

How To Cut Common Rafters---Pt. 1

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This article is written to help take the pain out of trying to cut common rafters for any type of building. In the example below, we will be cutting 2x8 rafters for a common 6/12 pitch gabled roof building 30' wide.

Terminology

Span-----The measurement of the total width of a building--- (rough frame only).

Run-----The measurement of half the width of a building--(rough frame only).

Plumb Cut-----Any vertical cut to a rafter.

Seat Cut-----Any any horizontal cut to a rafter.

Bird's Mouth-----Combination of plumb cut and seat cut created on rafter at area that connects rafter to wall.

Ridge Board-----Framing member Where the rafters meet at the center of the roof.

Fascia-----The vertical area of rafter at overhang.

Soffit-----The horizontal area of overhang created by rafters.

Step By Step Instructions:

Calculating Your Rafters

1. Measure the total width of your building-- (this measurement is known as the --" SPAN" of the building).
2. Divide the "SPAN" in half-- (this measurement is known as the-- "RUN" of the building).
3. Laying Out Rafters With 2' Framing Square.

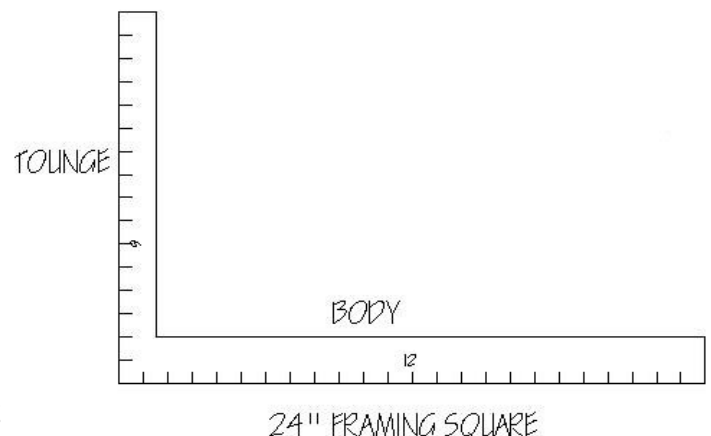
It is recommended that someone

who is cutting rafters to be familiar with the terminology of the 2' Framing Square. This Square is used in multiple areas of construction and most for building an entire home.

So, needless to say, you need a 2' Framing Square to layout your rafters.

If you cannot follow along with the terminology in the next couple of paragraphs please find a framing square along with the very short manual and read up.

Another small tool that comes in handy when you layout rafters are a pair of stair guides that you can purchase at your nearest hardware store. You don't need them but they make the handling of the 2' Framing Square a little easier.



The framing square has 2 blades on it, one long blade (body-24") and one short blade (tounge-16").

The Tongue numeric graduations are for the rise or pitch of the roof. and the Body numeric graduations are for the run of the roof (12") or if your dealing with a hip roof then it would be set at (17")--also this part of the square is for the seat cuts also known as level cuts.

How To Cut Common Rafters ---continued Pt.2

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Example: The Step Off Method

- Total Building Width (SPAN) = 30'-0"
- Total Building Run (HALF SPAN) = 15'-0"
- Pitch Of Roof---6/12 or 6" of rise for every 1' of run--(to center of building).

2' Square Settings:

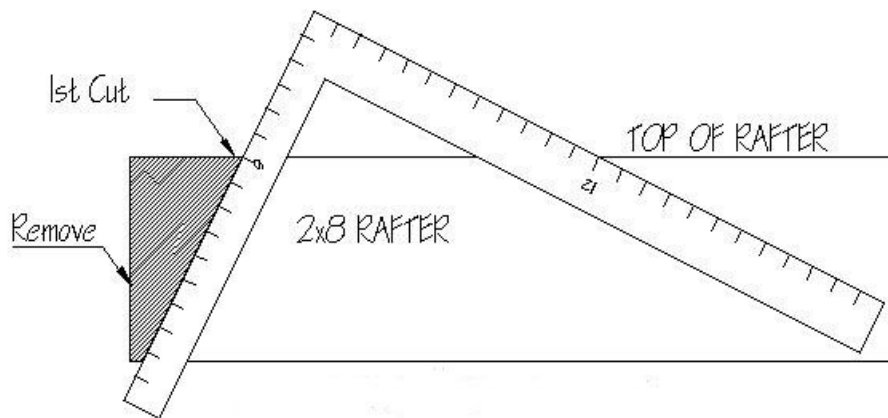
Lock a square guide on the tongue of the square at 6"---(pitch or rise of roof).

