

There are many ways in which to measure a roof. This section will show one method of how to properly do it. We'll express our final answer in "squares". In all roofing except polyurethane foam, roofers express Area in "squares".

1 square = 100 square feet

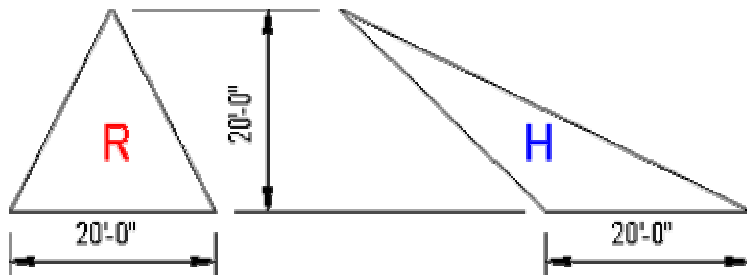
Before you get started, you need to know some simple geometry.

The base length (b) times the height (h) of any triangle is twice its area (A). So if you divide the product of the base and height by two, then you have the area of a triangle.

$$(b \times h) / 2 = \text{Area}$$

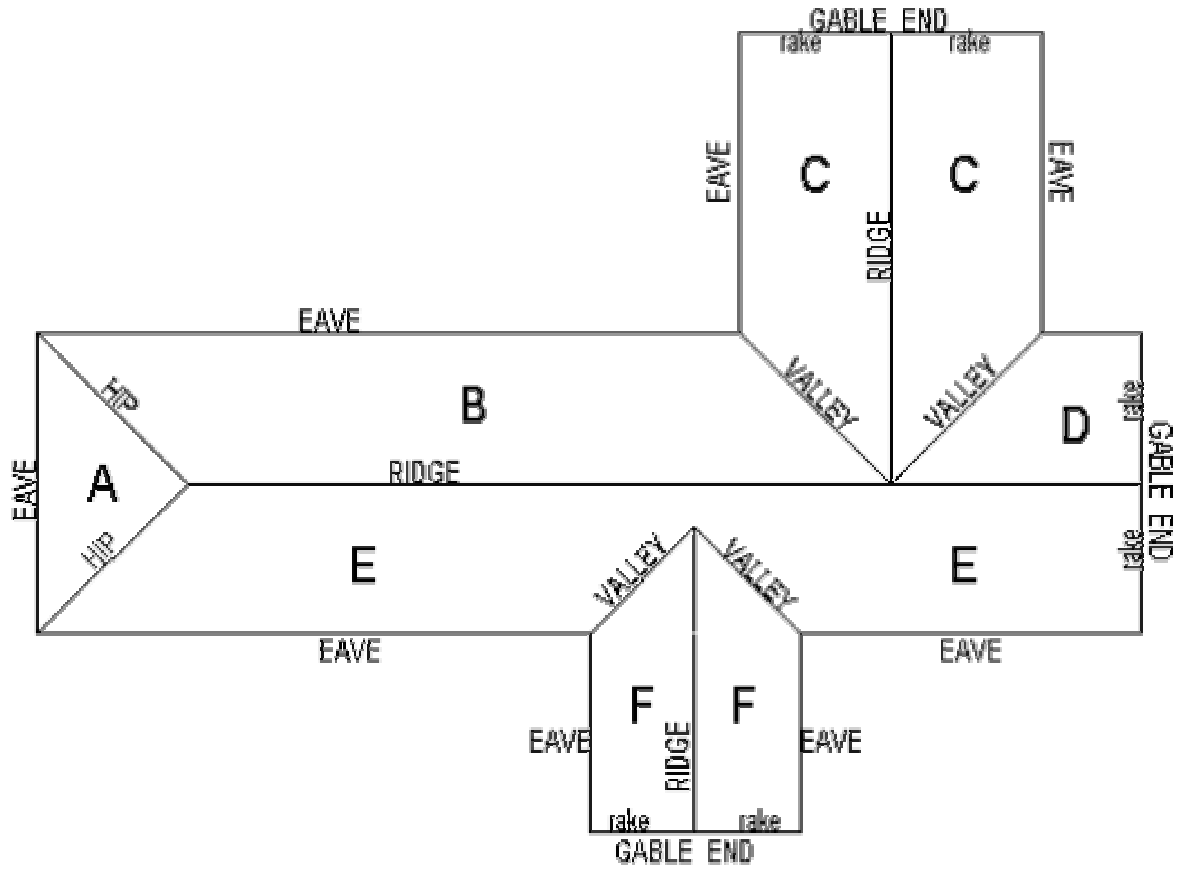
Therefore, the following two triangles, **R** and **H**, though different in looks and shape, have the exact same area.

$$(20' \times 20') / 2 = 200 \text{ square feet}$$



Now that you know this simple mathematical fact, you will easily understand how to measure the following roof.

