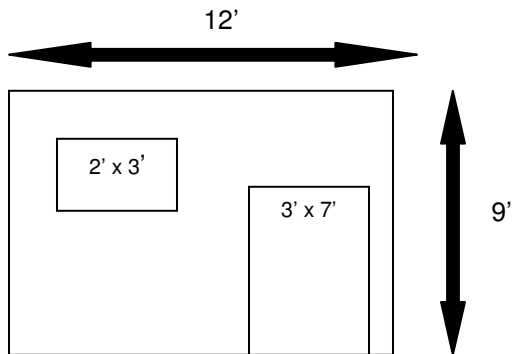# BPI Formula Reference Sheet

Area, Length, and Volume Calculations:

Formula: Area of a Rectangular Component (sq. ft.) = Length x Width
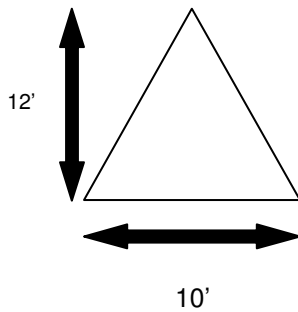
Gross Wall Area = 9' x 12' = 108 sq. ft.

Window Area = 2' x 3' = 6 sq. ft.

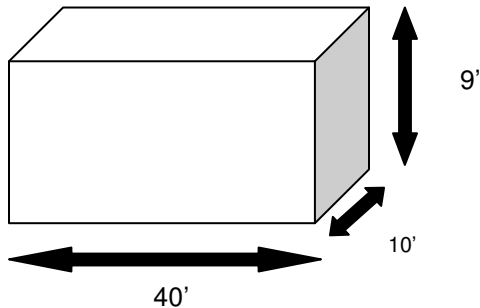Door Area = 3' x 7' = 21 sq. ft.

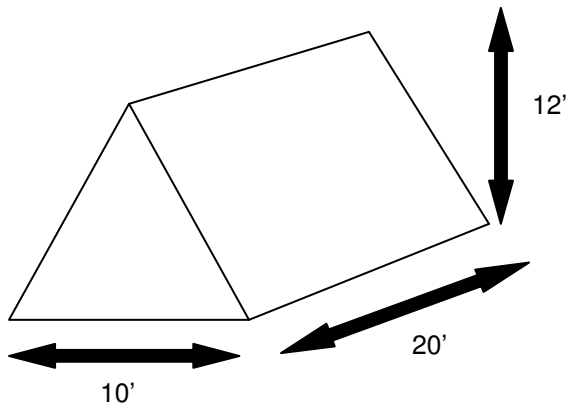**Formula: Area of a Triangular Component (sq. ft.) = Base x Height x .5**

Area of the Triangle = 10' x 12' x .5 = 60 sq. ft.

Formula: Volume of a Rectangular Component (cu. ft.) = Length x Width x Height

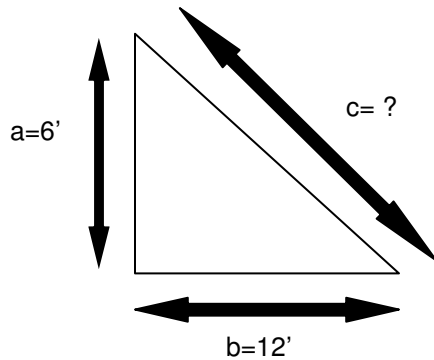Volume of the Rectangular Component =
40' x 10' x 9' = 3600 cu. ft.

Formula: Volume of a Triangular Component (cu. ft.) = Length x Base x Height x .5

12'

Volume of the Triangular Component =
10' x 20' x 12' x .5 = 1200 cu. ft.

20'

10'

Formula: Length of an unknown Right Triangle Leg = a^2 + b^2 = c^2

a=6'

c= ?

b=12'

a^2 + b^2 = c^2

(6 x 6) + (12 x 12) = c^2

(36) + (144) = c^2

c = √180

c = 13.4' or 13' 5"

Calculations for Heat Loss

Formulae: R-Value/U-Factor Conversion

U-Factor = 1/R-Value   OR   R-Value = 1/U-Factor

Formulae: Heat Loss Through a Building Component

= Area x ΔT/R-Value
OR
= U-Factor x ΔT x Area

Formula: Heating Degree Day

= Base Temperature (65) – Average Outdoor Temperature

Formula: Simple Payback (Savings to Investment Ratio)

= Initial Investment / Annual Savings

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