Lock a square guide on the body of the square at 12"---(run of roof).

Step 1. FASCIA BOARD CUT -1a

This is the first cut.

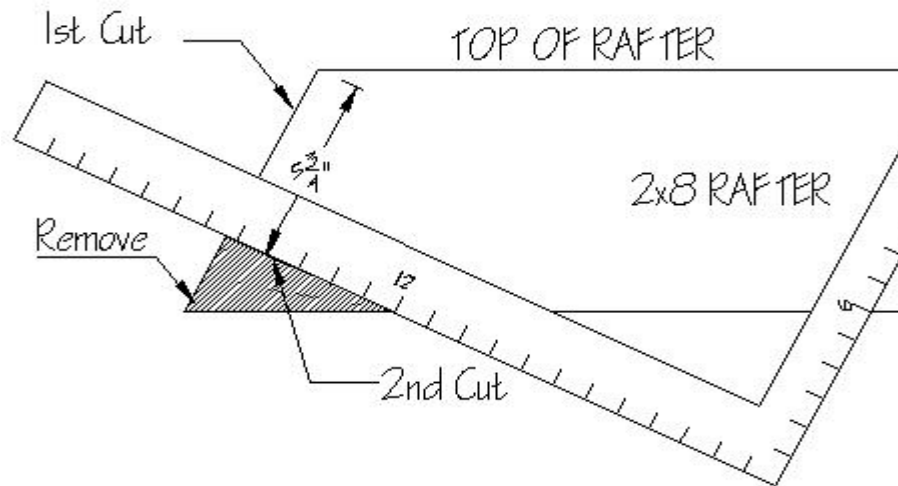
As you can see by the drawing below, this is the first part of the rafter that gets removed. Notice the position of the framing square where the 6" and the 12" numbers are placed. This is a 6/12 fascia board cut.



Step 2. FASCIA BOARD CUT -1b

This is the second cut.

As you can see by the drawing below, the framing square is moved to a new position to layout the cut for the seat cut. This is the second part of the rafter that gets removed. This area is for setting up the rafter to receive a 2x6 Sub-Fascia Board.

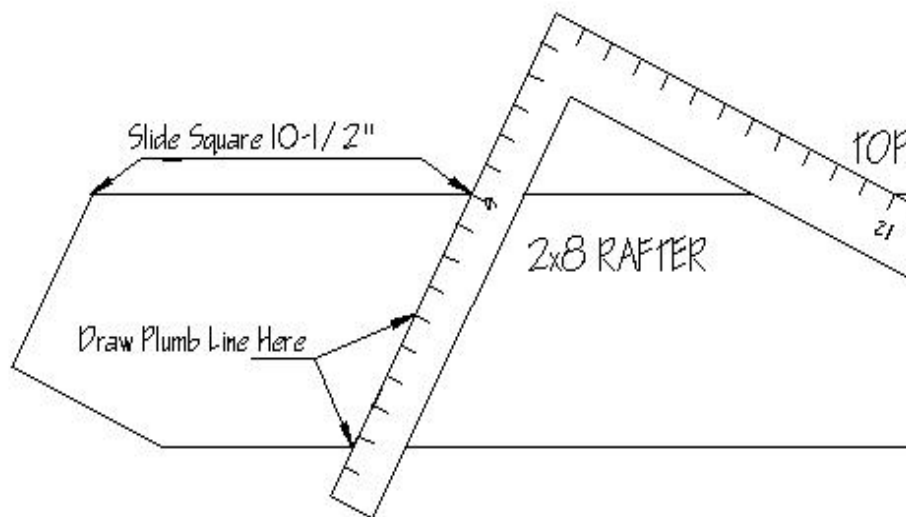


Step 3. BIRD'S MOUTH LAYOUT-1a

Draw Plumb Line.

As you can see by the drawing below, the square is moved up the rafter 10-1/2" to create a 12" overhang on the building that includes the 2x6 sub-fascia board.

