Greatest Common Divisor:
Used for fraction reduction in the FT2FIF and FT2FIFA function programs

$$GCD(a, b) := \left| \begin{array}{l} [\, n_1 \;\; n_2 \,] := [\, a \;\; b \,] \\ \text{while } n_2 \neq 0 \\ \quad \left| \begin{array}{l} t := n_2 \\ n_2 := \text{mod}(n_1, n_2) \\ n_1 := t \end{array} \right. \\ n_1 \end{array} \right.$$

$$Trunc(z, y) := \text{trunc}\left(\frac{z}{y}\right) \cdot y$$

$$Round(z, y) := \text{round}\left(\frac{z}{y}\right) \cdot y$$

$FR := 64$ **OR 16 OR 128 ...**

$$\text{appVersion}(4) = \text{"1.0.8253.4763"}$$

Convert decimal feet to annotated FIF

$$FT2FIFA(x) := \left| \begin{array}{l} Feet := Trunc(x, 1\ \text{ft}) \\ FT := \frac{Feet}{\text{ft}} \\ Inches := Trunc(x - Feet, 1\ \text{in}) \\ IN := \frac{Inches}{\text{in}} \\ Numerator := Round(FR \cdot (x - Feet - Inches), 1\ \text{in}) \\ NUM := \text{round}\left(\frac{Numerator}{\text{in}}, 0\right) \\ d := \text{eval}(GCD(NUM, FR)) \\ [\, FT \;\; IN \;\; NUM \;\; DEN \,] := \overrightarrow{\text{num2str}\left(\text{eval}\left(\left[\, FT \;\; IN \;\; \frac{NUM}{d} \;\; \frac{FR}{d} \,\right]\right)\right)} \\ \text{concat}(FT, \text{"' "}, IN, \text{"" "}, NUM, \text{"/"}, DEN) \end{array} \right.$$

$$FIFA2FT(x) := \left| \text{str2num}\left(\text{concat}\left(\text{strrep}\left(\text{strrep}\left(x, \text{"" "}, \text{"*'in+"}\right), \text{"' "}, \text{"*'ft+"}\right), \text{"*'in"}\right)\right)\right.$$

$$L_1 := \frac{\left(1\ \text{in} + \frac{3}{8}\ \text{in}\right)}{3} = 0.458\ \text{in}$$

$$FT2FIFA(L_1) = \text{"0' 0" 29/64"}$$

$$FIFA2FT(\text{"0' 0" 29/64"}) = 0.4531\ \text{in}$$

$$L_2 := 1\ \text{ft} + \frac{3}{8}\ \text{in} + 1\ \text{in} = 13.375\ \text{in}$$

$$FT2FIFA(L_2) = \text{"1' 1" 3/8"}$$

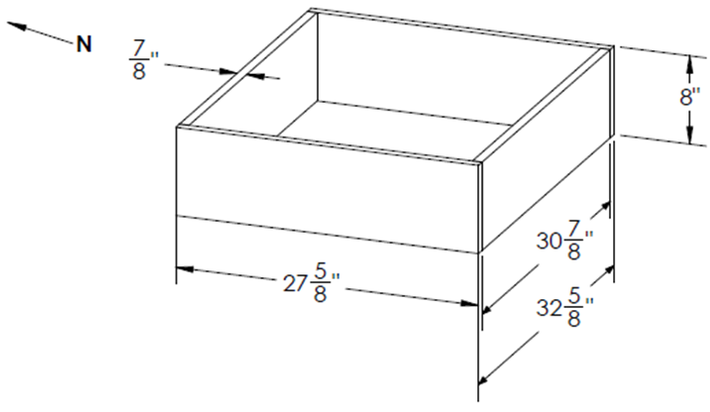
$$FIFA2FT(\text{"1' 1" 3/8"}) = 13.375\ \text{in}$$

Framing Stud centers: If you divide the 8-foot space we have been using by 5 we get a spacing of 19.2”. The black diamonds on the tape measure represent that spacing.

$L_3 := \frac{8\ ft}{5} = 19.2\ in$

$FT2FIFA(L_3) = "1'\ 7"\ 13/64"$

$FIFA2FT("1'\ 7"\ 13/64") = 19.2031\ in$



$LL := \left(30 + \frac{7}{8}\right) in = 30.875\ in$

$FT2FIFA(LL) = "2'\ 6"\ 7/8"$

$FIFA2FT("2'\ 6"\ 7/8") = 30.875\ in$

$LS := \left(27 + \frac{5}{8}\right) in = 27.625\ in$

$FT2FIFA(LS) = "2'\ 3"\ 5/8"$

$FIFA2FT("2'\ 3"\ 5/8") = 27.625\ in$

$2 \cdot LL = 61.75\ in$

$2 \cdot LS = 55.25\ in$

$Plank := 8\ ft = 96\ in$

$2 \cdot LL + LS = 89.375\ in$

$Total := 2 \cdot (LL + LS) = 117\ in$

$FT2FIFA(Total) = "9'\ 9"\ 0/1"$

$FIFA2FT("9'\ 9"\ 0/1") = 117\ in$