VICTOR®

C6000

ADVANCED CONSTRUCTION CALCULATOR

INSTRUCTION MANUAL

www.victortech.com (800) 628-2420

Table of Contents

Entering Linear, Square and Cubic Dimensions

Remember to press On/C On/C *to clear entries in between problems.*

LINEAR DIMENSIONS

Example: Enter 6 Feet 4-13/16 Inches.

KEY INPUT & DISPLAY	
On/C On/C	0
6 Feet 4 Inch 13 / 16	6_{Feet} $4\text{-}13/16_{\text{Inch}}$

SQUARE AND CUBIC DIMENSIONS

Example: Enter 54 Square Feet. Enter 54 Cubic Feet.

KEY INPUT & DISPLAY	
On/C On/C	0
54 Feet Feet	$54_{\text{SQ Feet}}$
54 Feet Feet Feet	$54_{\text{CU Feet}}$

Basic Math with Dimensions

Remember to press On/C On/C *to clear entries in between problems.*

ADDITION

Example: Add 3 Feet 6 Inches and 4-13/16 Inches.

KEY INPUT & DISPLAY	
On/C On/C	0
3 Feet 6 Inch +	3_{Feet} 6_{Inch}
4 Inch 13 / 16 =	3_{Feet} $10\text{-}13/16_{\text{Inch}}$

SUBTRACTION

Example: Subtract 11 Inches from 4 Feet 2 Inches.

KEY INPUT & DISPLAY	
On/C On/C	0
4 Feet 2 Inch −	4_{Feet} 2_{Inch}
11 Inch =	3_{Feet} 3_{Inch}

MULTIPLICATION

Example: Multiply 14 Feet by 5 Feet.

KEY INPUT & DISPLAY	
On/C On/C	0
14 Feet ×	14_{Feet}
5 Feet =	$70_{\text{SQ Feet}}$

DIVISION

Example: Divide 7 Feet 6 Inches by 2.

KEY INPUT & DISPLAY

On/C On/C	0
7 Feet 6 Inch ÷	$7_{Feet}\ 6_{Inch}$
2 =	$3_{Feet}\ 9_{Inch}$

PERCENTAGE CALCULATIONS

Example: Find 20% of 600 Feet.

KEY INPUT & DISPLAY

On/C On/C	0
6 0 0 Feet × 2 0 %	$120_{Feet}\ 0_{Inch}$

Conversions Between Dimensions

Remember to press On/C On/C *to clear entries in between problems.*

LINEAR CONVERSIONS

Example: Convert 13 Feet to other dimensions.

KEY INPUT & DISPLAY

On/C On/C	0
1 3 Feet	13_{Feet}
Conv Yds	4.333333_{YD}
Conv Feet	13_{Feet}
Conv Inch	156_{Inch}
Conv m	3.962_{M}
Conv 7	396.24_{CM}
Conv 9	3962.4_{MM}

Note: When performing multiple conversions, you only have to press the Conv key once except when accessing secondary functions, such as Conv 7 for Centimeters.

CONVERTING FEET-INCH-FRACTIONS TO DECIMAL FEET

Example: Convert 10 Feet 8-1/2 Inches to Decimal Feet. Then convert back to Feet-Inch-Fractions.

KEY INPUT & DISPLAY

On/C On/C	0
1 0 Feet 8 Inch 1 / 2	$10_{Feet}\ 8\text{-}1/2_{Inch}$
Conv Feet	10.70833_{Feet}
Feet*	$10_{Feet}\ 8\text{-}1/2_{Inch}$

*Repeated presses of Feet or Inch will toggle between Feet-Inch-Fractions and Decimal Feet or Inches.

CONVERTING DECIMAL FEET TO FEET-INCH-FRACTIONS

Example: Convert 20.7 Feet to Feet-Inch-Fractions.

KEY INPUT & DISPLAY

On/C On/C	0
2 0 · 7 Feet	20.7_{Feet}
Conv Feet	$20_{\text{Feet}}\ 8\text{-}3/8_{\text{Inch}}$
Feet*	20.7_{Feet}

*Repeated presses of Feet or Inch will toggle between Feet-Inch-Fractions and Decimal Feet or Inches.

CONVERTING FRACTIONAL INCHES TO DECIMAL INCHES

Example: Convert 10-1/2 Inches to Decimal Inches. Then convert to Decimal Feet.

KEY INPUT & DISPLAY

On/C On/C	0
1 0 Inch 1 / 2	$10\text{-}1/2_{\text{Inch}}$
Conv Inch	10.5_{Inch}
Feet	0.875_{Feet}
Inch*	$10\text{-}1/2_{\text{Inch}}$

*Repeated presses of Feet or Inch will toggle between Feet-Inch-Fractions and Decimal Feet or Inches.

CONVERTING DECIMAL INCHES TO FRACTIONAL INCHES

Example: Convert 10.25 Inches to Fractional Inches. Then convert to Decimal Feet.

KEY INPUT & DISPLAY

On/C On/C	0
1 0 · 2 5 Inch	10.25_{Inch}
Conv Inch	$10\text{-}1/4_{\text{Inch}}$
Feet Feet*	0.854167_{Feet}

*Repeated presses of Feet or Inch will toggle between Feet-Inch-Fractions and Decimal Feet or Inches.

SQUARE CONVERSIONS

Example: Convert 21 Square Feet to other square dimensions:

KEY INPUT & DISPLAY

On/C On/C	0
2 1 Feet Feet	$21_{\text{SQ Feet}}$
Conv Inch	$3024_{\text{SQ Inch}}$
Conv Yds	$2.333333_{\text{SQ Yd}}$
Conv m	$1.950964_{\text{SQ M}}$
Conv 7 *(cm)*	$19509.64_{\text{SQ CM}}$

CUBIC CONVERSIONS

Example: Convert 25 Cubic Feet to other cubic dimensions:

KEY INPUT & DISPLAY	
On/C On/C	0
2 5 Feet Feet Feet	$25_{\text{CU Feet}}$
Conv Inch	$43200_{\text{CU Inch}}$
Conv Yds	$0.925926_{\text{CU YD}}$
Conv m	$0.707921_{\text{CU M}}$

WEIGHT CONVERSIONS

Example: Convert 4,500 Pounds to Kilograms, Tons and Metric Tons:

KEY INPUT & DISPLAY	
1. Enter Pounds:	
On/C On/C	0
4 5 0 0 Conv 4 *(lbs)*	4500_{LB}
2. Covert to Kilgrams, Tons and Metric Tons:	
Conv 1 *(kg)*	2041.166_{kG}
Conv 6 *(tons)*	2.25_{Ton}
Conv 3 *(met tons)*	$2.041166_{\text{MET Ton}}$

WEIGHT PER VOLUME CONVERSIONS

Example: Convert 7 Cubic Yards of concrete to Pounds, Kilograms, Tons and Metric Tons, if concrete weights 2.0 Tons per Cubic Yard.

KEY INPUT & DISPLAY	
1. Enter Tons per Cubic Yard:	
On/C On/C	0
2 . 0 Stor 0* *(wt/vol)*	STORED 2.0 Ton Per CU YD
2. Enter number of Cubic Yards	
7 Yds Yds Yds	$7_{\text{CU YD}}$
3. Covert to Pounds, Kilograms, Tons and Metric Tons:	
Conv 1 *(kg)*	28000_{LB}
Conv 1 *(kg)*	12700.59_{kG}
Conv 6 *(tons)*	14_{Ton}
Conv 3 *(met tons)*	$12.70059_{\text{MET Ton}}$

*If calculator does not display Tons per Cubic Yard, keep pressing the 0 key until the desired format is displayed (e.g., Ton Per CU YD, LB Per CU YD, LB Per CU FEET, MET Ton Per CU M or kG Per CU M).

Linear Calculations

Remember to press [On/C] [On/C] *to clear entries in between problems.*

CUTTING BOARDS

Example: How many 5 Foot 2 Inch pieces can be cut from one 20 Foot board?

KEY INPUT & DISPLAY

Divide board length by smaller cuts:

[On/C] [On/C]	**0**
2 0 Feet	**20_{Feet}**
÷ 5 Feet 2 Inch =	**3.870968** *(3 whole pieces)*

WINDOW MEASUREMENT

Example: What is the total width of four window openings, if each measures 4 Feet 8 Inches in width?

KEY INPUT & DISPLAY

1. Enter window width:

[On/C] [On/C]	**0**
4 Feet 8 Inch	**4_{Feet} 8_{Inch}**

2. Find total width:

× 4 =	**18_{Feet} 8_{Inch}**

3. Covert to Decimal Feet:

Feet	**18.66667_{Feet}**

CALCULATING THE CENTER POINT

Example: You have a room that measures 14 Feet 6 Inches by 11 Feet 7 Inches. Find the center point to install a ceiling fan.

KEY INPUT & DISPLAY

1. Divide length in half, to figure first center point:

[On/C] [On/C]	**0**
1 4 Feet 6 Inch	**14_{Feet} 6_{Inch}**
÷ 2 =	**7_{Feet} 3_{Inch}**

2. Divide width in half, to figure second center point:

1 1 Feet 7 Inch	**11_{Feet} 7_{Inch}**
÷ 2 =	**5_{Feet} 9-1/2$_{Inch}$**

Therefore, you should install the fan at the intersection of 7 Feet 3 Inches length and 5 Feet 9-1/2 Inches width.

Area Calculations

Remember to press On/C On/C *to clear entries in between problems.*

SQUARE AREA (x^2)

Example: What is the area of a square room with sides measuring 6 Feet 8 Inches?

KEY INPUT & DISPLAY

On/C On/C	0
6 Feet 8 Inch Conv % (x^2)	44.44444 SQ Feet

AREA OF A RECTANGULAR ROOM (LxW)

Example: What is the area of a room measuring 10 Feet 6 Inches by 17 Feet 11 Inches?

KEY INPUT & DISPLAY

On/C On/C	0
1 0 Feet 6 Inch	10 Feet 6 Inch
× 1 7 Feet 1 1 Inch =	188.125 SQ Feet

Note: You can also find area using the Length and Width keys as seen in the next problem.

USING MULTI-FUNCTION Width KEY TO FIND AREA, SQUARE-UP AND PERIMETER

Example: Find the area, square-up and perimeter of a space measuring 22 Feet 5 Inches by 30 Feet 5 Inches:

KEY INPUT & DISPLAY

On/C On/C	0
2 2 Feet 5 Inch Length	LNTH 22 Feet 5 Inch
3 0 Feet 5 Inch Width	WDTH 30 Feet 5 Inch
Width	AREA 681.8403 SQ Feet
Width	SQUP 37 Feet 9-7/16 Inch
Width	PER 105 Feet 8 Inch

Volume Calculations

Remember to press On/C On/C *to clear entries in between problems.*

RECTANGULAR CONTAINERS (LxWxH)

Example: What is the volume of a rectangular container that measures 3 Feet by 2 Feet 10-5/8 Inches by 2 Feet 2 Inches?

KEY INPUT & DISPLAY

1. Find volume in Cubic Feet:

On/C On/C	0
3 Feet	3_{Feet}
× 2 Feet 1 0 Inch 5 / 8	$2_{\text{Feet}}\ 10\text{-}5/8_{\text{Inch}}$
× 2 Feet 4 Inch =	$20.19792_{\text{CU Feet}}$ *

2. Convert to Cubic Yards:

Conv Yds	$0.748071_{\text{CU YD}}$

*If the "Volume Display Format" Preference Setting is set to Cubic Yards or Cubic Meters, your result will display accordingly.