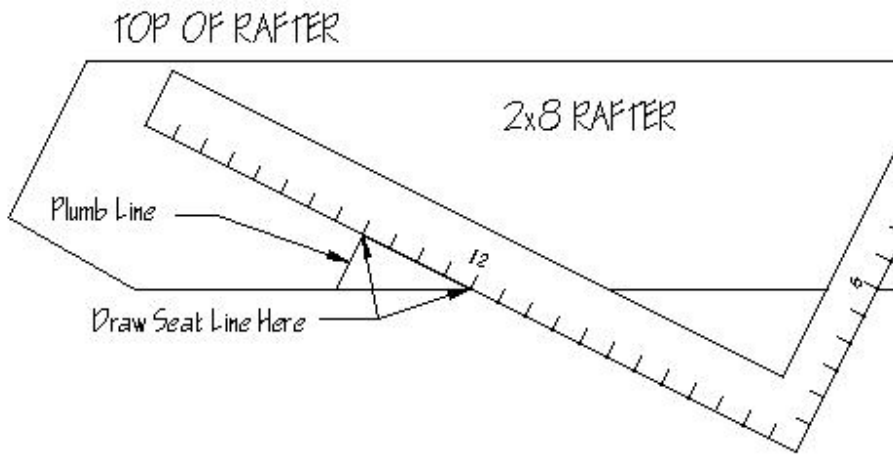
Now draw a plumb line along the tongue of the square that represents the 6" pitch. This represents the outside of the building wall.



Step 4. BIRD'S MOUTH LAYOUT-1b

Draw The Level Line -- or Seat Cut

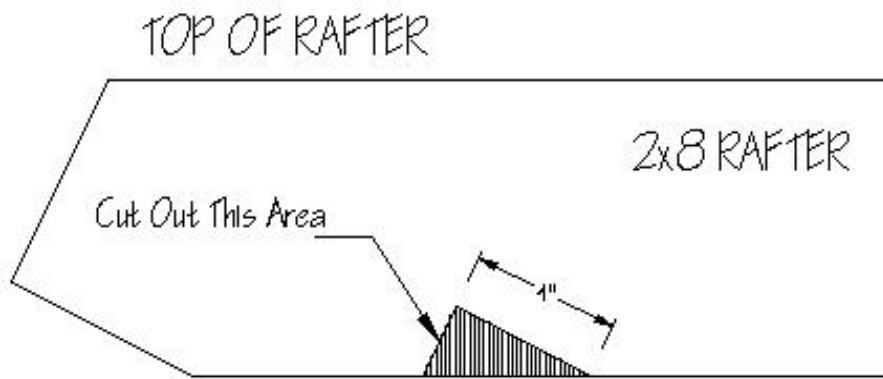
As you can see by the drawing below, the seat cut or level line is drawn. If your outside walls are 2x4 then this dimension is generally is 4" long. This is where the rafter will sit on the building wall plate. If the wall is a 2x6 then this line will have to be adjusted to accommodate the different sized wall.



Step 5. BIRD'S MOUTH -FINISH

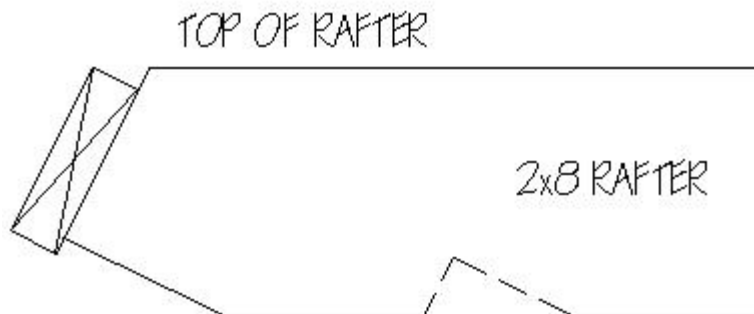
Cut Out The Bird's Mouth.

The picture below shows the entire area of the Bird's Mouth removed.



COMPLETED RAFTER TAIL

The picture below shows a completed 2x8 rafter tail with the birds mouth cut out to sit on a 2x4 wall. It also shows an attached 2x6 Sub-Fascia board.



