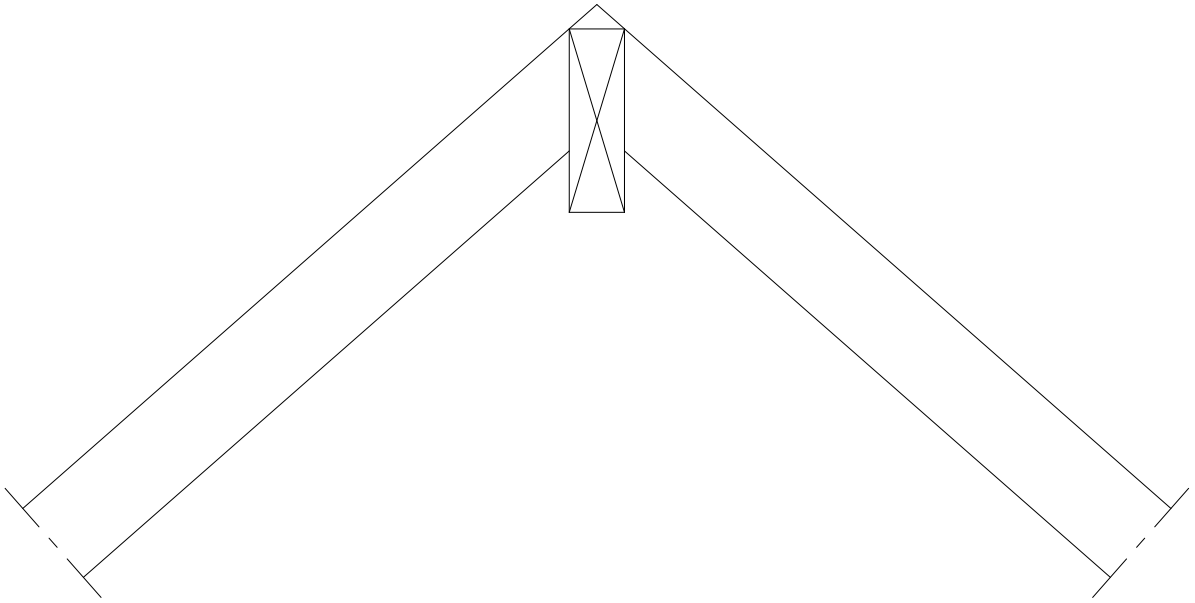
Roof real surface:

Represents the roof real dimensions, looking at it square and not from the top or in plan. It can be used for an actual roof surface but it can also be used to define the intersection between to beam, representing the face of one of the beam.

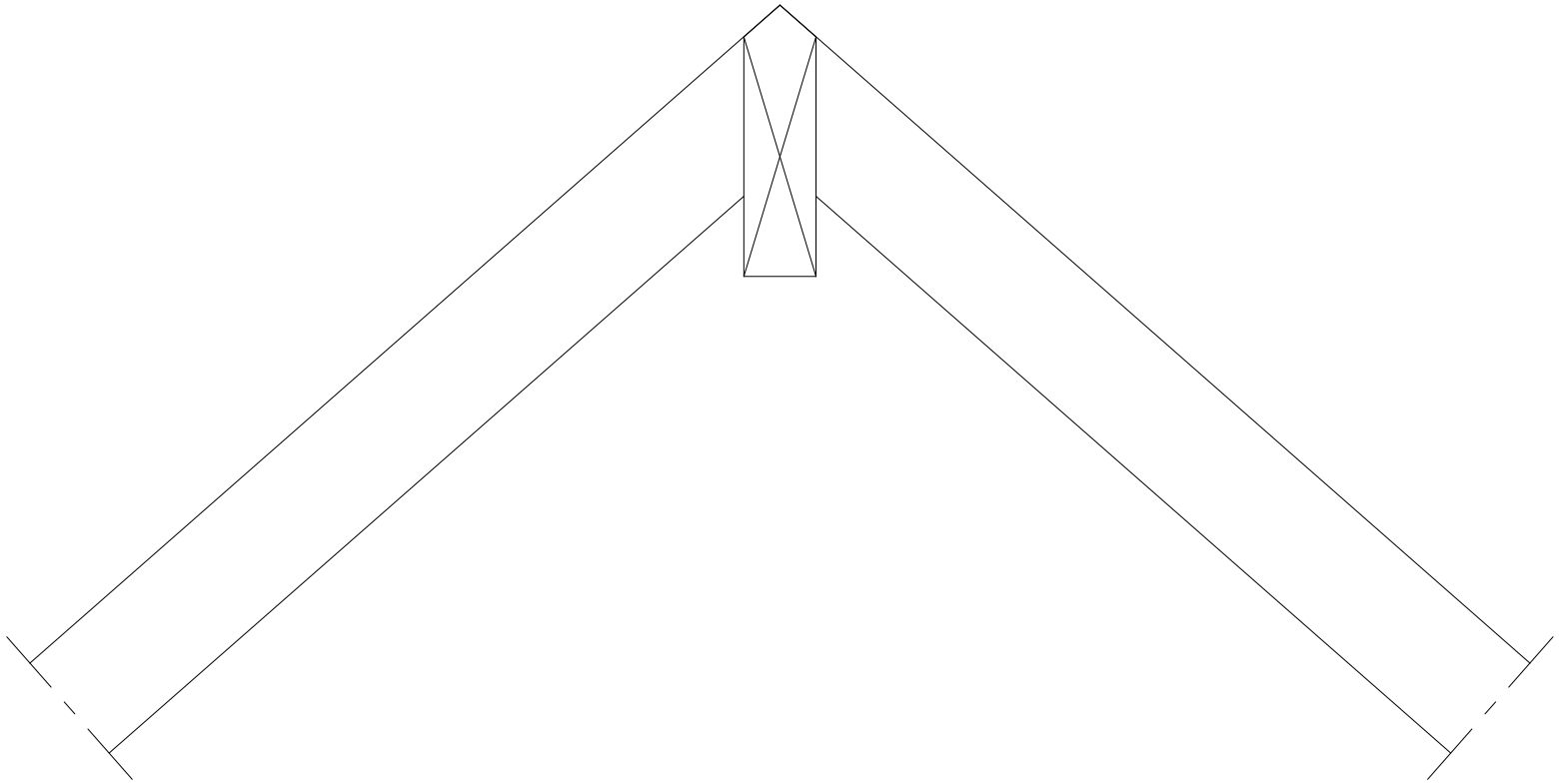
Why offset a hip or vally

Four ways to place a hip in a roof structure:

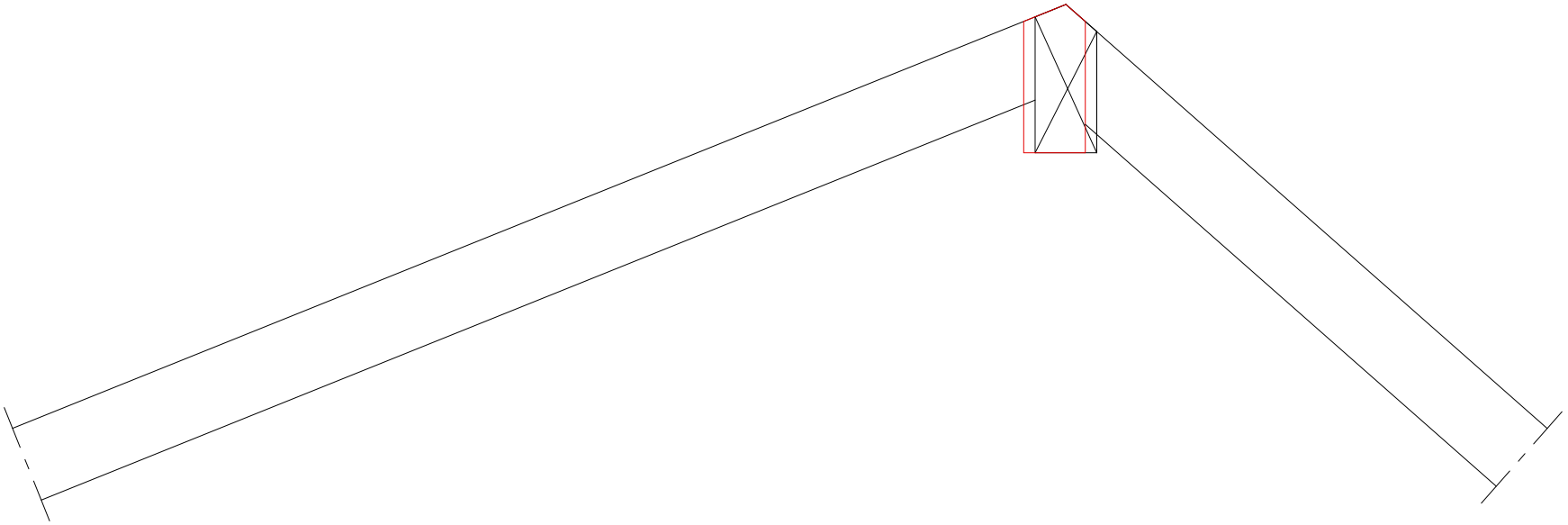
1-The hip is centred but dropped so that the upper edges are flat with the top of the rafter.