USING THE MULTI-FUNCTION Height KEY TO FIND VOLUME, WALL AREA AND ROOM AREA

Example: Find the volume, wall area and total surface/room area* if you have a length of 20 Feet, width of 25 Feet and height of 15 Feet.

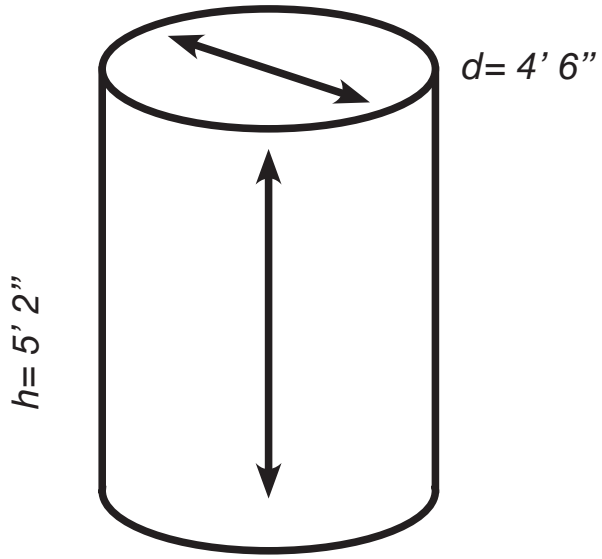
*Room Area inculdes four walls plus ceiling area

KEY INPUT & DISPLAY

On/C On/C	0
2 0 Feet Length	$\text{LNTH}\ 20_{\text{Feet}}\ 0_{\text{Inch}}$
2 5 Feet Width	$\text{WDTH}\ 25_{\text{Feet}}\ 0_{\text{Inch}}$
1 5 Feet Height	$\text{HGHT}\ 15_{\text{Feet}}\ 0_{\text{Inch}}$
Height	$\text{VOL}\ 7500._{\text{CU Feet}}$
Height	$\text{WALL}\ 1350._{\text{SQ Feet}}$
Height	$\text{ROOM}\ 1850._{\text{SQ Feet}}$

VOLUME OF A CYLINDER

Example: Calculate the volume of a cylinder with a diameter of 4 Feet 6 Inches and a height of 5 Feet 2 Inches:



Note: For a cylinder, use the Column function.

KEY INPUT & DISPLAY

1. Find Circle area:

On/C On/C	0
4 Feet 6 Inch	$4_{\text{Feet}}\ 6_{\text{Inch}}$
Circ Circ	AREA $15.90431_{\text{SQ Feet}}$

2. Enter height and find volume:

5 Feet 2 Inch Height	HGTH $5_{\text{Feet}}\ 2_{\text{Inch}}$
Conv Circ	COL $82.17228_{\text{CU Feet}}$

VOLUME OF A CONE

Example: Calculate the volume of a Cone with a diameter of 4 Feet 3 Inches and a height of 8 Feet:

KEY INPUT & DISPLAY

1. Find Circle area:

On/C On/C	0
4 Feet 3 Inch Circ	DIA $4_{\text{Feet}}\ 3_{\text{Inch}}$
Circ	AREA $14.18625_{\text{SQ Feet}}$

2. Enter height and find volume:

8 Feet Height	HGTH $8_{\text{Feet}}\ 0_{\text{Inch}}$
Conv Circ Circ Circ*	CONE $37.83001_{\text{CU Feet}}$

* To access Cone volume, you must press the Circ key three times after Conv .

WEIGHT PER VOLUME CALCULATIONS

Example: Convert 7 Cubic Yards of concrete to Pounds, Kilograms, Tons and Metric Tons, if concrete weights 2.0 Tons per Cubic Yard.

KEY INPUT & DISPLAY

1. Enter Tons per Cubic Yard:

On/C On/C — **0**

2 . 0 Stor 0* *(wt/vol)* — STORED **2.0** Ton Per CU YD

2. Enter number of Cubic Yards

7 Yds Yds Yds — **7** CU YD

3. Covert to Pounds, Kilograms, Tons and Metric Tons:

Conv 1 *(kg)* — **28000** LB

Conv 1 *(kg)* — **12700.59** kG

Conv 6 *(tons)* — **14** Ton

Conv 3 *(met tons)* — **12.70059** MET Ton

*If calculator does not display Tons per Cubic Yard, keep pressing the 0 key until the desired format is displayed (e.g., Ton Per CU YD, LB Per CU YD, LB Per CU FEET, MET Ton Per CU M or kG Per CU M).

Blocks/Bricks

Remember to press On/C On/C *to clear entries in between problems.*

NUMBER OF BLOCKS, BASED ON ENTERED LENGTH AND HEIGHT

Example: You are building an "L" shaped retaining wall out of standard 8-Inch x 16 Inch size blocks (Note: this is the default block size of 128 Square Inches). One side of the retaining wall is 24 Feet long, and the other side is 10 Feet 6 Inches long. The wall is to be 5 Feet high. How many blocks are required to build this wall? Add 5% waste allowance.

Note: The calculated area from an entered length and height will be used for calculating blocks if these values exist.

KEY INPUT & DISPLAY

1. Find total wall length:

On/C On/C — **0**

Rcl Conv 4* *(Blk Size)* — B--AR STORED **128.** SQ Inch

2 4 Feet + 1 0 Feet 6 Inch = — **34** Feet **6** Inch

Length — LNTH **34** Feet **6** Inch

2. Enter wall height as height:

5 Feet Height — HGTH **5** Feet **0** Inch

3. Find the number of blocks and add 5% waste allowance:

Conv Length — **BLKS 194.0625**

+ 5 % — **203.7656**

(204 Blocks)

Cont'd on Page 10

*If Rcl Conv Length (Blocks) does not result in 128 Square Inches, then enter the following:

1 2 8 Inch Inch Stor 4 *(Blk Size)* **B--AR** STORED **128.** SQ Inch

- OR -

8 Inch × 1 6 Inch = **128.** SQ Inch

Stor 4 *(Blk Size)* **B--AR** STORED **128.** SQ Inch

NUMBER OF BLOCKS, BASED ON ENTERED AREA

Example: Find the number of blocks required for an area measuring 250 Square Feet. Then add a 2% waste allowance.

KEY INPUT & DISPLAY

On/C On/C **0**

2 5 0 Feet Feet *(Blocks)* **250** SQ Feet

Conv Length **BLKS 281.25**

+ 2 % **286.875**

(287 Blocks)

NUMBER OF BLOCKS, BASED ON CALCULATED PERIMETER

Example: Calculate the wall's perimeter if the length is 33 Feet and width is 42 Feet. Then, find the number of blocks required. Add a 4% waste allowance.

KEY INPUT & DISPLAY

1. Enter wall area:

On/C On/C **0**

3 3 Feet Length **LNTH 33** Feet **0** Inch

4 2 Feet Width **WDTH 42** Feet **0** Inch

2. Find the perimeter:

Width Width Width **PER 150** Feet **0** Inch

3. Find the number of blocks for the displayed perimeter, and add 4% waste allowance:

= Conv Length *(Blocks)* **BLKS 112.50**

+ 4 % **117**

(117 Blocks)

NUMBER OF BLOCKS, BASED ON ENTERED LENGTH

Example: Calculate the number of blocks required for a length of 25 Feet.

KEY INPUT & DISPLAY

1. Enter wall area:

On/C On/C	**0**
2 5 Feet	**25 Feet**
Conv Length *(Blocks)*	**BLKS 18.75**

2.Display the stored block length*

Length	**B-LN STORED 16 Inch**

Note: The calculator will calculate the number of blocks based on the entered length and the stored block size (length).

*If the stored block length is not 16 Inches, then enter the following:

1 6 Inch Stor 4 *(Blk Size)*	**B-LN STORED 16 Inch**

NUMBER OF "FACE" BRICKS

Example: How many "face" bricks (21 Square Inch size) will you need to purchase to cover a 30 Foot by 6 Foot wall, if you include a 3% waste allowance? Use the Blocks function for calculating bricks.

KEY INPUT & DISPLAY

1. Enter and store brick area into Block Size storage key:

On/C On/C	**0**
2 1 Inch Inch Stor 4 *(Blk Size)*	**B--AR STORED 21 SQ Feet**

2.Enter length and height of wall:

3 0 Feet Length	**LNTH 30 Feet 0 Inch**
6 Feet Height	**HGHT 6 Feet 0 Inch**

3.Find the number of bricks and add a 3% waste allowance:

Conv Length *(Blocks)*	**BLKS 1234.286**
+ 3 %	**1271.314** *(1272 Blocks)*

4. Reset block area to default value:

1 2 8 Inch Inch Stor 4 *(Blk Size)*	**B--AR STORED 128. SQ Inch**

NUMBER OF "PAVER" BRICKS

Example: How many "paver" (32 Square Inch size) will you need to fill a 10 Foot by 15 Foot walkway?

KEY INPUT & DISPLAY

1. Enter and store brick area into Block Size storage key:

On/C On/C — **0**

3 2 Inch Inch Stor 4 *(Blk Size)* — **B--AR** STORED **32** SQ Feet

2.Enter length and width (as height):

1 0 Feet Length — **LNTH 10** Feet **0** Inch

1 5 Feet Height — **HGHT 15** Feet **0** Inch

3.Find the number of bricks:

Conv Length *(Blocks)* — **BLKS 675**
(675 Blocks)

4. Reset block area to default value:

1 2 8 Inch Inch Stor 4 *(Blk Size)* — **B--AR** STORED **128.** SQ Inch

Concrete/Paving

Remember to press On/C On/C *to clear entries in between problems.*

VOLUME OF CONCRETE FOR A DRIVEWAY

Example: Find the Cubic Yards of concrete required to pour a driveway with the following dimensions: 40 Feet 5 Inches long by 12 Feet 11 Inches wide by 4 Inches deep. If concrete costs $55 per Cubic Yard, what is the total cost?

KEY INPUT & DISPLAY

1. Multiply the length times the width to find the area:

On/C On/C — **0**

4 0 Feet 5 Inch — **40** Feet **5** Inch

× 1 2 Feet 1 1 Inch — **12** Feet **11** Inch

= — **522.0486** SQ Feet

2. Multiply times the depth to find the volume:

× 4 Inch = — **6.445045** CU YD *

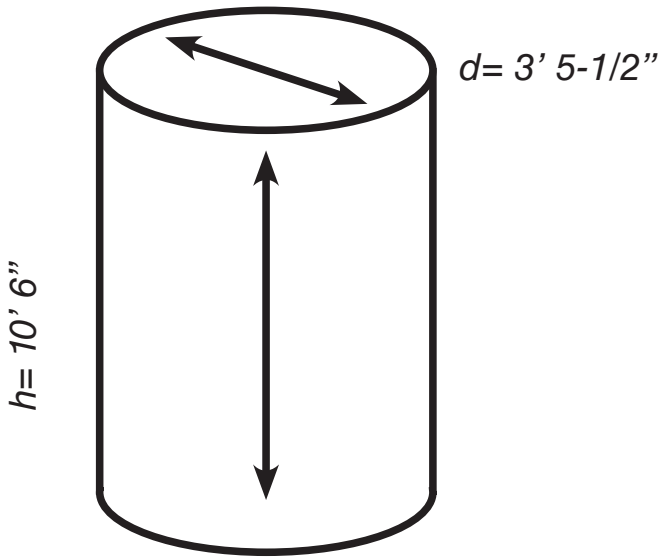
3. Multiply times the per Unit Cost to find the total cost of concrete:

× 5 5 Conv 0 *(Cost)* — **$354.48**

*This answer will automatically display in Cubic Yards due to the multiplication of mixed units, unless the preference setting for volume display has been changed from the default Standard Setting.

