Frame:

$70" + 46" + 22" + 45" + 47" + 20" = 250"$

Posts:

$9" + 12" + 12" = 33"$ (or 132" for 1x4 or 198" for 1x2)

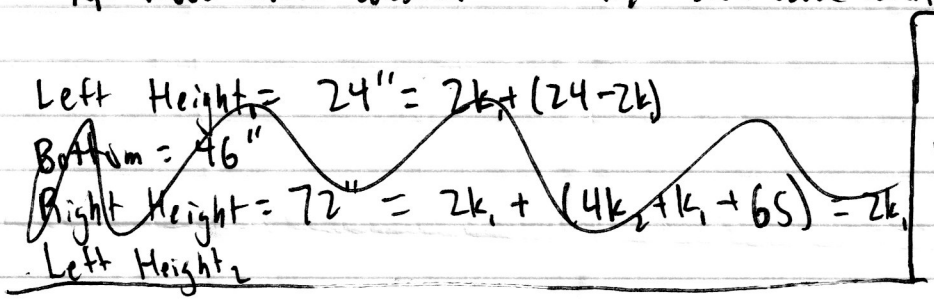
Shelves:

$18" + 18" + 18" + 18" = 72"$

* shelf supports

$(4" \times 4) + (4" \times 4) + (4" \times 4) + (4" \times 2) = 56"$

k_1 = wood (frame) width constant k_2 = shelf wood width constant



Left Height$_1$ = $24" = 2k_1 + (24 - 2k_1)$

Bottom = $46"$

Right Height = $72" = 2k_1 + (4k_2 + k_1 + 65) - 2k_1$

Left Height$_2$

$A = 24 - 2k_1$ $B = 46"$

$C = 48 - k_1$ $D = 20"$

$E = 72 - 2k_1$

$F = 46 - k_1$

Frame:

Height $= 72" = 2 \cdot k_1 + E$

$= 3 \cdot k_1 + A + C$

width $= 46" = B$

$= D + (46 - k_1 - D)$ (F)

if $k_1 = 1$,

$E = 70"$ $A = 22"$ $C = 47"$

$k = .75$ $E = 70.5"$ $A = 22.5"$ $47.25"$

$D = 20"$ $F = 45"$ $B = 46"$

$k = .75$ $D = 20"$ $F = 45.25"$ $B = 46$

Total = 250"

4x8 sheet wood

$48 \times 96 = 3(16 \times 96)$

$96 = 70 + 22 = 92 + 4 = E + A$

$96 = 45 + 20 = 65 + 31 = F + D$

$96 = 46 + 47 = 93 + 3 = B + C$

Shelfs:

$G = B - 2k_1 =$

$H = A - k_2 - I = 24 - 2k_1 - k_2 - I$

$I = A - k_2 - H = 24 - 2k_1 - k_2 - I$

$A = H + k_2 + I$

$J = 20 - 2 \cdot k_1$

if $k_1 = 1$ & $k_2 = 0.5$

$G = 44$ $H = 9.5$

$I = 12.5$ $J = 18$

Total $= 44 + 9.5 + (12.5) \cdot 2 + (18 \cdot 3)$

$= 132.5$