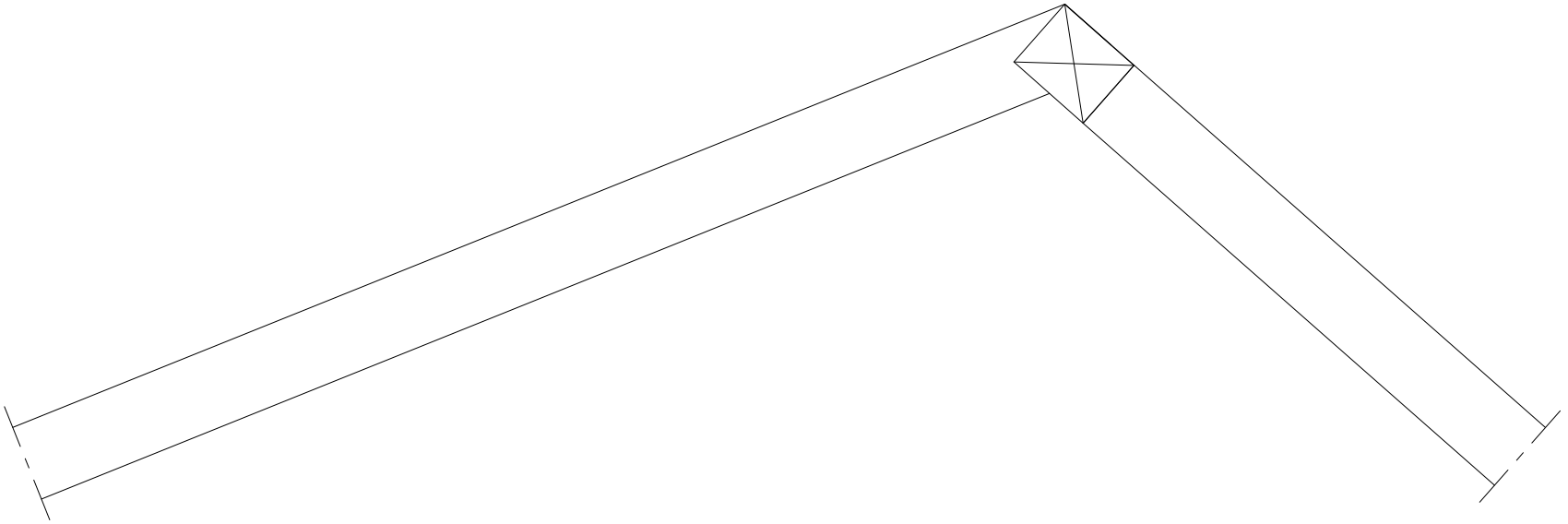
2-Centred with a backing angle. When the roof pitches are equal but the hip is wider than regular stick framing.



3-The hip is offset. When you have a main roof pitch different from the adjacent roof pitch. The reason to offset the hip is to save some material on the hip cross section.

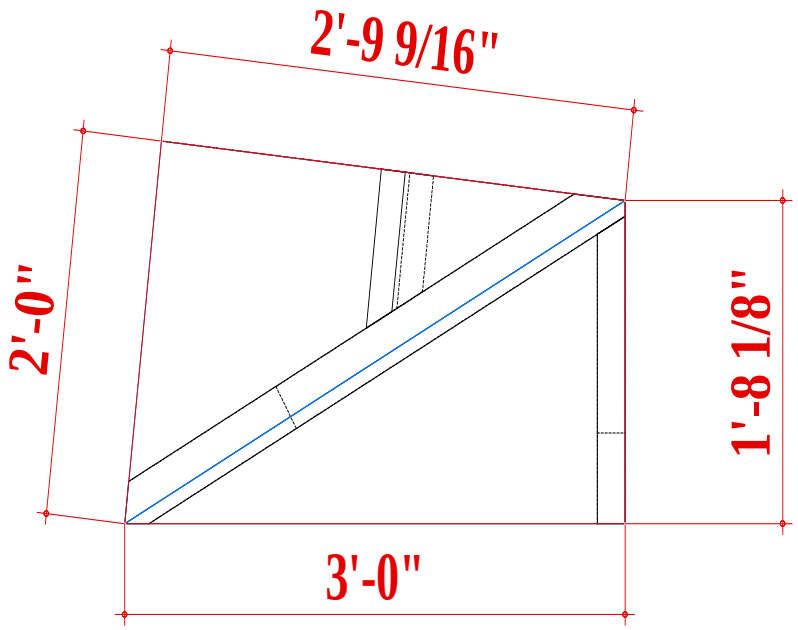


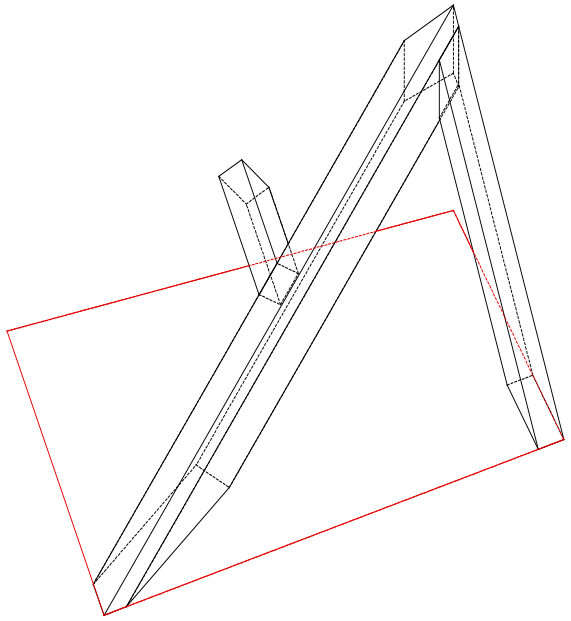
4-The hip is flush with one side of the roof or both sides with a backing angle.