CONCRETE COLUMNS

Example: Find the Cubic Yards of concrete required to pour five columns, if each has a diameter of 3 Feet 5-1/2 Inches and a height of 10 Feet 6 Inches. If the concrete weighs 1.75 Tons per Cubic Yard, what is the total weight in Tons? in Pounds? in Kilograms?



KEY INPUT & DISPLAY

1. Enter weight in Tons per Cubic Yard:

(1) (.) (7) (5) Stor (0) *(wt/vol)* — STORED **1.75** Ton Per CU YD

2. Enter diameter and find Circle area:

On/C On/C — **0**

(3) Feet (5) Inch (1) (/) (2) — **3** Feet **5-1/2** Inch

Circ Circ — **AREA 9.393417** SQ Feet

3. Enter height and find total volume of concrete:

(1) (0) Feet (6) Inch Height — **HGTH 10** Feet **6** Inch

Conv Circ *(Column/Cone)* — **COL 98.63087** CU Feet

Conv Yds — **COL 3.652995** CU YD

(×) (5) (=) — **18.26498** CU YD

4. Convert volume to weight in tons, pounds, and kilograms:

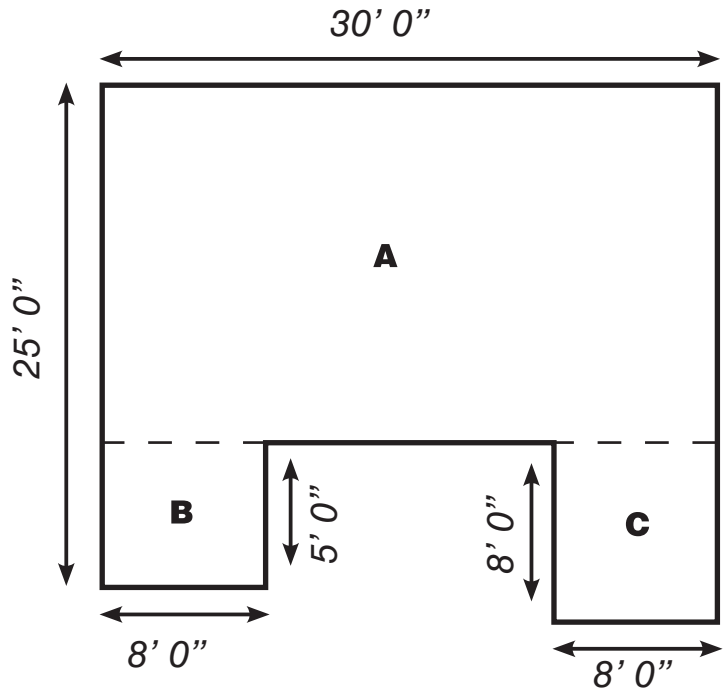
Conv (6) *(tons)* — **31.96371** Ton

Conv (4) *(lbs)* — **63927.42** LB

Conv (1) *(kg)* — **28996.99** kG

COMPLEX CONCRETE VOLUME

Example: You're going to pour an odd-shaped patio 4-1/2 Inches deep with the dimensions shown below. Calculate the total area (by dividing the drawing into three rectangles) and determine the total Yards of concrete required. Then, find the total cost, if concrete costs $45 per Cubic Yard.



KEY INPUT & DISPLAY

1. Find area of Part " A " and store into Memory:

On/C On/C	0
2 5 Feet −	$25_{\text{Feet}}\ 0_{\text{Inch}}$
5 Feet =	$20_{\text{Feet}}\ 0_{\text{Inch}}$
× 3 0 Feet =	$600_{\text{SQ Feet}}$
M+	M+ $600_{\text{SQ Feet}}$ M

2. Find area of Part " B " and store into Memory:

5 Feet	5_{Feet} M
× 8 Feet =	$40._{\text{SQ Feet}}$ M
M+	M+ $40._{\text{SQ Feet}}$ M

3. Find area of Part " C " and store into Memory:

8 Feet	8_{Feet} M
× 8 Feet =	$64._{\text{SQ Feet}}$ M
M+	M+ $64._{\text{SQ Feet}}$ M

4. Find total area and clear Memory:

Rcl Rcl	M+ $704_{\text{SQ Feet}}$ M

5. Find total Cubic Yards:

× 4 Inch 1 / 2 =	$9.777778_{\text{CU YD}}$

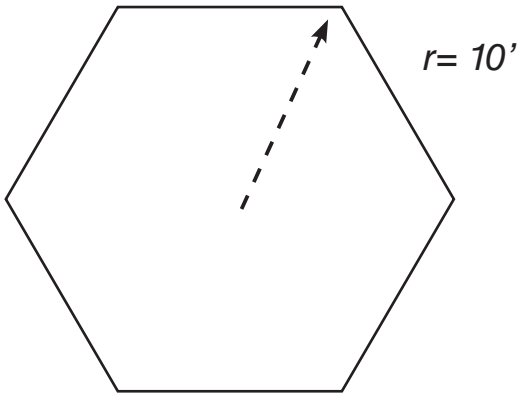
Cont'd on Page 15

6. Find total cost:

× 4 5 Conv 0 *(Cost)* **$440.00**

POLYGON, FINDING ANGLES BASED ON ENTERED RADIUS AND NUMBER OF SIDES

Example: You're going to pour a polygon-shaped patio. Find the polygon values if the radius is 10 Feet and the number of sides is 6.



KEY INPUT & DISPLAY

1. Enter radius and number of sides* to calculate the full angle:

On/C On/C **0**

1 0 Feet Conv Arc *(Radius)* **RAD 10 Feet 0 Inch**

6 Conv Run *(Polygon)* **FULL 120.00°**

2. Then calculate the bi-sect angle, side length, perimeter, and polygon area:

Run **HALF 60.00°**

Run **SIDE 10 Feet 0 Inch**

Run **PER 60 Feet 0 Inch**

Run **AREA 259.8076 SQ Feet**

*You must enter more than three sides for a multi-sided polygon figure or the calculator will display "None."

CONCRETE FOOTINGS

Example: Find the volume of concrete required for a 15 Inch by 7 Inch footing that measures 230 Feet 6 Inches in length. Then find the volume of five footings of the same size.

KEY INPUT & DISPLAY

1. Calculate and store footing area:

On/C On/C **0**

1 5 Inch × 7 Inch = Stor 6 *(Ftg Area)* **F-AR STORED 105. SQ Feet**

2.Enter length and find footing volume:

2 3 0 Feet 6 Inch Conv Width *(Footing)* **FTG 6.224923 CU YD**

To find the volume of multiple footings of the same size, multiply times the total number of footings:

3.Multiply by 5 footings to find total concrete volume:

× 5 = **31.12461 CU YD**

4. Clear and return stored footing size to default:

Conv × **ALL CLEArEd**

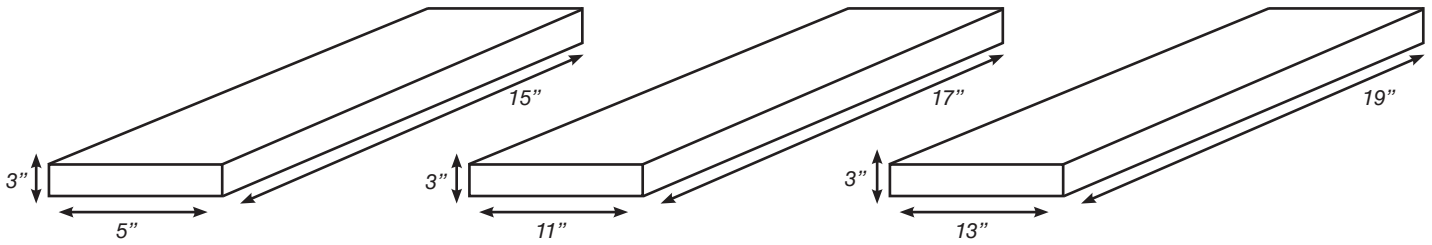
Board Feet - Lumber Estimation

Remember to press [On/C] [On/C] *to clear entries in between problems.*

This calculator easily calculates board feet for lumber estimation problems. The default entry format for Board Feet is "Inch x Inch x Feet" (e.g., 2 x 4 x 14 is 2 Inches x 4 Inches x 14 Feet). You can also convert Cubic values (volume) to Board Feet.

TOTAL BOARD FEET – WITH DOLLAR COST

Example: Find the total board feet for the following board sizes:



If the boards cost $300 per MBM., what is the total cost? Use [Conv] [0] (cost) to figure total lumber cost.

KEY INPUT & DISPLAY

1. Enter board sizes, convert to board feet and store in memory:

[On/C] [On/C]	**0**
[3] [×] [5] [×] [1] [5] [Conv] [8] [M+]	**BDFT 18.75** M
[3] [×] [1] [1] [×] [1] [7] [Conv] [8] [M+]	**BDFT 46.75** M
[3] [×] [1] [3] [×] [1] [9] [Conv] [8] [M+]	**BDFT 61.75** M

2. Recall total Board Feet and calculate total cost:

[Rcl] [Rcl]	**BDFT 127.25**
[×] [3] [0] [0] [Conv] [0] *(Cost)*	**$38.$^{18}**

Note: Unit cost is entered in the standard per thousand board foot measure (MBM) format.

NUMBER OF BOARD FEET BASED ON ENTERED VOLUME

Example: Find the number of Board Feet required for a volume of 200 Cubic Feet.

KEY INPUT & DISPLAY

Enter Cubic Feet and convert to Board Feet:

[On/C] [On/C]	**0**
[2] [0] [0] [Feet] [Feet] [Feet]	**200**$_{\text{CU Feet}}$
[Conv] [8] *(Bd Ft)*	**BDFT 2400.**

Circle and Arc Calculations

Remember to press On/C On/C *to clear entries in between problems.*

Circle/Arc values can be solved by entering any two of the following values: Arc Length/Angle, Diameter/Radius, Chord Length (Run), and Segment Rise (Rise). It is recommended that you clear the calculator (press On/C twice) after calculating right-triangle solutions prior to beginning an Arc or Circle solution.

