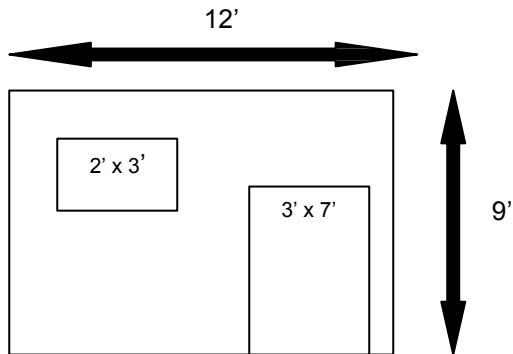


Formula Reference Sheet

Area, Length, and Volume Calculations:

Formula: Area of a Rectangular Component (sq. ft.) = Length x Width

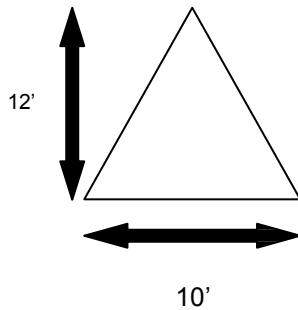


Gross Wall Area = 9' x 12' = 108 sq. ft.

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

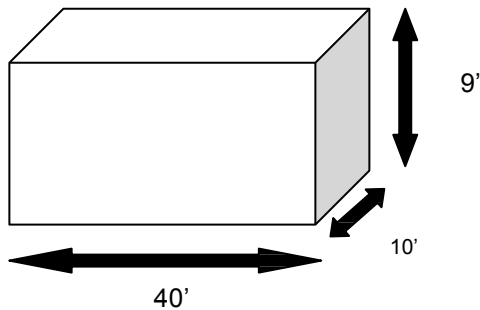
Door Area = 3' x 7' = 21 sq. ft.

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



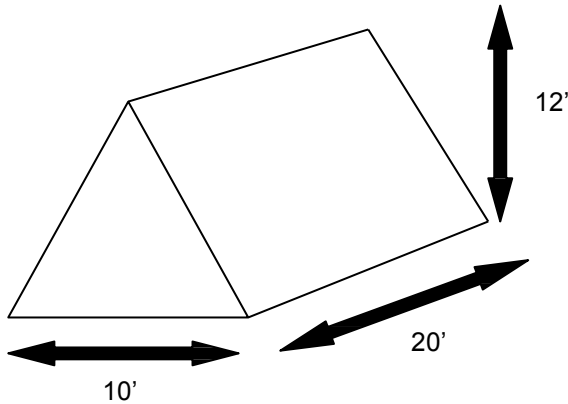
Area of the Triangle = 10' x 12' x .5 = 60 sq. ft.

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



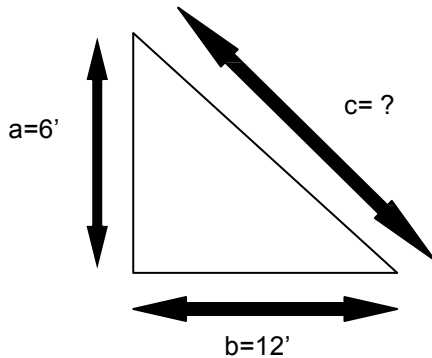
Volume of the Rectangular Component =
40' x 10' x 9' = 3600 cu. ft.

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



Volume of the Triangular Component =
 $10' \times 20' \times 12' \times .5 = 1200 \text{ cu. ft.}$

Formula: Length of an unknown hypotenuse



$$a^2 + b^2 = c^2$$
$$(6 \times 6) + (12 \times 12) = c^2$$
$$(36) + (144) = c^2$$
$$c = \sqrt{180}$$
$$c = 13.4' \text{ or } 13' 5''$$

Calculations For Heat Loss

Formulae: R-Value/U-Factor Conversion

$$\text{U-Factor} = 1/\text{R-Value} \quad \text{OR} \quad \text{R-Value} = 1/\text{U-Factor}$$

Formulae: Heat Loss Through a Building Component

$$= \text{Area} \times \Delta T / \text{R-Value}$$

OR

$$= \text{U-Factor} \times \Delta T \times \text{Area}$$

Formula: Heating Degree Day

$$= \text{Base Temperature } (65^\circ) - \text{Average Outdoor Temperature}$$

Formula: Simple Payback

$$= \text{Initial Investment} / \text{Annual Savings}$$

Annual BTUs Lost from Ventilation

= 1.08 x CFM x Annual HDD x hrs/day of Fan Operation