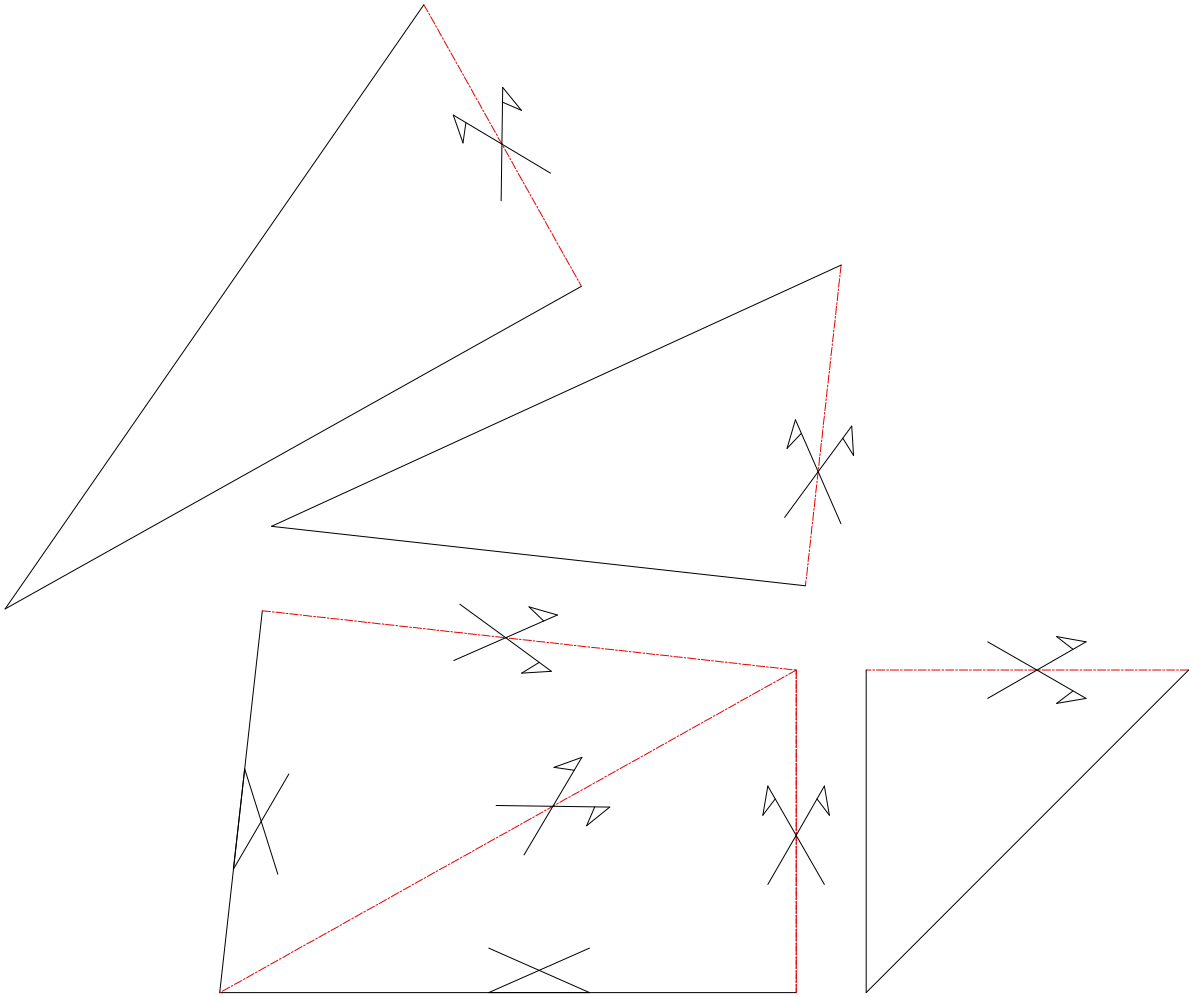
Hip introduction

Based on the plan view below, we will find how to layout the different angles necessary to layout a basic jack rafter and purlin against a hip with unequal roof pitch and plates not square to each other.



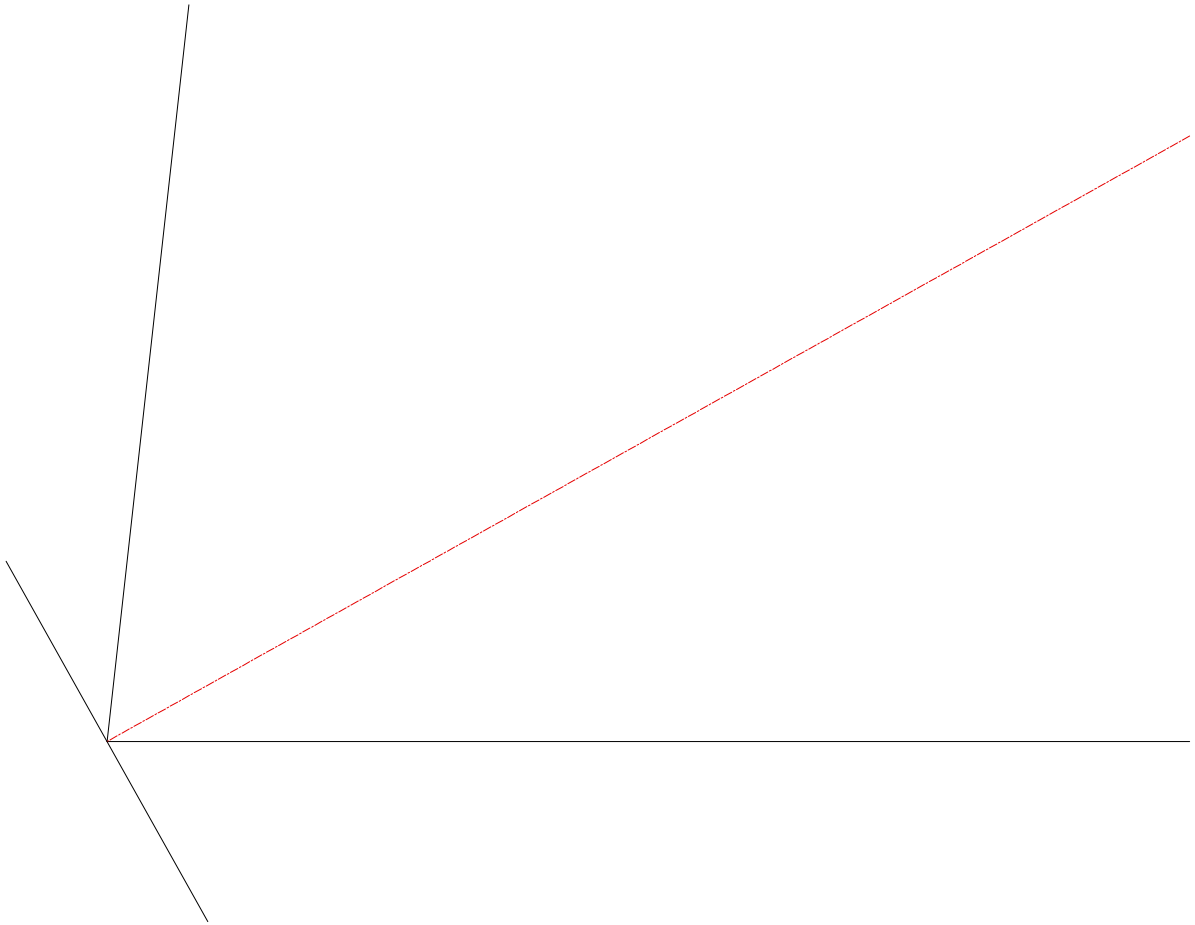


Plan view with elevations:

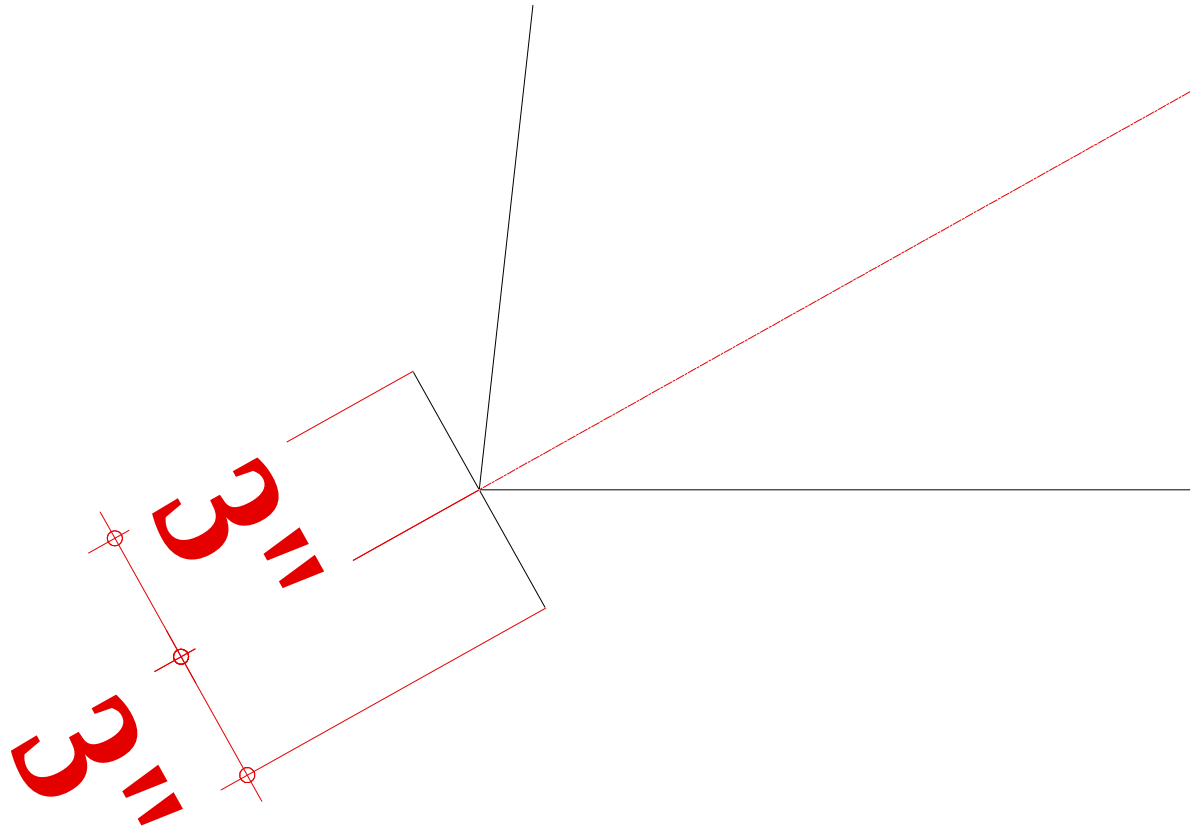


Offset the hip in four steps:

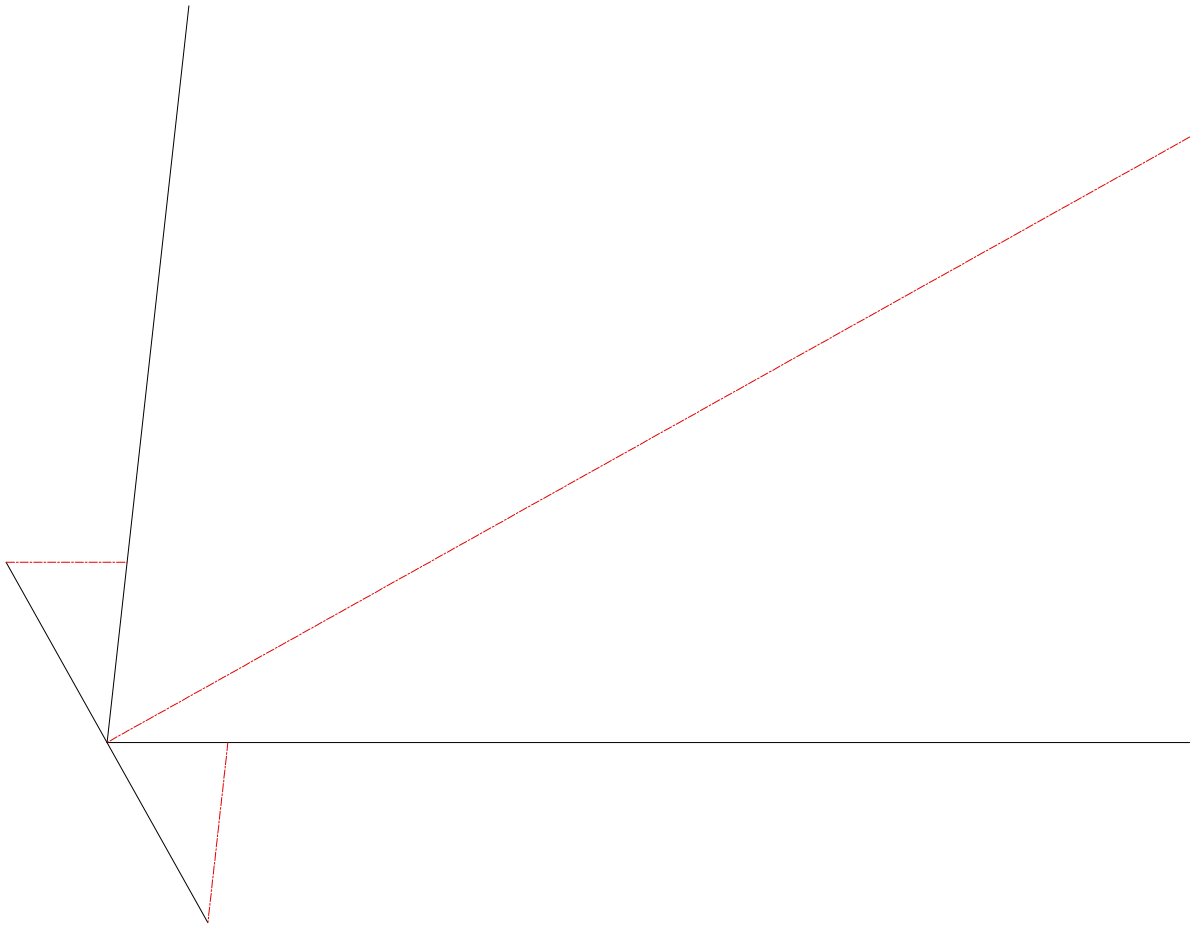
1-Draw a line at the hip base square to the hip centre line.



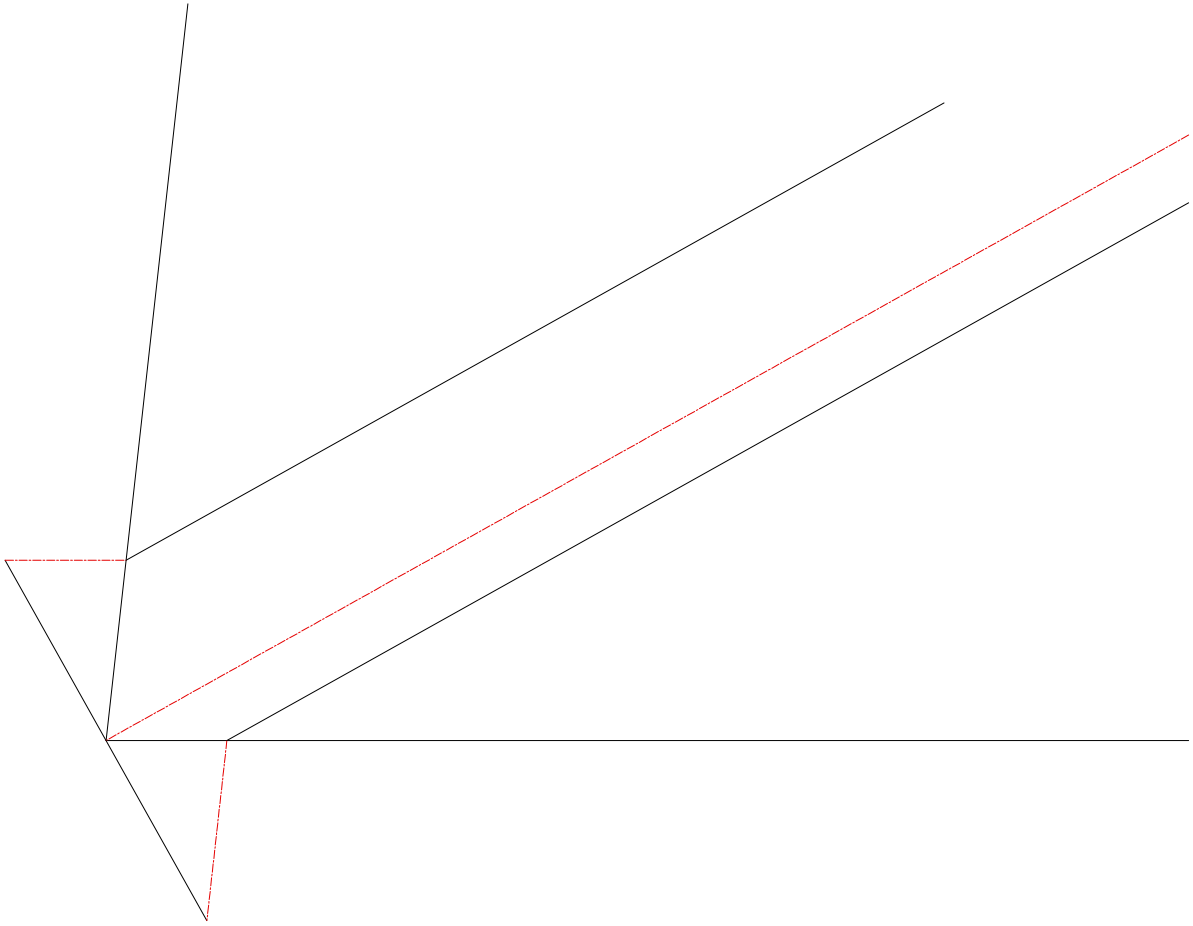
2-Draw the full width of the hip on that line on either side of the centre line.



3-From the two points draw a line parralel to the opposite eave line untill you meet the adjacent eave line.