Note: Circle/Arc solutions cannot be solved for the following cases:

- Entered Arc Length and Chord Length (Run) or Entered Arc Length and Segment Rise (Rise)

CIRCUMFERENCE AND AREA OF A CIRCLE

Example: Find the area and circumference of a circle with a diameter of 12 Inches:

KEY INPUT & DISPLAY	
On/C On/C	**0**
1 2 Inch Circ	**DIA 12$_{Inch}$**
Circ	**AREA 113.0973$_{SQ\ Inch}$**
Circ	**CIRC 37-11/16$_{Inch}$**

ARC LENGTH – DEGREE AND DIAMETER KNOWN

Example: Find the arc length of an 75˚ portion of a circle with a 8-foot diameter:

KEY INPUT & DISPLAY	
On/C On/C	**0**
8 Feet Circ	**DIA 8$_{Feet}$ 0$_{Inch}$**
7 5 Arc	**ARC 75.00˚**
Arc	**ARC 5$_{Feet}$ 2-13/16$_{Inch}$**

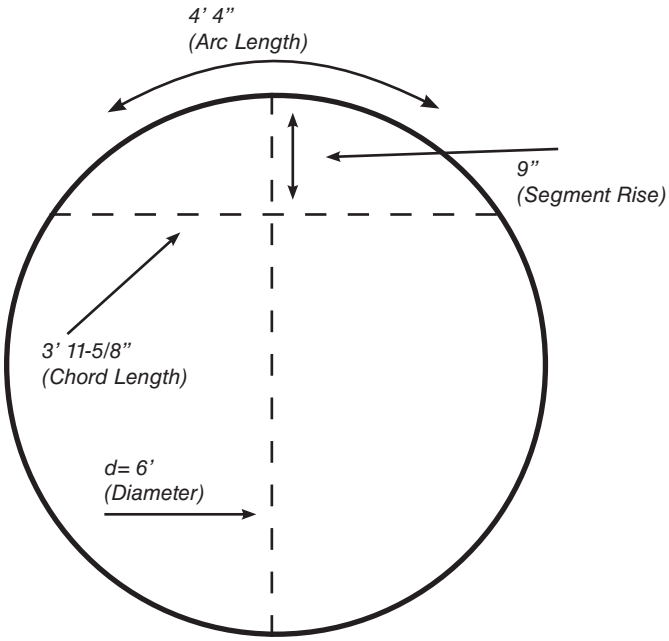
ARC LENGTH – CHORD LENGTH AND SEGMENT RISE KNOWN

Example: Find the arc length and radius of a circle with a 4-feet 8-inch chord length and 2-foot 6-inch segment rise.

KEY INPUT & DISPLAY	
1. Enter the chord length of the segment as Run:	
On/C On/C	**0**
4 Feet 8 Inch Run	**RUN 4$_{Feet}$ 8$_{Inch}$**
2. Enter the height of the segment as Rise:	
2 Feet 6 Inch Rise	**RISE 2$_{Feet}$ 6$_{Inch}$**
3. Find the radius:	
Conv Arc *(Radius)*	**RAD 2$_{Feet}$ 4-1/16$_{Inch}$**
4. Find the arc angle:	
Arc	**ARC 187.90˚**
5. Find the arc length:	
Arc	**ARC 7$_{Feet}$ 8-1/16$_{Inch}$**

ARC CALCULATIONS – ARC LENGTH AND DIAMETER KNOWN

Example: Find the arc degree, chord length, segment rise, segment and pie slice area, and segment rise, given a 6 Foot diameter and an arc length of 4 Feet 4 Inches:



KEY INPUT & DISPLAY

1. Enter Circle diameter (Note: Enter diameter into the Circ key):

On/C On/C	**0**
6 Feet Circ	**DIA 6_{Feet} 0_{Inch}**

2. Enter arc length:

4 Feet 4 Inch Arc	**ARC 4_{Feet} 4_{Inch}**

3. Find degree of arc:

Arc	**ARC 82.76˚**

4. Find chord length:

Arc	**CORD 3_{Feet} $11\text{-}5/8_{Inch}$**

5. Find segment area:

Arc	**SEG $2.035873_{SQ\ Feet}$**

6. Find pie slice area:

Arc	**PIE $6.5_{SQ\ Feet}$**

7. Find segment rise:

Arc	**RISE 0_{Feet} 9_{Inch}**

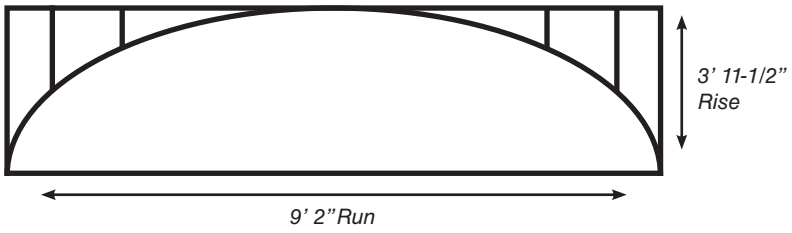
Arched Segment Walls

Remember to press On/C On/C *to clear entries in between problems.*

The arc function can also calculate the outside (default) and inside lengths of arched walls. The outside arched wall lengths are measured outside of the arc (see diagram below). The inside arched wall lengths are measured inside of the arc.

ARCHED SEGMENT WALLS – ARCHED WINDOWS (NO BASE)

Example: Find the radius of an arched window with a chord length of 9 Feet 2 Inch and a rise of 3 Feet and 11-1/2 Inches. Then, find the arc angle, arc length and segment area of the window. Then find the "outside" arched segment wall lengths in order to frame the window.



KEY INPUT & DISPLAY

1. Enter chord length:

On/C On/C — **0**

9 Feet 2 Inch Run — **RUN 9_{Feet} 2_{Inch}**

2. Enter rise:

3 Feet 1 1 Inch 1 / 2 Rise — **RISE 3_{Feet} $11\text{-}1/2_{Inch}$**

3. Find arc angle:

Arc — **ARC 163.26°**

4. Find arc length:

Arc — **ARC 13_{Feet} $2\text{-}3/8_{Inch}$**

5. Display chord length:

Arc — **CORD 9_{Feet} 2_{Inch}**

6. Find segment area:

Arc — **SEG $27.48605_{SQ\ Feet}$**

7. Find pie slice area:

Arc — **PIE $30.57678_{SQ\ Feet}$**

8. Display enetered rise (segment height):

Arc — **RISE 3_{Feet} $11\text{-}1/2_{Inch}$**

9. Display On-center spacing:

Arc — **OC STORED 16_{Inch}**

10. Find the arched segment wall lengths:

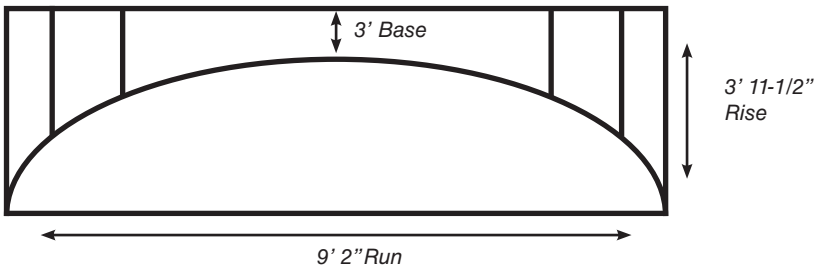
Arc — **AW 1 0_{Feet} $2\text{-}3/8_{Inch}$**

Arc — **AW 2 0_{Feet} $10\text{-}1/8_{Inch}$**

Arc — **AW 3 2_{Feet} $3\text{-}9/16_{Inch}$**

ARCHED SEGMENT WALLS – ARCHED WINDOWS (WITH BASE)

Example: Find the radius of an arched window with a chord length of 9 Feet 2 Inch and a rise of 3 Feet and 11-1/2 Inches and a base height of 3 Feet. Then, find the arc angle, arc length and segment area of the window. Then find the "outside" arched segment wall lengths in order to frame the window.



KEY INPUT & DISPLAY

1. Enter chord length:

On/C On/C — **0**

9 Feet 2 Inch Run — **RUN 9_{Feet} 2_{Inch}**

2. Enter rise:

3 Feet 1 1 Inch 1 / 2 Rise — **RISE 3_{Feet} $11\text{-}1/2_{Inch}$**

3. Enter base heigth (into Rake Wall funcation):

3 Feet Conv Rise — **BASE 3_{Feet} 0_{Inch}**

4. Find arc angle:

Arc — **ARC 163.26°**

5. Find arc length:

Arc — **ARC 13_{Feet} $2\text{-}3/8_{Inch}$**

6. Display chord length:

Arc — **CORD 9_{Feet} 2_{Inch}**

7. Find segment area:

Arc — **SEG $27.48605_{SQ\ Feet}$**

8. Find pie slice area:

Arc — **PIE $30.57678_{SQ\ Feet}$**

9. Display entered rise (segment height)

Arc — **RISE 3_{Feet} $11\text{-}1/2_{Inch}$**

10. Display On-center spacing:

Arc — **OC STORED 16_{Inch}**

11. Find the arched segment wall lengths:

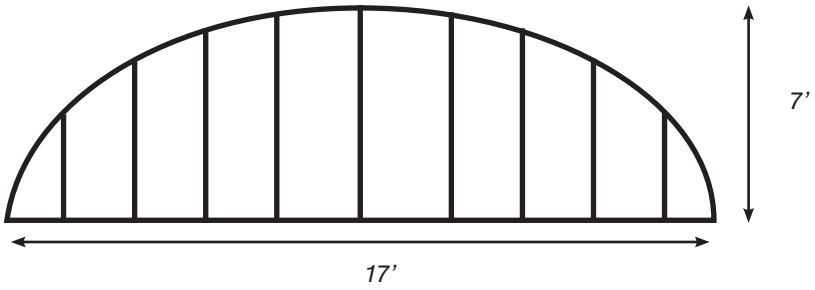
Arc — **AW 1 3_{Feet} $2\text{-}3/8_{Inch}$**

Arc — **AW 2 3_{Feet} $10\text{-}1/8_{Inch}$**

Arc — **AW 3 5_{Feet} $3\text{-}9/16_{Inch}$**

ARCHED SEGMENT WALLS – CHORD LENGTH AND SEGMENT HEIGHT KNOWN

Example: You're building a circular or arched segment wall. Given a chord length of 17 Feet and a segment height of 7 Feet, find all arc values and "inside" arched segment wall lengths. The On-center spacing is 16 Inches.



KEY INPUT & DISPLAY

1. Change arched walls preference setting to "inside" Arc:

Conv Stor Stor Stor Stor Stor Stor — **AW outSidE**

(+) — **AW inSidE**

On/C — **0**

2.Enter chord length and segment height (rise):

On/C On/C — **0**

1 7 Feet Run — **RUN 17_{Feet} 0_{Inch}**

7 Feet Rise — **RISE 7_{Feet} 0_{Inch}**

3. Find arc angle:

Arc — **ARC 157.89°**

4. Find arc length:

Arc — **ARC 23_{Feet} $10\text{-}3/8_{Inch}$**

5. Display entered chord length:

Arc — **CORD 17_{Feet} 0_{Inch}**

6. Find segment area:

Arc — **SEG $89.23357_{SQ\ Inch}$**

7. Find pie slice area:

Arc — **PIE $103.3496_{SQ\ Feet}$**

8. Display entered segment heigth (rise):

Arc — **RISE 7_{Feet} 0_{Inch}**

9. Display stored On-Center spacing for the wall:

Arc — **OC STORED 16_{Inch}**

Cont'd on Page 22

10. Find arched segment wall lengths:

Arc	AW1 6_{Feet} $10\text{-}3/4_{Inch}$
Arc	AW2 6_{Feet} $6\text{-}15/16_{Inch}$
Arc	AW3 6_{Feet} $0\text{-}1/4_{Inch}$
Arc	AW4 5_{Feet} $1\text{-}15/16_{Inch}$
Arc	AW5 3_{Feet} $10\text{-}7/16_{Inch}$

11. Change arched walls preference setting back to “outside” Arc:

Conv Stor Stor Stor Stor Stor Stor	AW inSidE
+	AW outSidE
On/C	0

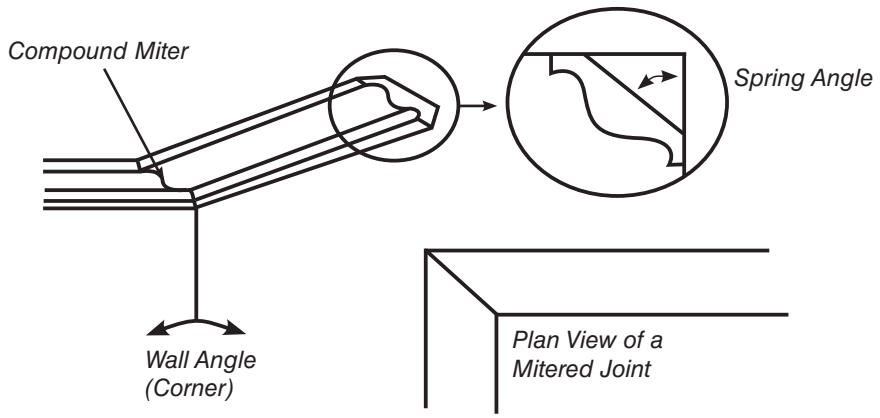
*Successive presses of Arc will toggle to the beginning.