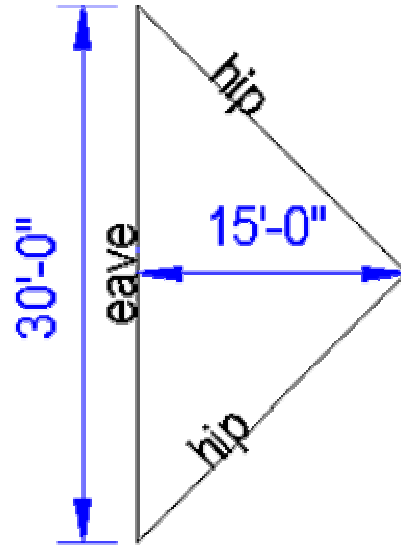
The picture shown is an aerial view of a roof with both a hip end and gable ends. It is strongly recommended that you make a rough sketch of your roof. In order to make it easier for measuring, the roof will be broken up into sections A through F.



Section A

This section is a simple triangle. Simply measure the length of the eaves and the perpendicular line from the eaves to the peak. Multiply these numbers and divide the answer by two.

$$(30' \times 15')/2 = 225 \text{ square feet}$$



So **Section A** has 225 square feet in it.

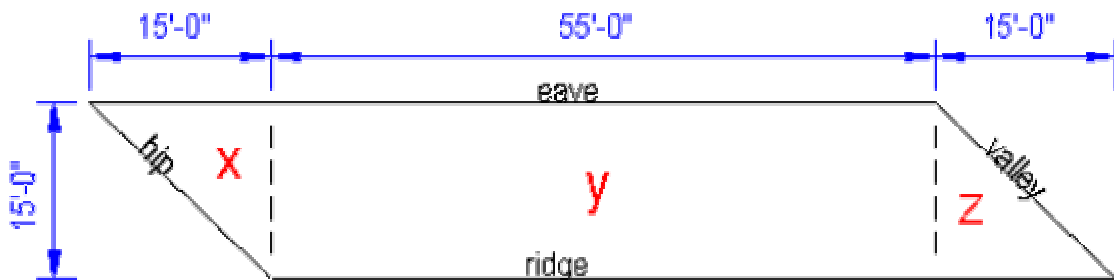
Section B

The easiest way to measure this section is to divide it up into three different sections: **x**, **y**, and **z**. It's pretty obvious that sections **x** and **z** are the same size, even without being marked. But because it's much easier to work in theory and numbers on pieces of paper (like architects do) than actually performing the construction (like contractors do), it's always a good idea to go ahead and measure both triangles.

$$x = (15' \times 15')/2 = 112.5 \text{ square feet}$$

$$y = 55' \times 15' = 825 \text{ square feet}$$

Because we know that **z** is equal to **x** after measuring, we'll simply add another 112.5 square feet to our current list of numbers.



So **Section B** has a total of $112.5 + 112.5 + 825 = 1,050$ square feet.

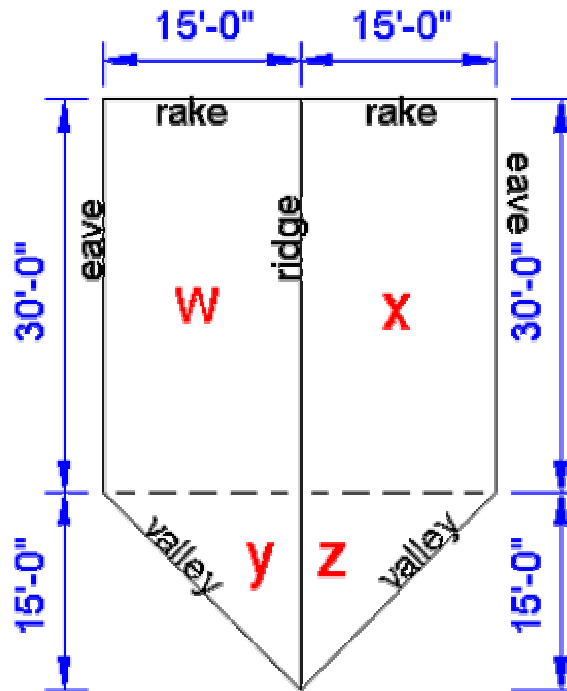
Section C

Again, with this section it's pretty obvious that we have symmetrical sides. Let's go ahead and divide it up into sections, measure one side and get the answers that we want and then we'll check the other side.

$$w = 30' \times 15' = 450 \text{ square feet}$$

$$y = (15' \times 15')/2 = 112.5 \text{ square feet}$$

A quick measurement verifies that x and z are the same as w and y so we'll multiply the sum of w and y by 2 for the final Area.