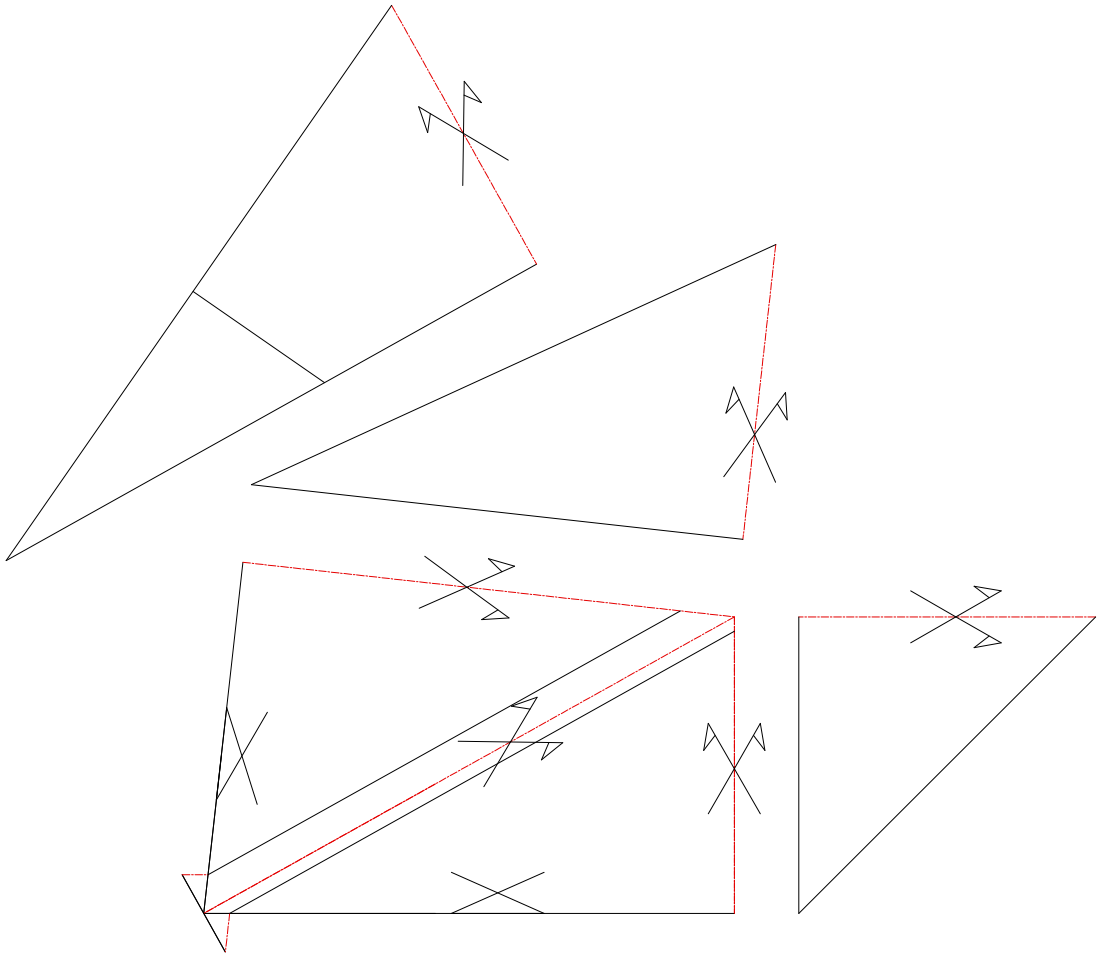


4-Where the line intersects the eave line, draw a line parralel to the hip in plan view. This gives you the exact location of the hip.

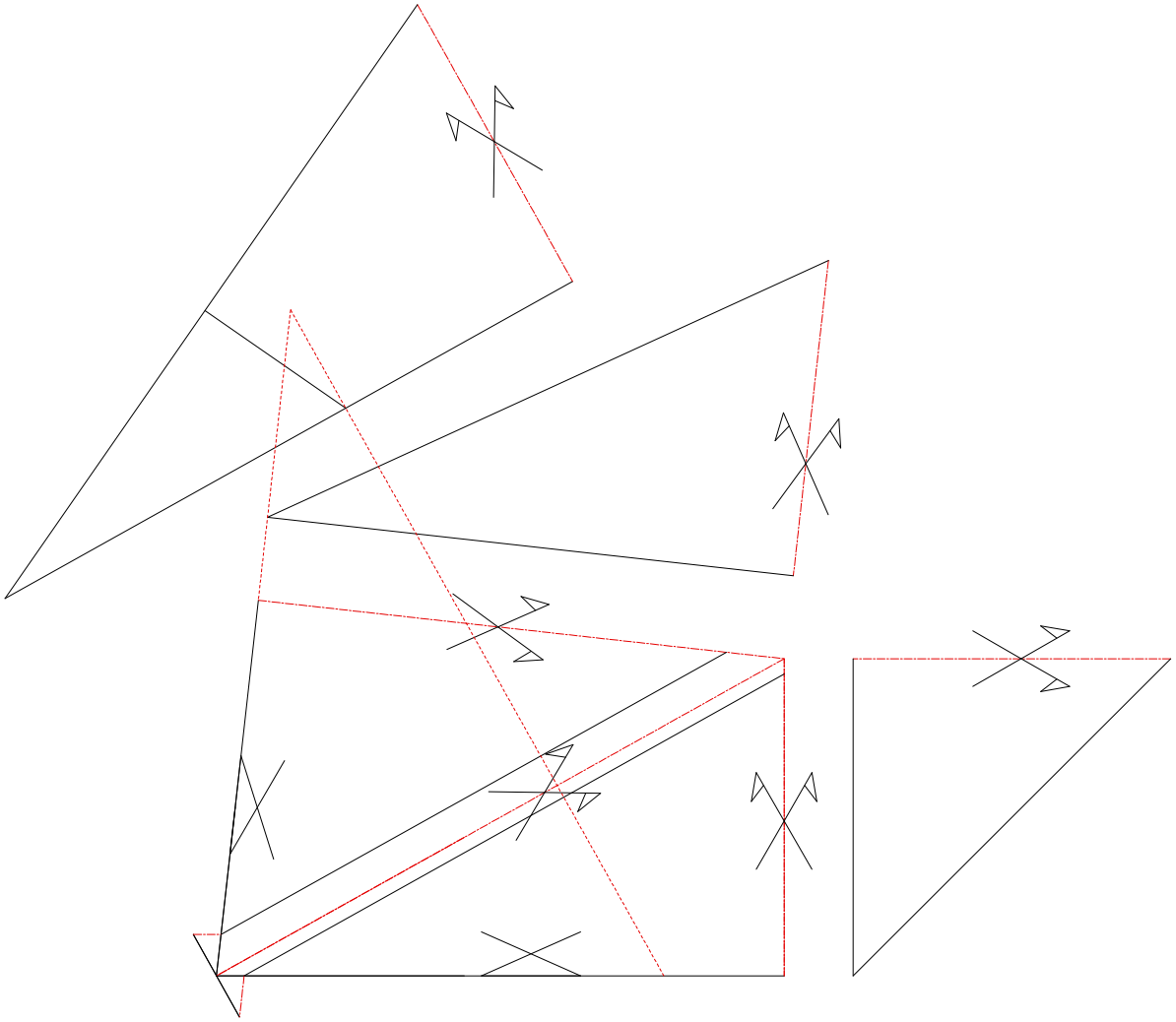


Hip backing angle in four steps:

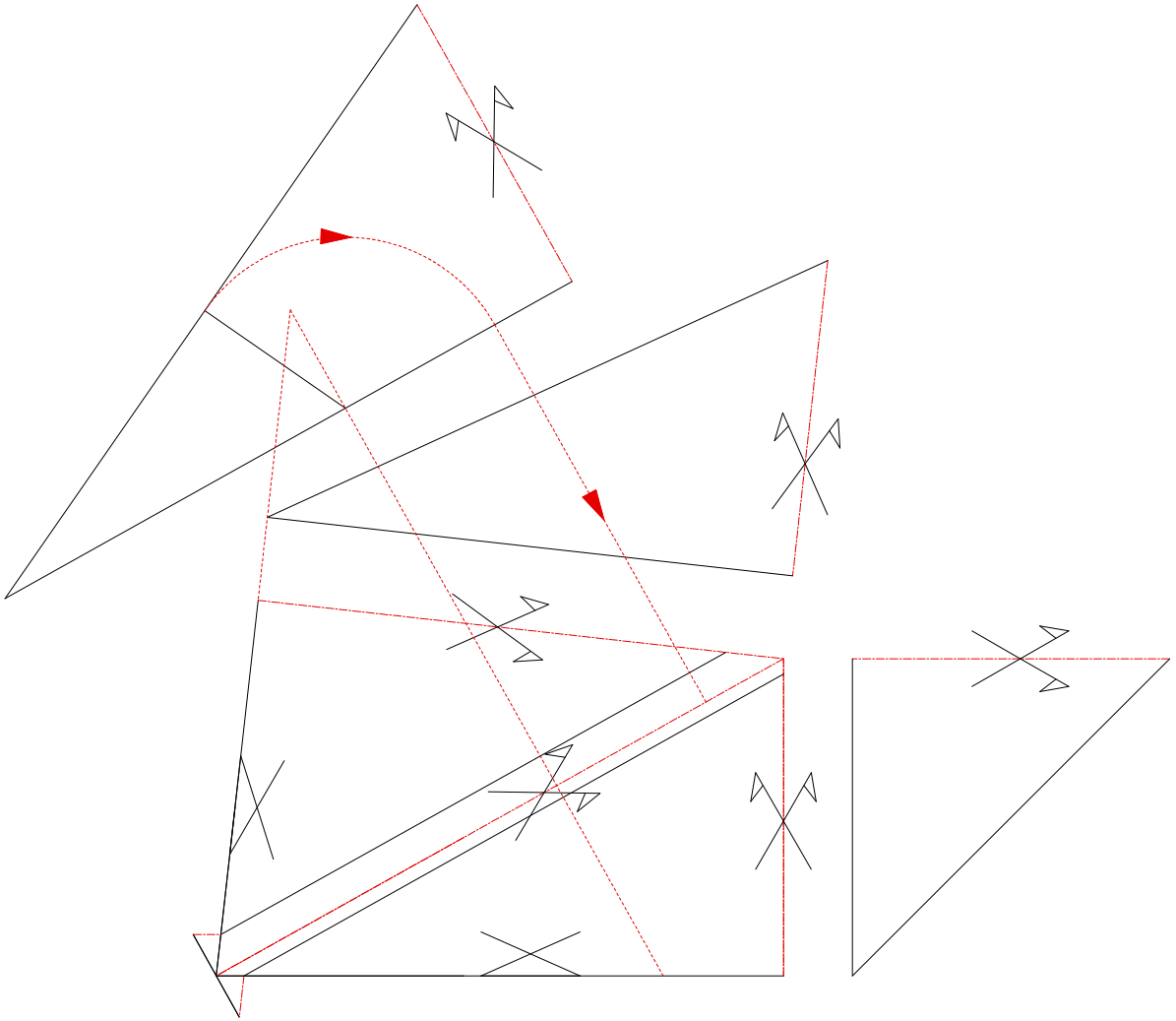
1-Draw a line square to the hip length in elevation.



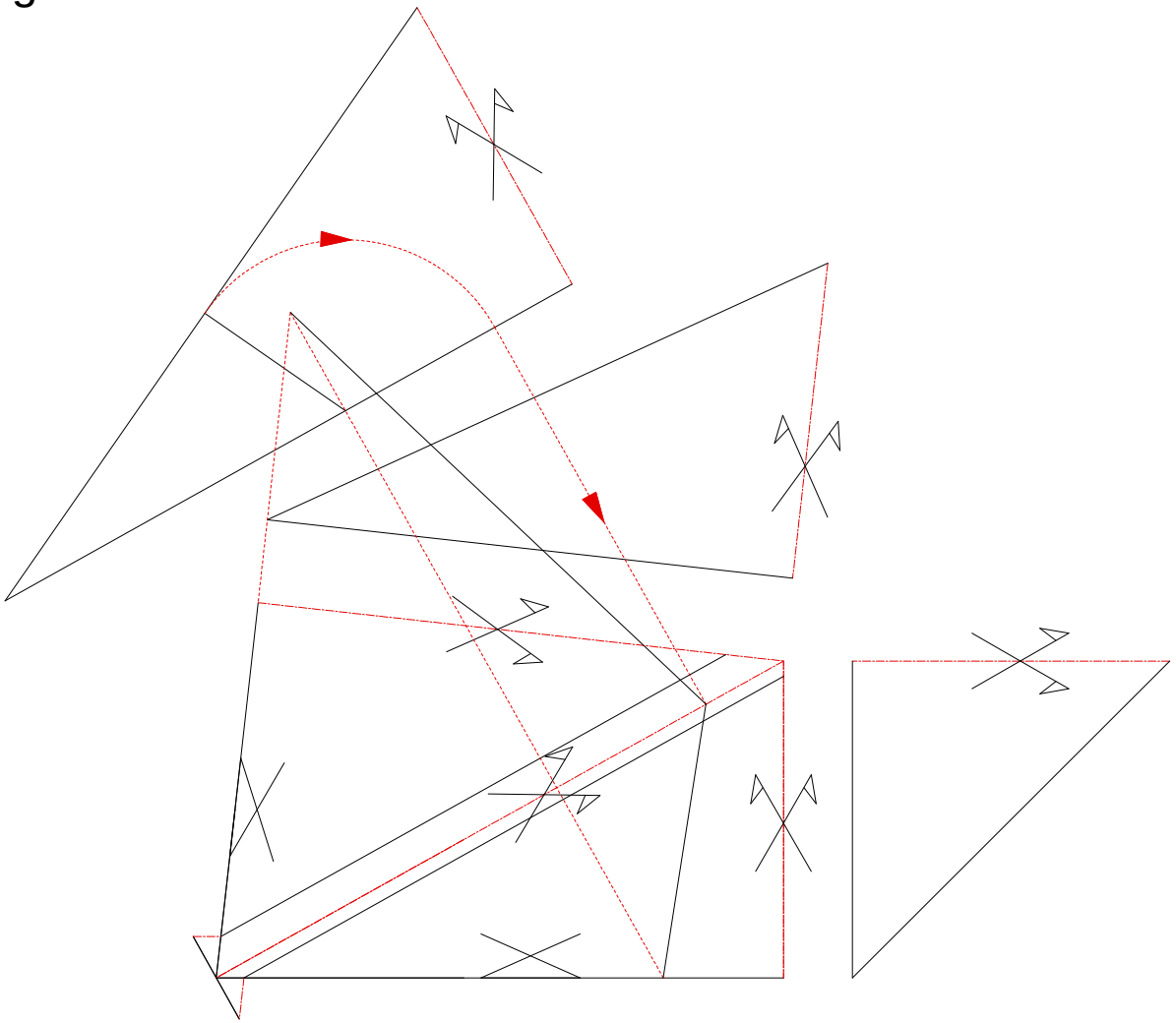
2-Where the line in step 1 intersect the hip gutter line, draw a line square through this point to intersect with both eave lines.