Compound Miter

Remember to press On/C On/C *to clear entries in between problems.*

COMPOUND MITER CUTS

Example: You’re installing crown moulding on the upper wall of your living room. If the wall corner angle is 70˚ and the spring (crown) angle is 40˚, find the miter angle and bevel angle cut.



KEY INPUT & DISPLAY

1. Store the spring angle:

On/C On/C	0
4 0 Stor Comp Miter *(Spring Angle)*	SPRG STORED 40.00˚

2. Enter wall corner angle and calculate miter angle:

7 0 Comp Miter	MITR 42.55˚

3. Calculate bevel angle:

Comp Miter	BEVL 38.87˚

4. Display stored spring angle:

Comp Miter	SPRG STORED 40.00˚

Cont’d on Page 23

5. Display entered wall corner angle:

Comp Miter — **CRNR 70.00°**

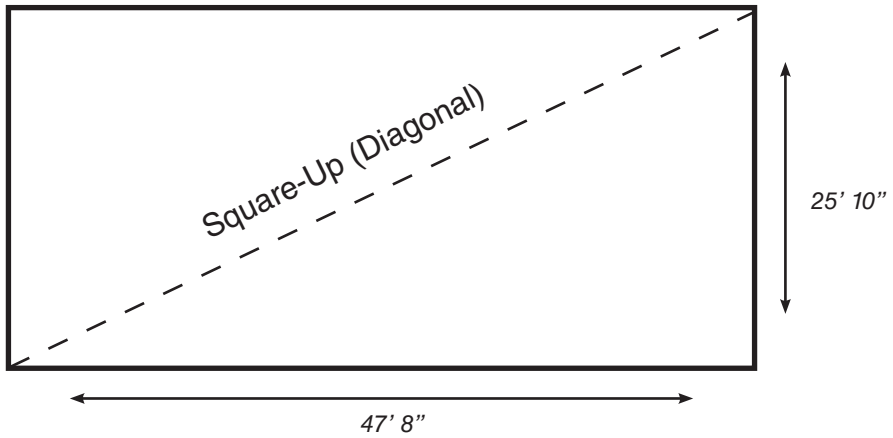
*When a value less than 25 is entered as the wall corner angle, the compound miter function assumes this is the number of sides of a polygon, calculates the wall corner angle, and displays it first before displaying the miter angle.

Squaring Up A Foundation

Remember to press On/C On/C *to clear entries in between problems.*

SQUARING-UP A FOUNDATION

Example: A concrete foundation measures 47 Feet 8 Inches by 25 Feet 10 Inches. Find the diagonal measurement (square-up) to ensure the form is perfectly square.



KEY INPUT & DISPLAY

1. Enter sides as rise/run:

On/C On/C — **0**

2 5 Feet 1 0 Inch Rise — **RISE 25_{Feet} 10_{Inch}**

4 7 Feet 8 Inch Run — **RUN 47_{Feet} 8_{Inch}**

2. Find the square-up (diagonal):

Diag — **DIAG 54_{Feet} $2\text{-}5/8_{Inch}$**

ALTERNATIVE METHOD USING Length AND Width KEYS

1. Enter sides as length and width:

On/C On/C — **0**

2 5 Feet 1 0 Inch Length — **LNTH 25_{Feet} 10_{Inch}**

4 7 Feet 8 Inch Width — **WDTH 47_{Feet} 8_{Inch}**

2. Find the square-up (diagonal):

Width Width — **SQUP 54_{Feet} $2\text{-}5/8_{Inch}$**

Studs

Remember to press On/C On/C *to clear entries in between problems.*

FIND NUMBER OF REQUIRED STUDS FOR A GIVEN WALL LENGTH

Example: Find the number of 16-inch On-center studs needed for a wall with a length of 20 Feet 8-1/2 Inches.

KEY INPUT & DISPLAY

1. Enter length and convert to Studs*.

On/C On/C	**0**
2 0 Feet 8 Inch 1 / 2	**20**$_{\text{Feet}}$ **8-1/2**$_{\text{Inch}}$
Conv 5 *(Studs)*	**STUD 17.** *(Studs)*

*The length is divided by the On-center spacing; in this case, 16 Inches (default setting). Press Rcl 5 to review the stored On-center value. If you need to enter a new On-center, for example 18 Inches, enter 1 8 Inch Stor 5.

Drywall

Remember to press On/C On/C *to clear entries in between problems.*

NUMBER OF DRYWALL SHEETS FOR A GIVEN AREA

Example: Find the number of 4 x 8, 4 x 9 and 4 x 12 sheets to cover an area of 160 Square Feet.

KEY INPUT & DISPLAY

1. Enter area:

On/C On/C	**0**
1 6 0 Feet Feet	**160** $_{\text{SQ Feet}}$

2. Find the number of 4 x 8 sheets, 4 x 9 sheets and 4 x 12 sheets required:

Conv Height *(Drywall)*	**4x8 5.0** (5 - 4 x 8 Sheets)
Height	**4x9 4.444444** (5 - 4 x 9 Sheets)
Height	**4x12 3.333333** (4 - 4 x 12 Sheets)
Height	**160.** $_{\text{SQ Feet}}$

NUMBER OF DRYWALL SHEETS FOR A GIVEN LENGTH

Example: Find the number of 4 x 8, 4 x 9 and 4 x 12 sheets to cover a length of 50 Feet.

KEY INPUT & DISPLAY

1. Enter area:

On/C On/C	**0**
5 0 Feet	**50**$_{\text{Feet}}$

Cont'd on Page 25

2. Find the number 4 x 8 sheets, 4 x 9 sheets and 4 x 12 sheets required:

Conv Height *(Drywall)* **4x8 12.5***

Height **4x9 12.5***

Height **4x12 12.5***

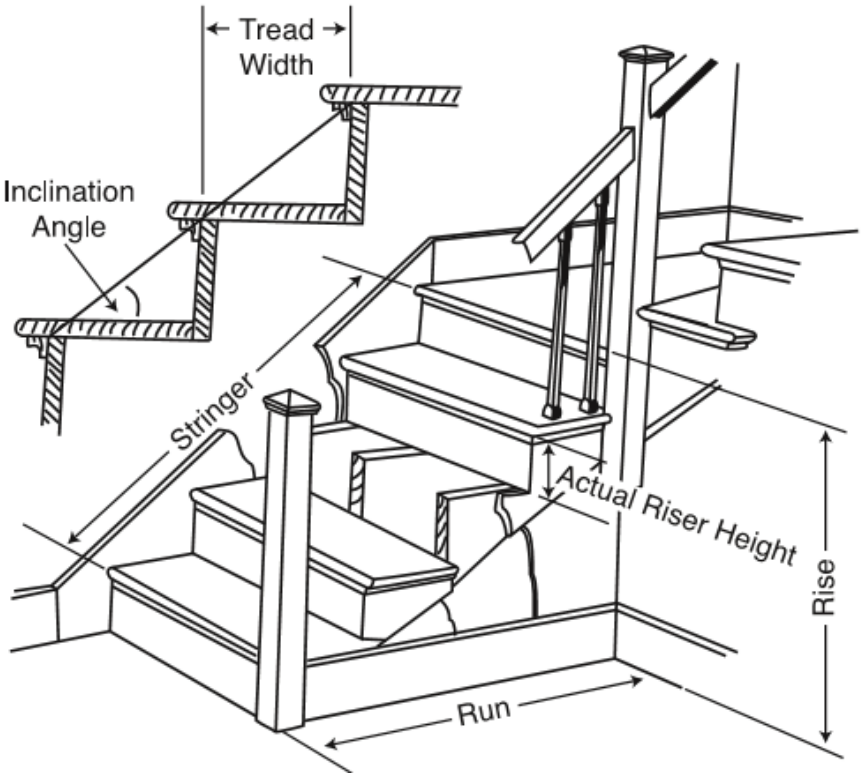
Height **LNTH 50$_{Feet}$ 0$_{Inch}$**

*It is the same amount for all three of the sheet sizes because the linear calculation is based on the width of the sheets (e.g., 4 Feet)

Note: The order in which the different sheet size answers appear may differ from that of the guide. The order is based on the last displayed sheet size when previously calculated.

Stair Layout

Remember to press On/C On/C *to clear entries in between problems.*



STAIR LAYOUT DEFINITIONS

Rise: The “floor-to-floor” or “landing-to-landing’ rise is the actual vertical rise required for building a stairway after the finish flooring has been installed.

Run: The run of a stairway is the amount of horizontal space required. The total run of a stairway is equal to the width of each tread multiplied by the number of treads.

Desired Riser Height: The desired riser height is the amount of vertical rise you allow for each individual riser in the stairway. This is sometimes dictated by local code.

Actual Riser Height: The actual height of each riser is measured from the top of one tread to the top of the next tread.

Number of Risers: The number of risers includes both the first and the last riser of the stairway.

Riser Overage or Underage: The riser overage or underage is the difference between the "floor-to-floor" rise and the total height of all of the risers. Many times the riser height does not divide evenly into the floor-to-floor rise and a small fraction of an inch is left over. A postitive remainder is an overage, while a negative remainder is an underage.

Tread Width: The width of each tread is measured from the front of one riser to the front of the next riser. The width of each tread does NOT include the nosing or overhang of the tread. The nosing or overhang of a tread is the rounded front of the tread that projects beyond the face of the riser.

Number of Treads: The number of treads is one less than the number of risers.

Tread Overage or Underage: The tread overage or underage is the difference between the run or horizontal space that a stairway must fit into and the total width of the treads. Similar to the riser overage/underage, many times the total width of the treads does not divide evenly into the run or horizontal space for the stairway and a small fraction of an inch is left over. A positive remainder is an overage, a negative remainder is an underage.

Stringers: Also called carriages, stair horses or stair jacks. Stringers are the diagonal members that support the treads and risers.

Angle of Incline: The angle of incline of the stairway is determined by rise and run of each stair. The angle of incline should not be confused with the pitch of the stairway. The pitch of a stairway is the angle based on the floor-to-floor rise and horizontal run of the stairway. The angle of incline is based on the "actual" riser height and the "actual" tread width of the stair.

Stairwell Opening: The length of the opening at the top of the stairs. The computation is based on the headroom height (the desired spacing between the stairs and upper floor ceiling) and thickness of the upper floor where the opening is located.