How To Cut Common Rafters---Pt. 3

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Stepping Off The Length Of The Rafter

Once you have the rafter tail cut for the overhang and the birds mouth now you have to calculate the length of the rafter.

The method that is used for calculating the length of a rafter using a 2' framing square is called the "Step Method".

Our example roof specs are:

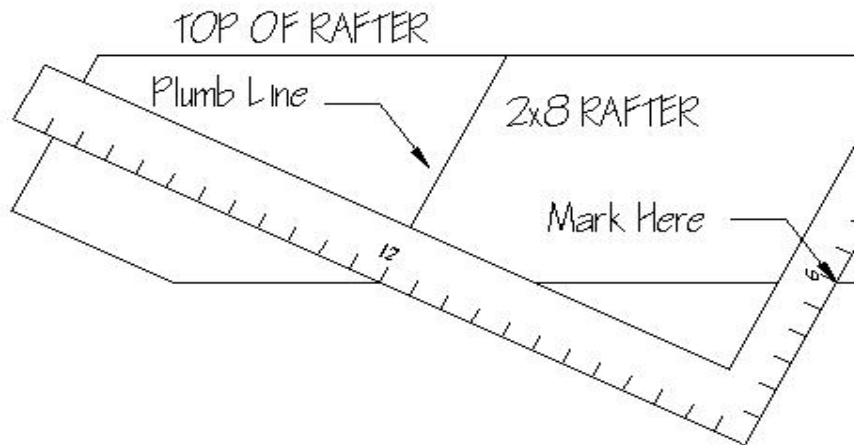
30'-0" building width

15'-0" span (1/2 the measurement of the building)

If you have a 15'-0" Run then you have 15 steps that are layed out on your rafter.

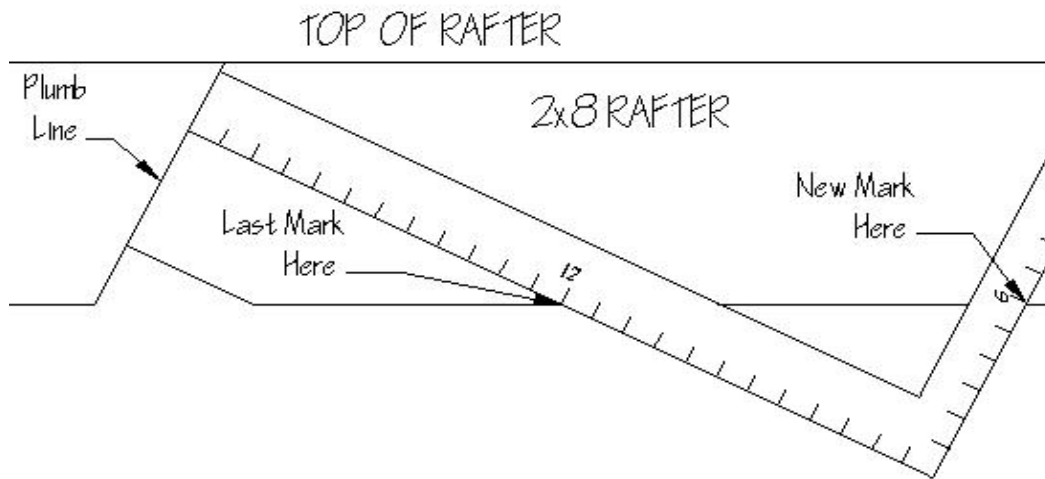
RAFTER STEP 1

The diagram below shows you the beginning of the 1st step. Notice the location of the 2' Framing square and how the 6" and 12" are set as the guides. Your first mark for the 15 steps is at the 6" area of the square. This is RAFTER STEP 1



