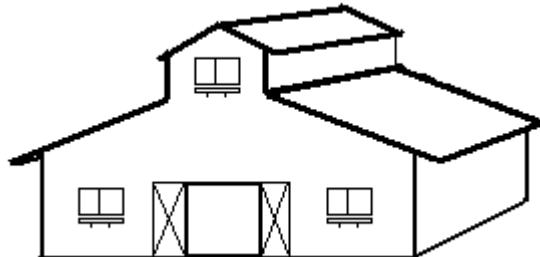


Roofing a Barn.



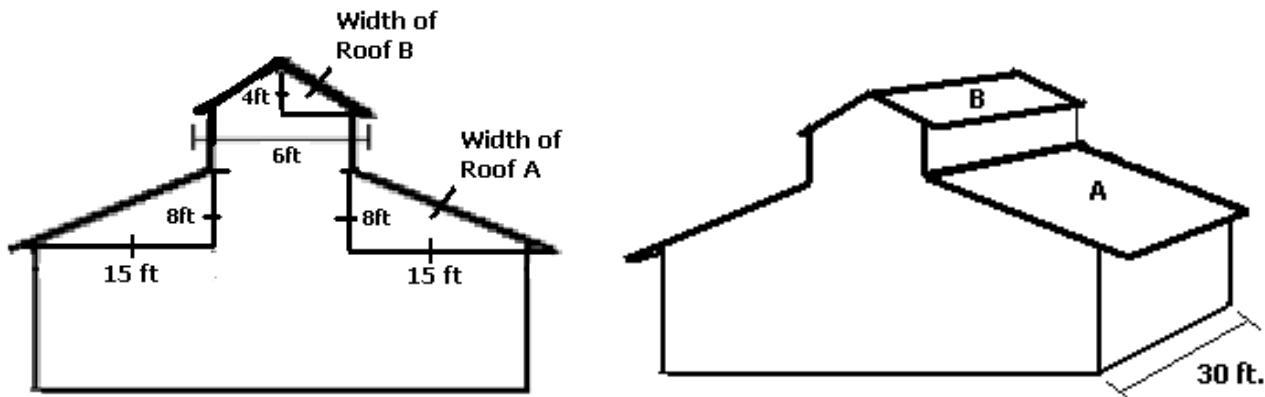
In this lab you will determine the cost of putting a roof on a barn. In order to find a true cost you will need to know the exact area of the roof, the cost of materials, and the cost of labor.

The barn is in need of a total roof replacement. The "Farmer" has already taken the roof off and wishes to put a new tin roof on. To put on a tin roof all you need to do is lay down sheets of plywood and nail the tin on top of the plywood.

Find out how much it would cost a roofer to cover the roof with plywood and then nail tin to the top of the plywood.

Part I. Finding the area of the roof

In order to determine the amount of plywood and tin that is needed for the roof you have to determine the area of the roof. Use the blueprints below to determine the total amount of area the roof of the barn will cover. (For accuracy purposes assume that the overhang is calculated in the distance given)



Notice that the barn is symmetrical. On each side of the barn we have "roof A" and "roof B" which are both rectangular in shape and have a length of 30 ft.

1.) Use Pythagorean theory to find the exact width of "roof A"

The exact width of "roof A" is _____

2.) The exact area of "roof A" is _____ sq. ft.

3.) Use Pythagorean theory to find the exact width of "roof B"

The exact width of "roof B" is _____

4.) The exact area of "roof B" is _____ sq. ft.

5.) Find the combined total area of roof of the entire barn. (Remember that each side of the barn has a "roof A" and "roof B")

Part II. Estimating the Cost of Roofing the Barn

Now that we know how much the area the roof actually covers we can find out how much the materials will cost to replace the roof. Use these materials with the prices and quantities listed below.

Plywood



\$34.85 per sheet of plywood
(each sheet 4' x 8')

Nails



\$10.95 per box
(each box will nail 250 sq. ft
of roof)

Tin



Cut to exact size need cost
\$4.78 per square foot

6.) How many pieces of plywood will be required to cover the total area of the roof? (Must buy whole sheets of Plywood)

7.) What is the total cost of plywood that will need to be purchased?

8.) How many boxes of nails must be purchased to complete the roof? (Can only buy whole boxes)

9.) What is the total cost of nails that will need to be purchased?

10.) What is the total amount of square foot of tin that is needed to be purchased? (This can be cut to the exact size needed)

11.) What is the total cost of tin that is needed to be purchased?

12.) What is the total cost of all three materials combined?