Common Rafter Calculation

1. Determine the Run of the rafter, which is ½ the span (the distance from outside wall to outside wall). Example: We are building a house that is 36’ x 40’. The roof is spanning the 36’ area of the house. So, our span is 36’ 0” and our run is 18’ 0”.
2. Determine the slope of the roof, which is given on the elevation drawing in the house plans. For this example, we will use the slope of 5/12. The slope is given in the format of Rise/Run. This means that we have a 5” rise for every one foot of Run.
3. Next we need to look at a rafter (framing) square to determine the multiplier. The multiplier for a 5/12 slope is 13”. You can also calculate the multiplier using the Pythagorean Theorem. Below I have provided a visual illustration of the triangle created by this slope.

 13

5

 12

1. The next step is to calculate the line length of the common rafter: Run x Multiplier = line length.

So, 18’ x 13” = 234” or 19’ 6”

1. Last, you need to subtract ½” the thickness of the ridge pole, which is 1 ½” thick. 1.5” x ½ = ¾”. 234” – ¾” = 233 ¼” or 19’ 5 ¼”
2. This is the line length of the common rafter, which is from the center of the building to the outside walls. You will still have to calculate the overhang.