STAIRS - GIVEN ONLY FLOOR-TO-FLOOR RISE

Example: You're building a stairway with a total rise of 10 Feet 7 Inches. Your desired riser height is 7-1/2 Inches and desired tread width is 10 Inches. The desired headroom is 6 Feet 8 Inches and floor thickness 10 Inches*. Find all stair values, then calculate the run.

*Headroom and floor thickness are required to calculate the length of the stairwell opening.

KEY INPUT & DISPLAY

1. Enter known rise:

On/C On/C — **0**

1 0 Feet 7 Inch Rise — **RISE 10 Feet 7 Inch**

2. Recall stored desired stair riser height:

Rcl 7 — **R-HT STORED 7-1/2 Inch**

3. Recall stored desired stair tread width:

Rcl 9 — **T-WD STORED 10 Inch**

4. Recall stored desired floor thickness:

Rcl 8 — **FLOR STORED 10 Inch**

5. Display stored Headroom (via Preference Setting Mode:)

Conv Stor Stor Stor Stor — **HDRM 6 Feet 8 Inch**

Cont'd on Page 27

6. Find riser height, number of risers, riser underage/overage, tread width, number of treads, tread overage/underage, length of stairwell opening, stringer length and angle of incline. As a final step, calculate the run.

Stair	R-HT 7-1/2 Inch
Stair	RSRS 17.
Stair	R+/- 0-1/2 Inch
Stair	T-WD STORED 10 Inch
Stair	TRDS 16.
Stair	T+/- 0 Inch
Stair	OPEN 10 Feet 0 Inch
Stair	STRG 16 Feet 8 Inch
Stair	INCL 36.87°
Stair	RUN 13 Feet 4 Inch
Stair*	RISE STORED 10 Feet 7 Inch

*Continuous presses of Stair will also recall stored desired riser height, tread, headroom and floor thickness values.

Notes on Changing Stored Stair Variables:

To Change Desired Riser Height: If you wish to use a Desired Riser Height of other than 7-1/2 Inches (the calculator's default), simply enter a new value. For example, to enter 8 Inches, enter 8 Inch Stor 7. Press Rcl 7 to review your new entry. This value will be permanently stored until you change it.

To Change Desired Tread Width: If you wish to use a Desired Tread Width of other than 10 Inches (the calculator's default), simply enter a new value. For example, to enter 10-1/2 Inches, enter 1 0 Inch 1 / 2 Stor 9. Press Rcl 9 to review your new entry. This value will be permanently stored until you change it.

To Change Desired Floor Thickness: If you wish to use a Desired Floor Thickness of other than 10 Inches (the calculator's default), simply enter a new value. For example, to enter 12 Inches, enter 1 2 Inch Stor 8. Press Rcl 8 to review your new entry. This value will be permanently stored until you change it.

To Change Desired Headroom: If you wish to use a Desired Headroom other than 6 Feet 8 Inches (the calculator's default), simply select a new value via preference Mode and use + or − keys to increase/decrease by one inch. See examples below. This value will be permanently stored until you change it.

KEY INPUT & DISPLAY

1. Select Headroom via Preference Mode:

On/C On/C	0
Conv Stor Stor Stor Stor	HDRM 6 Feet 8 Inch

2. Decrease Headroom Height by 2 Inches:

− −	HDRM 6 Feet 6 Inch

3. Then increase Headroom Height by 4 Inches:

+ + + +	HDRM 6 Feet 10 Inch

4. Return Headroom Height to default of 6 Feet 8 Inches:

− −	HDRM 6 Feet 8 Inch

STAIRS - GIVEN ONLY THE RUN

Example: You're building a stairway with a total run of 15 Feet. Your desired riser height is 7-1/2 Inches and desired tread width is 10 Inches. The desired headroom is 6 Feet 8 Inches and floor thickness 10 Inches. Find all stair values, then calulate the rise.

KEY INPUT & DISPLAY

1. Enter run:

KEY INPUT	DISPLAY
On/C On/C	0
1 5 Feet Run	RUN 15 Feet 0 Inch

2. Find riser height, number of riser, riser underage/overage, tread width, number of treads, tread overage/underage, stairwell opening, stringer length and angle of incline. As a final step, calcuate the rise.

KEY INPUT	DISPLAY
Stair	R-HT STORED 7-1/2 Inch
Stair	RSRS 19.
Stair	R+/- 0 Inch
Stair	T-WD 10 Inch
Stair	TRDS 18.
Stair	T+/- 0 Inch
Stair	OPEN 10 Feet 0 Inch
Stair	STRG 18 Feet 9 Inch
Stair	INCL 36.87°
Stair	RUN STORED 15 Feet 0 Inch
Stair	RISE 11 Feet 10-1/2 Inch

STAIRS - GIVEN RISE AND RUN

Example: You need to build a stairway with a floor-to-floor height of 12 Feet 1 Inch, a run of 17 Feet 7 Inches, and a nominal desired riser height of 7-1/2 Inches (default). Calculate all stair values.

KEY INPUT & DISPLAY

1. Enter rise and run:

KEY INPUT	DISPLAY
On/C On/C	0
1 2 Feet 1 Inch Rise	RISE 12 Feet 1 Inch
1 7 Feet 7 Inch Run	RUN 17 Feet 7 Inch

2. Find stair values:

KEY INPUT	DISPLAY
Stair	R-HT ⚠ 7-5/8 Inch *
Stair	RSRS 19.
Stair	R+/- - 0-1/8 Inch
Stair	T-WD 11-3/4 Inch

Cont'd on Page 29

Stair	TRDS 18.
Stair	T+/- 0-1/2 Inch
Stair	OPEN 11 Feet 6-11/16 Inch
Stair	STRG 21 Feet 0-1/8 Inch
Stair	INCL 32.98°
Stair	RUN STORED 17 Feet 7 Inch
Stair	RISE STORED 12 Feet 1 Inch
Stair	R-HT STORED 7-1/2 Inch
Stair	T-WD STORED 10 Inch
Stair	HDRM STORED 6 Feet 8 Inch
Stair	FLOR STORED 10 Inch

*A ⚠ in the display means that the calculated riser height exceeds the stored desired riser height.

STAIRS - GIVEN RISE AND RUN, USING "RISER LIMITED" FUNCTION FOR CODE RESTRICTIONS

Example: Your local code prohibits risers greater than 7-1/2 Inches. You need to build a stairway with a floor-to-floor height of 10 Feet 4 Inches, a run of 15 Feet 8 Inches. Calculate all stair values. Use the "Riser Limited" function (second function of the Stair key) to calculate a riser height that does not exceed the stored Desired Riser Height of 7-1/2 Inches.

KEY INPUT & DISPLAY

1. Enter rise and run:

On/C On/C	0
1 0 Feet 4 Inch Rise	RISE 10 Feet 4 Inch
1 5 Feet 8 Inch Run	RUN 15 Feet 8 Inch

2. Find Stair values using "Riser Limited":

Conv Stair *(Riser Limited)*	R-HT 7-5/16 Inch
Stair	RSRS 17.
Stair	R+/- 0-5/16 Inch
Stair	T-WD 11-3/4 Inch
Stair	TRDS 16.
Stair	T+/- 0 Inch
Stair	OPEN 12 Feet 0-5/8 Inch
Stair	STRG 18 Feet 5-7/16 Inch
Stair	INCL 31.90°
Stair	RUN STORED 15 Feet 8 Inch

Cont'd on Page 30

Stair	RISE STORED 10_{Feet} 4_{Inch}
Stair	R-HT STORED $7\text{-}1/2_{Inch}$
Stair	T-WD STORED 10_{Inch}
Stair	HDRM STORED 6_{Feet} 8_{Inch}
Stair	FLOR STORED 10_{Inch}

BALUSTER SPACING

Example: You are going to install a handrail at the top of a balcony. Your total span is 175 Inches and you would like the space between the balusters to be about 4 Inches. If each baluster is 1-1/2 Inches wide, what is the exact spacing between each baluster?

KEY INPUT & DISPLAY

1. Estimate number of balusters in span.

On/C On/C	0
1 7 5 Inch ÷	175_{Inch}
5 Inch 1 / 2 =*	31.81818 *(32 balusters)*

*Desired spacing plus baluster width (4” plus 1-1/2”)

2. Find total space ‘occupied’ by the balusters by multiplying the width of each baluster by the rounded number of balusters (found above):

1 Inch 1 / 2 ×	$1\text{-}1/2_{Inch}$
3 2 =	48_{Inch}

3. Find total space between all balusters:

1 7 5 Inch −	175_{Inch}
4 8 Inch =	127_{Inch}

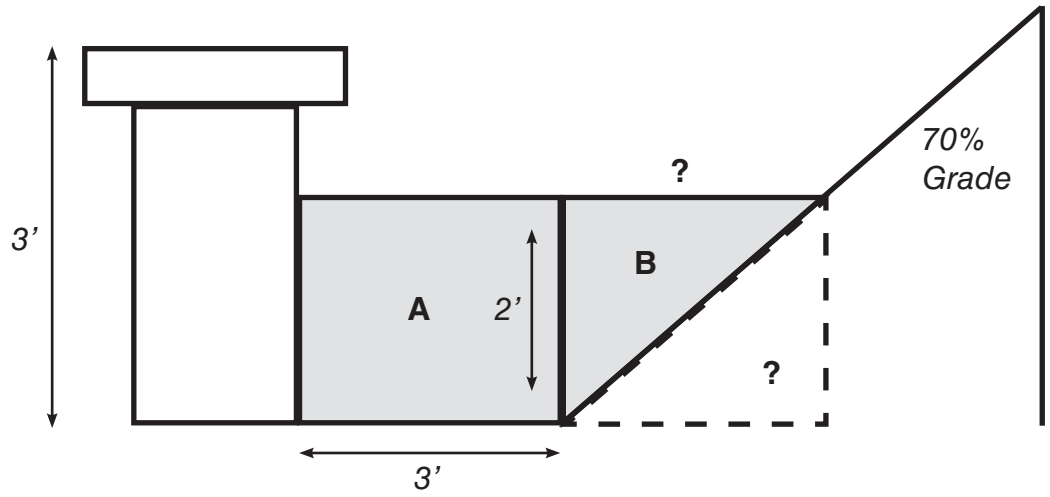
4. Find actual baluster spacing by dividing total space between all balusters by the number of spaces between the balusters (number of balusters plus one equals 33)

1 2 7 Inch ÷	127_{Inch}
3 3 =	$3\text{-}7/8_{Inch}$

Remember to press [On/C] [On/C] *to clear entries in between problems.*

BACK-FILL ON A SLOPE - PERECNT OF GRADE KNOWN

Example: You've built 50 Linear Feet of a 3Foot high retaining wall that is 3 Feet from the base of a 70% grade. You need to pour back-fill within 12 Inches of the top of the wall (for a 2 Foot depth). How many Cubic Yards of fill should you have delivered?