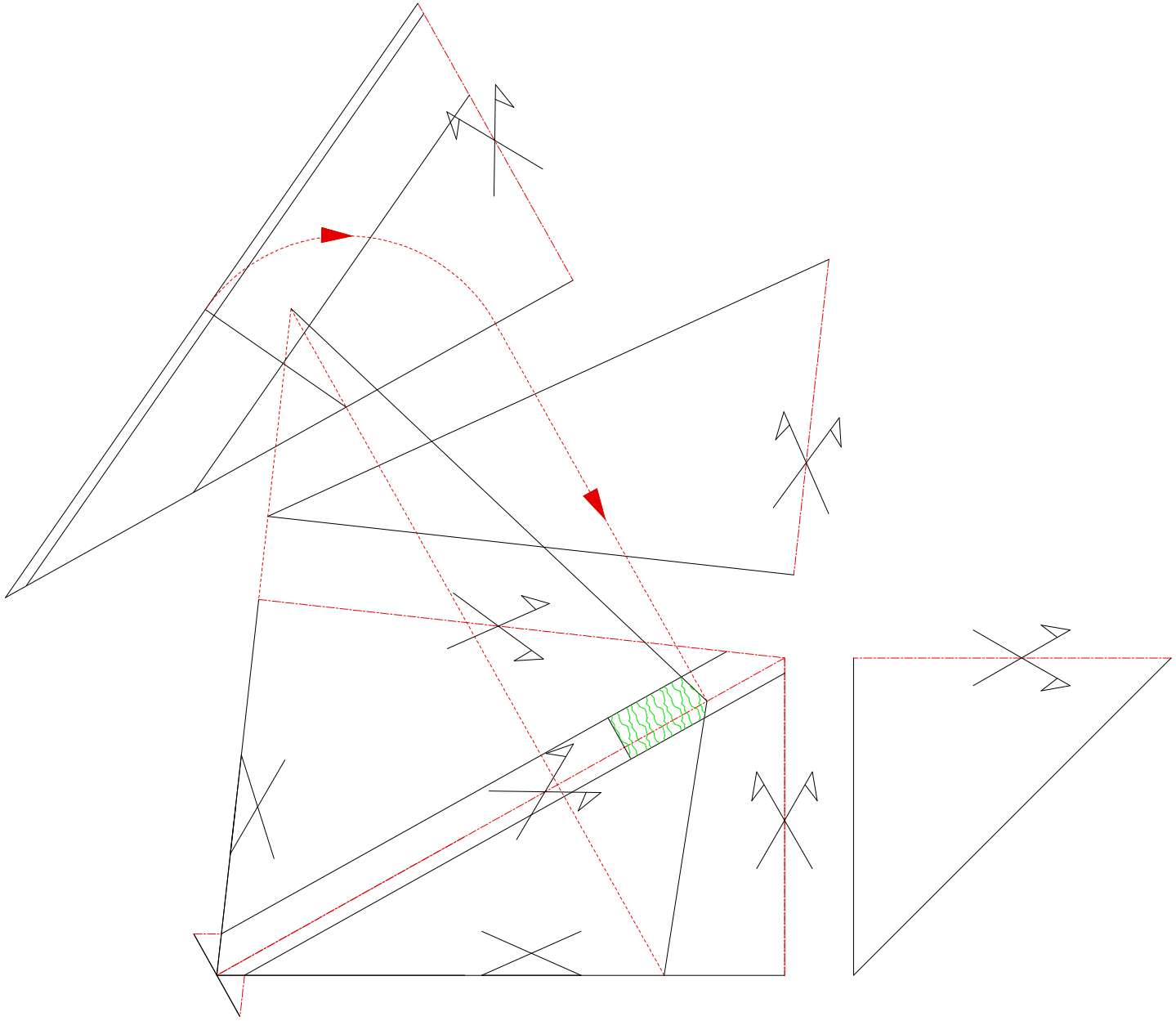


3-Take the length of the line drawn in step 1 and transfer it to the plan view on top of the hip centre line on either side of the where the line in step 2 intersects the hip in plan.



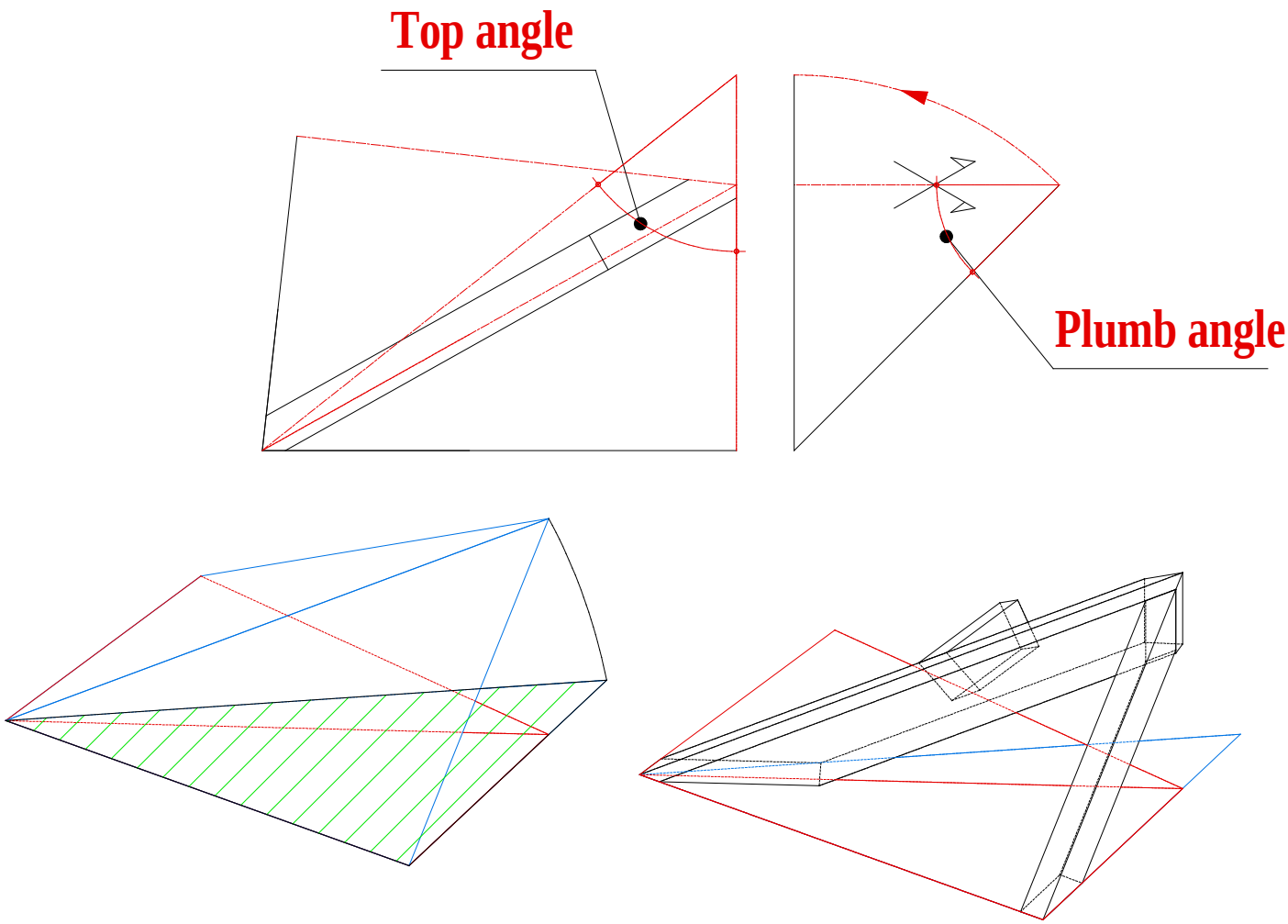
4-Connect the points obtained in step 2 and 3. This gives you the hip backing angle.



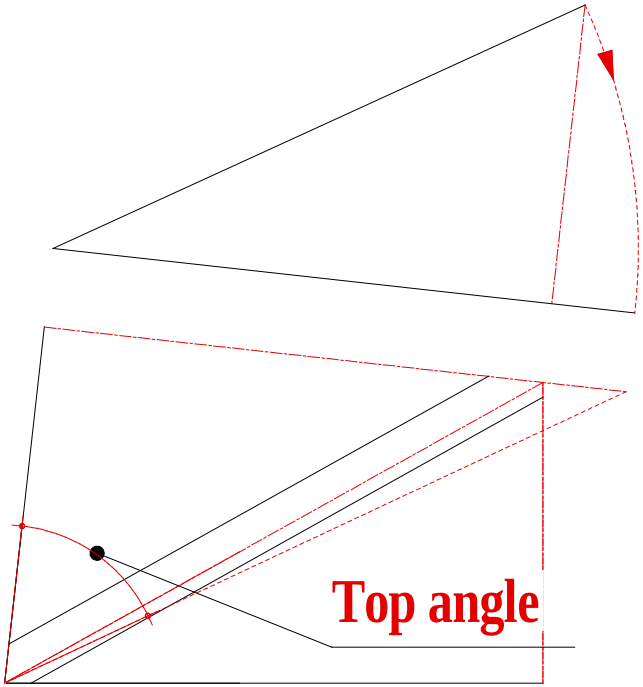


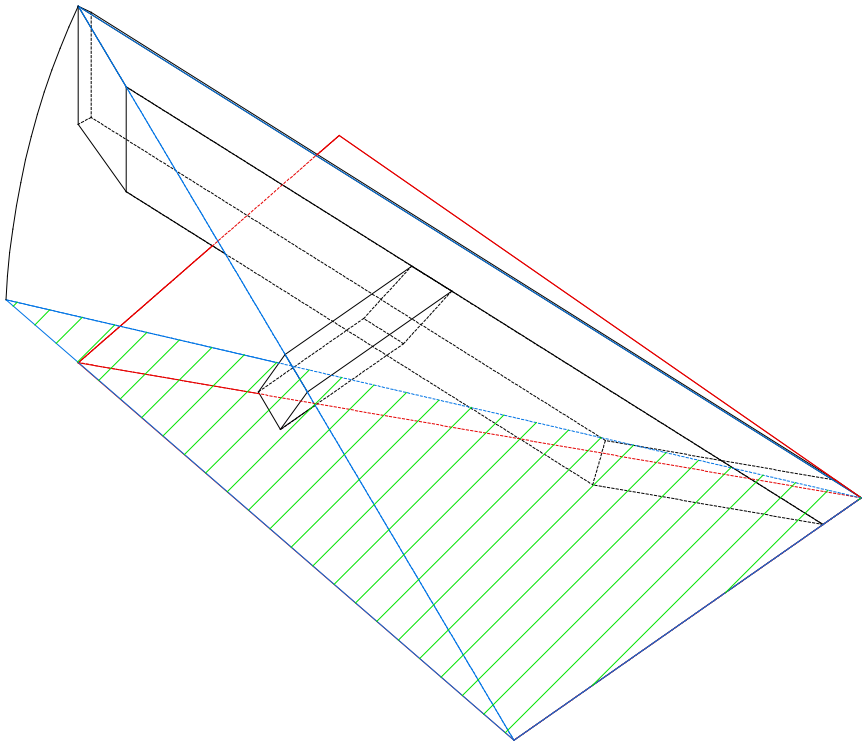
Where to find the different angles for the jack rafter and purlin:

