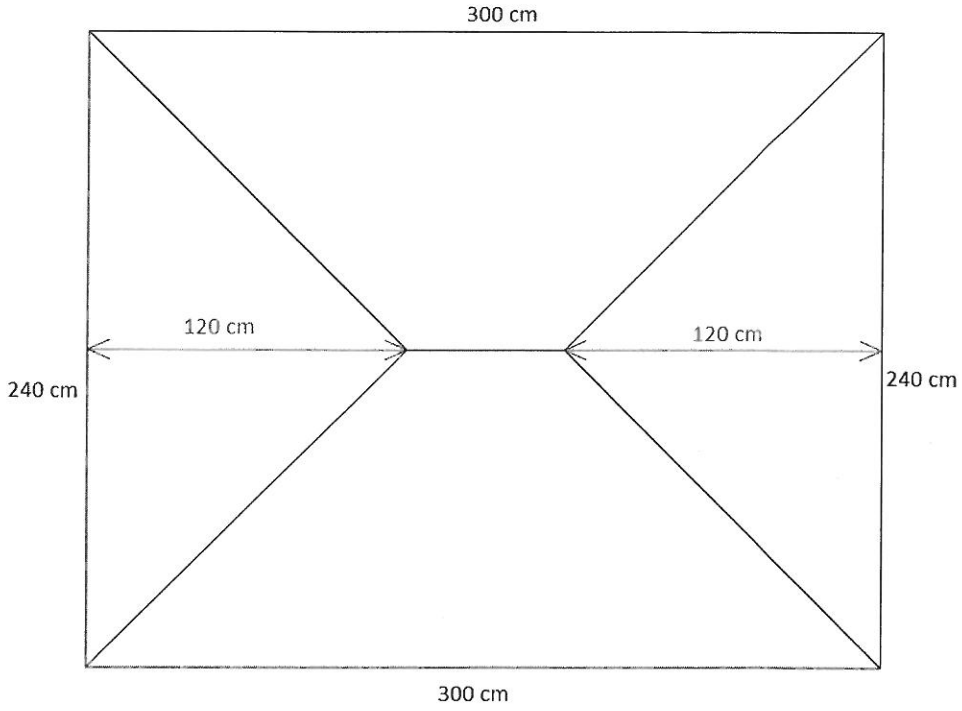
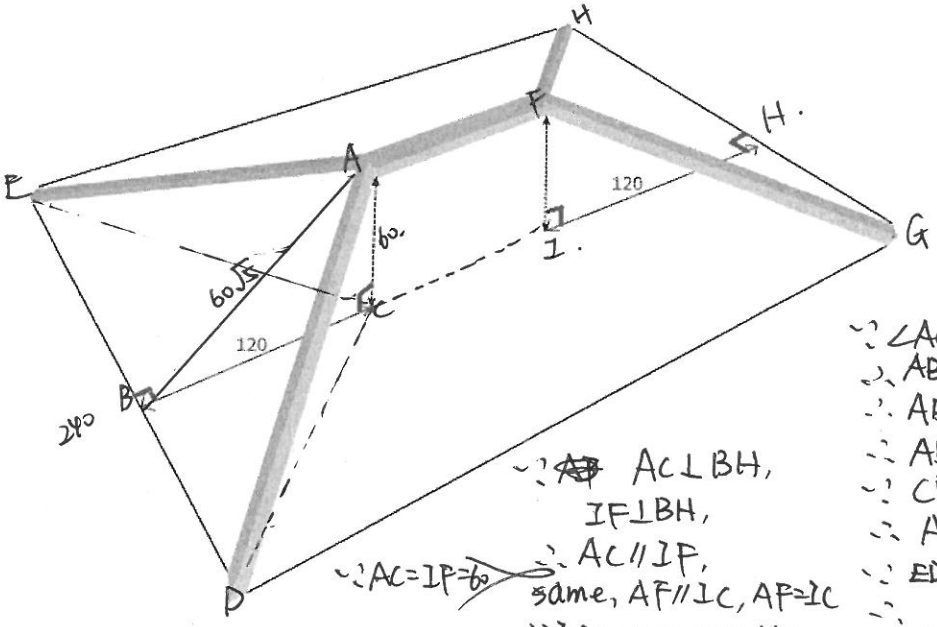
Here is a birds eye view:





∵ ∠ACB = 90°
∴ $AB^2 = AC^2 + BC^2$
∴ $AB^2 = 18000$
∴ $AB = 60\sqrt{5}$
∵ CD = CE, AC⊥BC
∴ AD = AE, AB⊥DE.
∵ ED = 240, EB = BD = ½ DE
∴ BE = BD = 120
∵ AB⊥DE,
∴ ∠ABD = ∠ABE = 90°
∴ $AB^2 + BD^2 = AD^2$
$AE^2 = BA^2 + BE^2$
∴ $AD^2 = AE^2 = 32400$
∴ AD = AE = 180, same,
FG = FH = 180.

∵ AC⊥BH,
IF⊥BH,
∴ AC∥IF,
∵ AC = IF = 60
same, AF∥IC, AF = IC
∵ IC = 300 − 120 − 120
= 60
∴ AF = 60

The lengths marked with dotted lines are equal to $60cm$.

What is the total length of wood needed to make these five main beams for the roof?

Can you reduce the amount of wood needed by changing the lengths marked in red?

With thanks to Don Steward, whose ideas formed the basis of this problem.

∴ AF + GF + FH + AD + AE = 60 + 720 = 780.