KEY INPUT & DISPLAY

1. Find volume for "A":

[On/C] [On/C]	0
5 0 [Feet]	50 Feet
× 3 [Feet]	3 Feet
× 2 [Feet] = [M+]	M+ 300. CU Feet M

2. Find run of "B":

7 0 [%] [Pitch]	%GRD 70 M
2 [Feet] [Rise]	RISE 2 Feet 0 Inch M
[Run]	RUN 2 Feet 10-5/16 Inch M

3.Find volume of triangle "B":

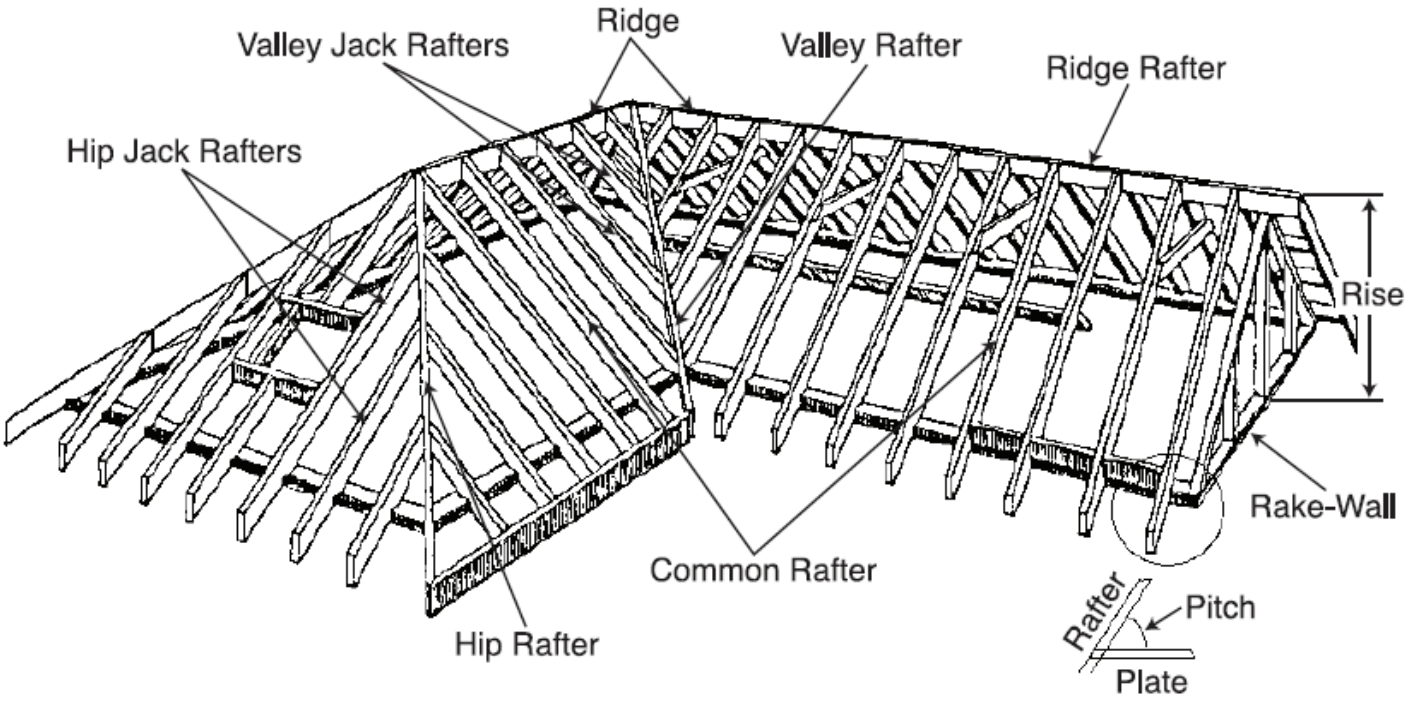
5 0 [Feet]	50 Feet M
× [Rcl] [Run]	RUN 2 Feet 10-5/16 Inch M
× 2 [Feet] =	285.7143 CU Feet M
÷ 2 = [M+]	M+ 142.8571 CU Feet M

4. Find total volume:

[Rcl] [Rcl]	M+ 442.8571 CU Feet
[Conv] [Yds]	16.40212 CU YD

Right Triangle And Roof Framing Examples

Remember to press On/C On/C *to clear entries in between problems.*



ROOF FRAMING DEFINITIONS

Rise: The vertical distance measured from the wall's top plate to the top of the ridge.

Span: The horizontal distance or full width between the outside edges of the wall's top plates.

Run: The horizontal distance between the outside edge of the wall's top plate and the center of the ridge; in most cases this is equivalent to half of the span.

Pitch: Pitch and slope are synonymous in modern trade language. Pitch/slope of a roof is generally expressed in two types of measurement:

1) Ratio of unit rise to unit run * - 7/12 or 7 Inch

2) Angle of rafters, in degrees - 30.26˚

**The unit rise is the number of Inches of rise per Foot (12 Inches) of unit run. The unit run is expressed as one Foot (12 Inches).*

Plate: The top horizontal wall member that the ceiling joist and rafters sit on and fasten to.

Ridge: The uppermost point of two roof planes. This rafter is the uppermost rafter that all Hip, Valley Jack and Common rafters are fastened to.

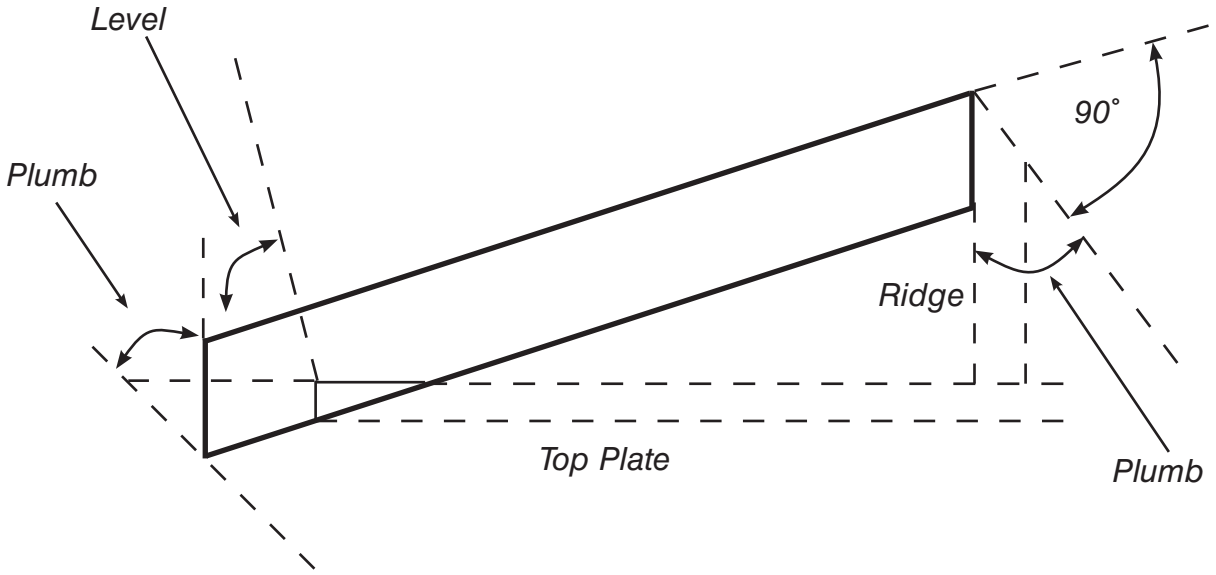
Rafters: Rafters are inclined roof support members. Rafters inculde the following types:

- **Common Rafter:** The Common connects the plate to the ridge and is perpendicular to the ridge.
- **Hip Rafter:** The Hip rafter extends from the corner of two wall plates to the ridge or King rafter at an angle other than 90˚. The Hip rafter is an external angle of two planes.
- **Valley Rafter:** The valley rafter extends from the corner of two wall plates to the ridge or King rafter at an angle other than 90˚. The Valley rafter is an internal angle of two planes.
- **Jack Rafters:** Rafters that connect the Hip or Valley rafter to the wall plate.
- **Irregular Hip/Valley Jacks:** Jack rafters found in dual pitch or “Irregular” roofs.

Regular Roof: A standard roof where the Hips and/or Valleys run at 45˚ and have the same pitch/slope on both sides of the Hip and/or Valley.

Irregular Roof: A non-standard roof where the Hips and/or Valleys bisect two different pitches/slopes, or have “skewed wings” or irregular Jacks.

Rake Wall: A gable end wall that follows the pitch/slope of a roof.



Plumb: Vertical Cut. The angle of cut from the edge of the board that allows the rafter to mate on the vertical side of the ridge rafter.

Level: Horizontal Cut. The angle of cut from the edge of the board that allows the rafter to seat flat on the wall plate.

Cheek: Side Cut(s). The angle to cut from the SIDE of the Jack rafter to match up against the Hip or Valley rafter, usually made by tilting the blade from 90˚. Jack rafters typically have one Cheek cut. If there is only one pitch (no irregular pitch), the angle will be 45˚. If there are two pitches, each side will have a different Cheek cut for the Jack rafter and angles will total 90˚.

Incremental Adjustment: The difference in rafter length from one rafter to the next.

DEGREE OF PITCH

Example: If the degree of the pitch is 32.35˚ what is the percent Grade, Slope and Pitch in Inches?

KEY INPUT & DISPLAY

KEY INPUT	DISPLAY
On/C On/C	0
3 2 ▪ 3 5 Pitch	PTCH 32.35˚
Pitch	%GRD 63.33959
Pitch	SLP 0.633396
Pitch	PTCH 7-5/8 Inch

Note: To convert Pitch in Inches: Simply enter the Pitch in Inches first (e.g. 7 Inch Pitch) then continuously press the Pitch key to calculate the pitch conversions, as above.

PERCENT GRADE

Example: If the Percent Grade is 42.25%, what is the Slope, Pitch in Inches, and Degree of Pitch?

KEY INPUT & DISPLAY

KEY INPUT	DISPLAY
On/C On/C	0
4 2 ▪ 2 5 % * Pitch	%GRD 42.25
Pitch	SLP 0.4225
Pitch	PTCH 5-1/16 Inch
Pitch	PTCH 22.90˚

*For entering Percent Grade, you need to label the value with the percent key.

PITCH RATIO OR SLOPE

Example: If the Pitch Ratio is 0.55, what is the Pitch in Inches, Degree of Pitch, and Percent Grade?

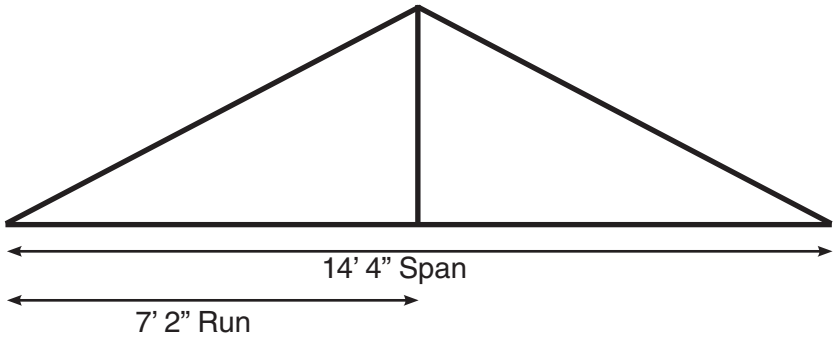
KEY INPUT & DISPLAY

KEY INPUT	DISPLAY
On/C On/C	0
▪ 5 5 Conv * Pitch *(Slope)*	SLP 0.55
Pitch	PTCH 6-5/8 Inch
Pitch	PTCH 28.81˚
Pitch	%GRD 55

*For entering Pitch Ratio, you must press the Conv key first.

COMMON RAFTER LENGTH

Example: If a roof has a 7/12 Pitch and span of 14 Feet 4 Inches, what is the point-to-point length of the point-to-point length of the Common rafter (excluding the overhang or ridge adjustment)? What are the Plumb and Level cuts?