1-Jack rafter angles

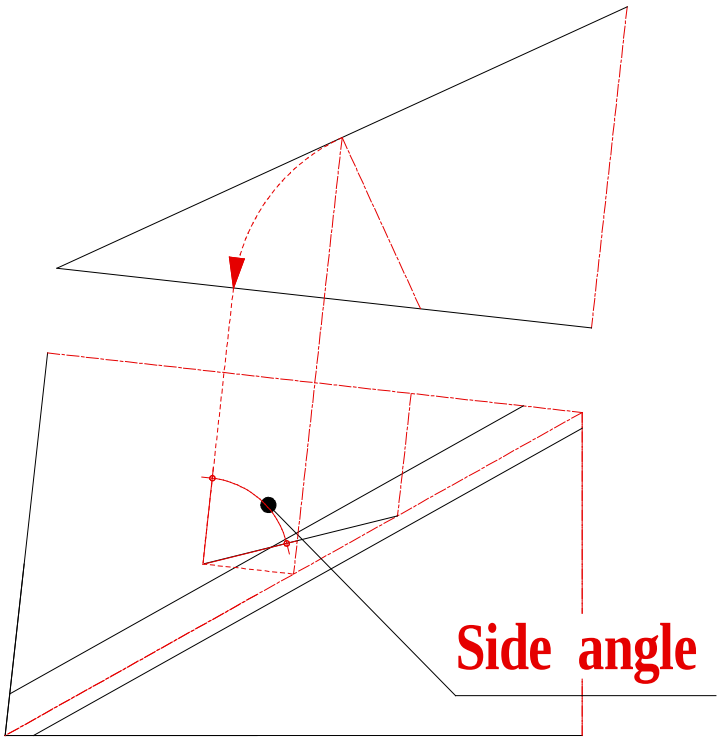


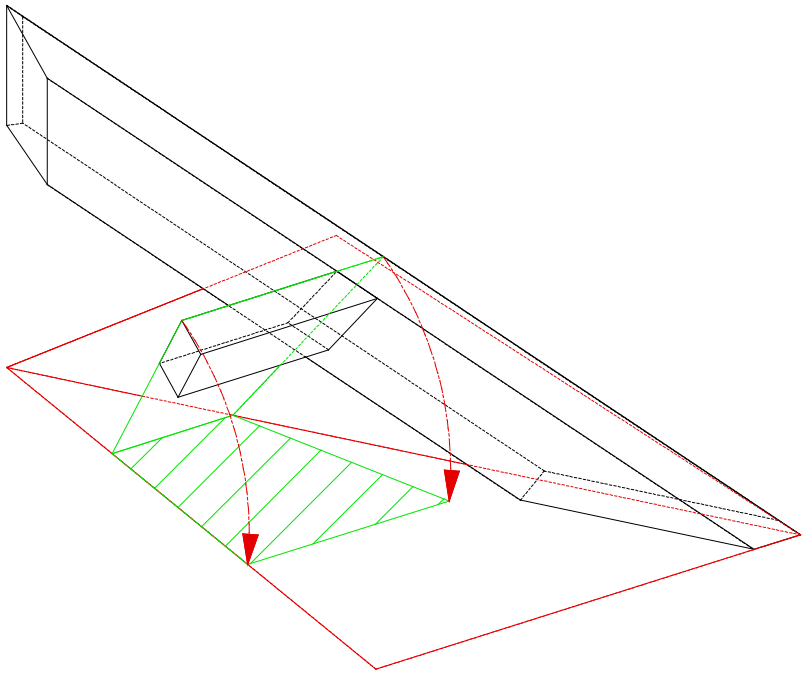
2-Purlin top angle.



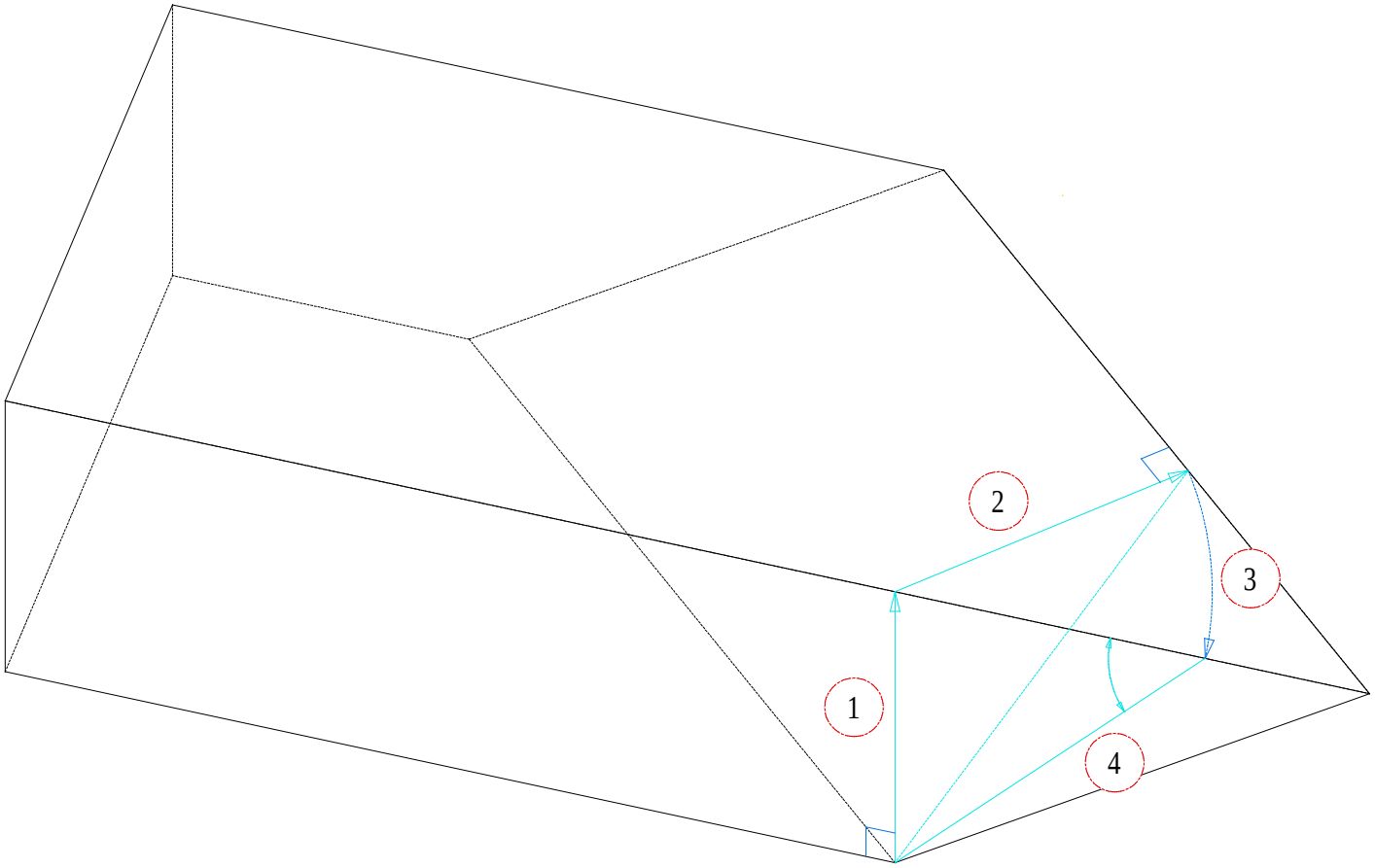


2-Purlin side angle.





Saw angle for compound angles:



STEPS TO FOLLOW:.

1. Draw a line square to the width from the lowest corner
2. Through the point created in step one, draw a line sqaure to the compound angle
3. Using the point created in step one as the center of a circle and the point created in step 2 as the radius, bring the radius from the compound angle to the outside edge.
4. Connect the last point to the starting point, this is your saw angle.