RAFTER STEP 2

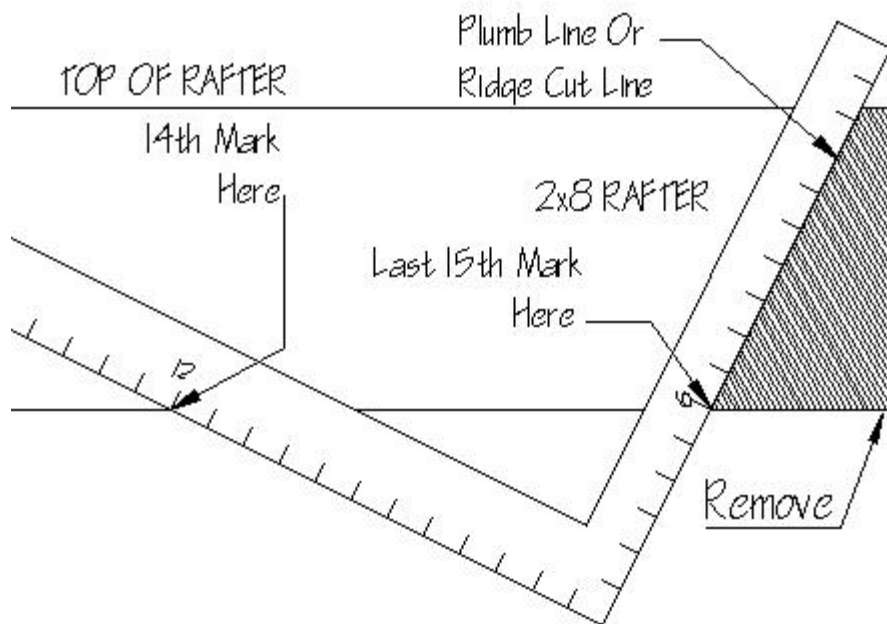
The diagram below shows you the the 2nd Rafter Step. Notice how you slide your 2' Framing square up the rafter to RAFTER STEP 2.



The stepping pattern above is continued until you reach the 15th Rafter Step.

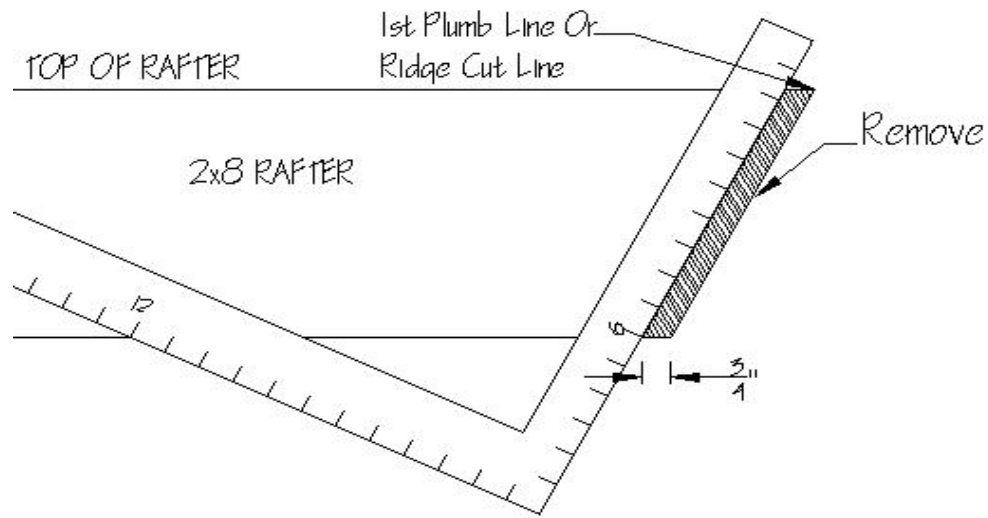
RAFTER STEP 15

After stepping and marking the Rafter all 15 steps then you can cut the Ridge Board Cut. The diagram below shows you the framing square at 14th and 15th step. This area that is being cut off is the Ridge Cut.



REMOVE HALF THE WIDTH OF THE RIDGE BOARD MATERIAL

The following diagram shows the last cut at the Ridge to allow the Ridge Board material. In this example we are using a 2x10 Ridge Board. Half of the Ridge Board would be $\frac{3}{4}$ " , so we cut that extra amount off the Rafter.



This is a quick and simple way to layout common rafters using a framing square.

Roof framing is one of the most technical aspects of carpentry. It does take some time to learn all the "Tricks Of The Trade" but with time and effort, you can cut your own roof in no time using the methods shown here.

Good Luck On Your Roof Framing Jobs.

Job Cost Calculators

<http://www.jccalc.com/>