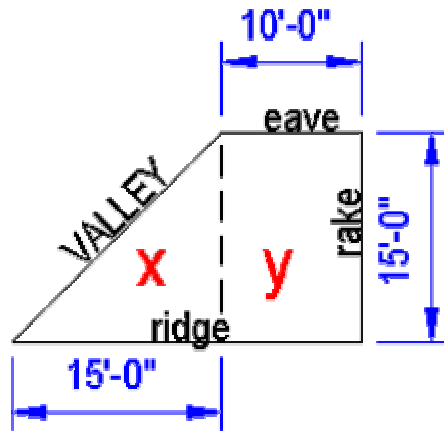


Section C = $(450 + 112.5) \times 2 = 1,125$ square feet.

Section D

$$x = (15' \times 15')/2 = 112.5 \text{ square feet}$$

$$y = 10' \times 15' = 150 \text{ square feet}$$



$$\text{Section D} = 112.5 + 150 = 262.5 \text{ square feet}$$

Section E

This section has several different subsections so we'll have to be careful and make sure we do it right. If your roof has a section similar in shape, double check your sketch to make sure that every piece is either rectangular or triangular.

$$s = (15' \times 15')/2 = 112.5 \text{ square feet}$$

$$t = 40' \times 15' = 600 \text{ square feet}$$

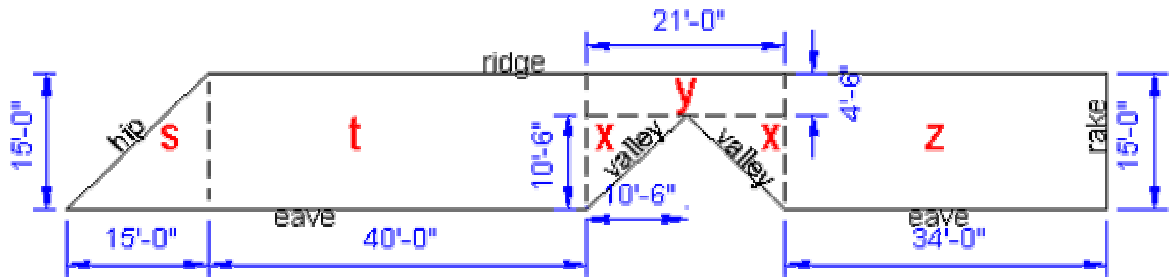
Remember to check both small triangles in the center part to make sure that they are the same size.

$$x = (10.5' \times 10.5')/2 = 55 \text{ square feet}$$

$$y = 21' \times 4.5' = 94.5 \text{ square feet}$$

The actual answer of x is $55\frac{1}{8}$ square feet, but we rounded off for ease of measuring.

$$z = 34' \times 15' = 510 \text{ square feet}$$



Be careful adding all of these up. Remember that there are two different **x** sections so we'll need to add it twice. **Section E** = $112.5 + 600 + 55 + 55 + 94.5 + 510 = 1,427$ square feet.

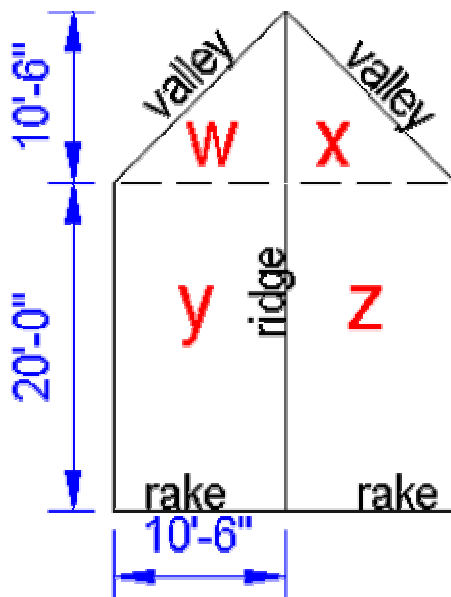
Section F

This section is simply a smaller version of **Section C** so we'll do it the same way.

$$w = (10.5' \times 10.5')/2 = 55 \text{ square feet}$$

$$y = 20' \times 10.5' = 210 \text{ square feet}$$

Don't forget to make quick measurements to ascertain that **x** and **z** are equal to **w** and **y**.



Section F = $55 + 55 + 210 + 210 = 530$ square feet.

Sum It Up

Now take all sections and add them up.

Section A = 225

Section B = 1,050

Section C = 1,125

Section D = 262.5

Section E = 1427

Section F = 530

Out total square footage is equal to 4,619.5 square feet. Or, roughly 46 squares.
Remember that 1 square = 100 square feet.