Note: Run is half the Span.

KEY INPUT & DISPLAY

1. Find diagonal or point-to-point length of the Common rafter:

KEY INPUT & DISPLAY	
On/C On/C	0
7 Inch Pitch	PTCH 7_{Inch}
1 4 Feet 4 Inch ÷ 2 =	7_{Feet} 2_{Inch}
Run	RUN 7_{Feet} 2_{Inch}
Diag	DIAG 8_{Feet} 3-9/16$_{Inch}$

2. Find Plumb and Level cuts:

KEY INPUT & DISPLAY	
Diag	PLMB 30.26˚
Diag	LEVL 59.74˚

Note: The Common rafter calculation is the “point-to-point” length and does not include the overhang or ridge adjustment.

COMMON RAFTER LENGTH - PITCH UNKNOWN

Example: Find the common rafter length for a roof with a rise of 8 Feet 10-1/2 Inches and a run of 16 Feet 8 Inches. Solve for the Pitch in Degrees and in Inches.

KEY INPUT & DISPLAY

Find Diagonal and Pitch:

KEY INPUT & DISPLAY	
On/C On/C	0
8 Feet 1 0 Inch 1 / 2 Rise	RISE 8_{Feet} 10-1/2$_{Inch}$
1 6 Feet 8 Inch Run	RUN 16_{Feet} 8_{Inch}
Diag	DIAG 18_{Feet} 10-9/16$_{Inch}$
Pitch	PTCH 6-3/8$_{Inch}$
Pitch	PTCH 28.04˚

ANGLE AND DIAGONAL (HYPOTENUSE)

Example: Find the Diagonal (Hypotenuse) and degree of angle of a right trianagle that is 10 Feet high and 14 Feet long.

KEY INPUT & DISPLAY

1. Enter Rise and Run;

On/C On/C	0
1 0 Feet Rise	RISE 10_{Feet} 0_{Inch}
1 4 Feet Run	RUN 14_{Feet} 0_{Inch}

2. Solve fo Diagonal/Hypotenuse and Pitch in Inches and Degree of Angle:

Diag	DIAG 17_{Feet} $2\text{-}7/16_{Inch}$
Pitch	PTCH $8\text{-}9/16_{Inch}$
Pitch	PTCH 35.54˚

RISE

Example: Find the Rise given a 7/12 Pitch and a Run of 12 Feet 6 Inches

KEY INPUT & DISPLAY

On/C On/C	0
7 Inch Pitch	PTCH 7_{Inch}
1 2 Feet 6 Inch Run	RUN 12_{Feet} 6_{Inch}
Rise	RISE 7_{Feet} $3\text{-}1/2_{Inch}$

RISE AND DIAGONAL

Example: Find the Rise and Diagonal of a right trangle given a 30˚ Pitch and a run of 22 Feet 7 Inches.

KEY INPUT & DISPLAY

On/C On/C	0
3 0 Pitch	PTCH 30.00˚
2 2 Feet 7 Inch Run	RUN 22_{Feet} 7_{Inch}
Rise	RISE 13_{Feet} $0\text{-}7/16_{Inch}$
Diag	DIAG 26_{Feet} $0\text{-}15/16_{Inch}$

SHEATHING CUT

Example: You have framed an equal pitch roof and need to apply the roof sheathing. Find the distance from the corner of the sheathing so that you can finish the run at the Hip rafter and cut the material. The pitch is 7 Inches and you are using 4 Foot by 8 Foot plywood, with the 8 Foot side along the plate.

KEY INPUT & DISPLAY

1. Enter Pitch

On/C On/C	0
7 Inch Pitch	PTCH 7_{Inch}

Cont'd on page 37

2. Enter width of plywood:

4 Feet Diag	DIAG 4_{Feet} 0_{Inch}

3. Find length of sheathing:

Run	RUN 3_{Feet} $5\text{-}7/16_{Inch}$

REGULAR HIP/VALLEY AND JACK RAFTERS

Example: You're working with a 7/12 Pitch, and half your total span is 10 Feet 5 Inches.

1. Find point-to-point length and cut angles for the common rafter;
2. Find the length and cut angles of the adjoining Hip (or Valley) and;
3. Find the Incremental Jack Adjustment, Regular Jack Rafter lengths and cut angles (Jack Rafters at 16-Inch On-center spacing).

KEY INPUT & DISPLAY

1. Find Common rafter length and Plumb and Level cuts:

On/C On/C	0
1 0 Feet 5 Inch Run	RUN 10_{Feet} 5_{Inch}
7 Inch Pitch	PTCH 7_{Inch}
Diag	DIAG 12_{Feet} $0\text{-}11/16_{Inch}$
Diag	PLMB 30.26˚
Diag	LEVL 59.74˚

2. Find Hip/Valley rafter length and cut angles:

Hip/V	H/V 15_{Feet} $11\text{-}1/4_{Inch}$
Hip/V	PLMB 22.42˚
Hip/V	LEVL 67.58˚
Hip/V	CHK1 45.00˚

3. Find regular incremental Jack adjustment and regular Jack rafter lengths and cut angles:

Jack	JKOC STORED 16_{Inch}*
Jack	INCR 1_{Feet} $6\text{-}1/2_{Inch}$
Jack	JK1 10_{Feet} $6\text{-}3/16_{Inch}$
Jack	JK2 8_{Feet} $11\text{-}11/16_{Inch}$
Jack	JK3 7_{Feet} $5\text{-}1/8_{Inch}$
Jack	JK4 5_{Feet} $10\text{-}5/8_{Inch}$
Jack	JK5 4_{Feet} $4\text{-}1/8_{Inch}$
Jack	JK6 2_{Feet} $9\text{-}9/16_{Inch}$
Jack	JK7 1_{Feet} $3\text{-}1/16_{Inch}$

Cont'd on page 38

Jack — JK8 0_{Feet} 0_{Inch}

Jack — PLMB 30.26˚

Jack — LEVL 59.74˚

Jack — CHK1 45.00˚

*If display does not read JKOC 16 INCH (the default), then reset On-center spacing by pressing 1 6 Inch Stor 5.

JACK RAFTERS - USING OTHER THAN 16-INCH ON-CENTER SPACING

Example: A roof has a 9/12 Pitch and a run of 8 Feet 11 Inches. Find the incremental jack adjustment, jack rafter lengths and cut angles at 18 Inch (versus 16 Inch) On-center spacing. The On-center spacing is used for both Regular and Irregular Jack calculations

KEY INPUT & DISPLAY

1. Enter Pitch, Run and spacing:

On/C On/C — 0

9 Inch Pitch — PTCH 9_{Inch}

8 Feet 1 1 Inch Run — RUN 8_{Feet} 11_{Inch}

1 8 Inch Stor 5 *(o.c.)* — OC STORED 18_{Inch}

2. Find regular incremental Jack adjustment and regular Jack rafter lengths and cut angles:

Jack — JKOC STORED 18_{Inch}

Jack — INCR 1_{Feet} $10\text{-}1/2_{Inch}$

Jack — JK1 9_{Feet} $3\text{-}1/4_{Inch}$

Jack — JK2 7_{Feet} $4\text{-}3/4_{Inch}$

Jack — JK3 5_{Feet} $6\text{-}1/4_{Inch}$

Jack — JK4 3_{Feet} $7\text{-}3/4_{Inch}$

Jack — JK5 1_{Feet} $9\text{-}1/4_{Inch}$

Jack — JK6 0_{Feet} 0_{Inch}

Jack — PLMB 36.87˚

Jack — LEVL 53.13˚

Jack — CHK1 45.00˚

3. Reset On-center spacing to default 16-Inch:

1 6 Inch Stor 5 *(o.c.)* — OC STORED 16_{Inch}

IRREGULAR HIP/VALLEY AND JACK RAFTERS - DESCENDING, WITH ON-CENTER SPACING MAINTAINED

Example: You're working with a 7/12 Pitch and half your overall span is 5 Feet. The irregular Pitch is 8/12, and 16-inch On-center spacing is maintained on both sides. Complete the following steps:

1. Find the length of the common rafter;
2. Reset calculator to 16-Inch On-center spacing;
3. Enter the Irregular Pitch; find the length of the adjoining "Irregular" Hip (or Valley) and the cut angles;
4. Find the incremental jack adjustment and the jack lengths on the "Irregular" Pitch side (16-Inch On-center spacing);
5. Find the cut angles;
6. Find the incremental jack adjustment and the jack lengths on the "Regular" Pitch side (16-Inch On-center spacing);
7. Find the cut angles.

KEY INPUT & DISPLAY

1. Find Common rafter length:

On/C On/C	**0**
7 Inch Pitch	**PTCH 7 Inch**
5 Feet Run	**RUN 5 Feet 0 Inch**
Diag	**DIAG 5 Feet 9-7/16 Inch**

2. Enter On-center spacing:

1 6 Inch Stor 5 *(o.c.)*	**OC STORED 16 Inch**

3. Find Irregular Hip/Valley rafter length and cut angles:

8 Inch Conv Hip/V *(Ir/Pitch)*	**IPCH 8 Inch**
Hip/V	**IH/V 7 Feet 3-1/16 Inch**
Hip/V	**PLMB 32.70˚**
Hip/V	**LEVL 66.30˚**
Hip/V	**CHK1 41.19˚**
Hip/V	**CHK2 48.81˚**

4. Find irregular incremental jack adjustmental jack adjustment and Irregular Jack lengths:

Conv Jack *(Ir/Jack)*	**IJOC STORED 16 Inch**
Jack	**INCR 1 Feet 4-13/16 Inch**
Jack	**IJ1 3 Feet 10-1/4 Inch**
Jack	**IJ2 2 Feet 5-7/16 Inch**
Jack	**IJ3 1 Feet 0-5/8 Inch**
Jack	**IJ4 0 Feet 0 Inch**

Cont'd on page 40

5. Find Irregular Jack plumb, level and cheek cut angles:

Jack — **PLMB 33.69˚**

Jack — **LEVL 56.31˚**

Jack — **CHK1 41.19˚**

6. Find regular incremental jack adjustment and Regular Jack lengths:

Jack — **JKOC** STORED **16$_{Inch}$**

Jack — **INCR 1$_{Feet}$ 9-3/16$_{Inch}$**

Jack — **JK1 4$_{Feet}$ 0-5/16$_{Inch}$**

Jack — **JK2 2$_{Feet}$ 3-1/8$_{Inch}$**

Jack — **JK3 0$_{Feet}$ 5-15/16$_{Inch}$**

Jack — **JK4 0$_{Feet}$ 0$_{Inch}$**

7. Find Regular Jack plumb, level and cheek cut angles:

Jack — **PLMB 30.26˚**

Jack — **LEVL 59.74˚**

Jack — **CHK1 48.81˚**

IRREGULAR HIP/VALLEY AND JACK RAFTERS - ASCENDING, WITH JACKS MATING AT HIP/VALLEY

Example: You're working with 7/12 Pitch and half your overall span is 6 Feet. The Irregular Pitch is 8/12, and the Jacks need to mate at the Hip. The maximum allowable On-center spacing in 16 Inches. Find the Jack Rafter sizes from smallest to largest (ascending order). Complete the following steps:

1. Set Preference display to "JK ASCEND" (Jack sizes in ascending order);
2. Set Preference display to "IRJK JAC-JAC" (Jacks mate);
3. Find the length of the common rafter;
4. Find the length of the adjoining "Irregular" Hip (or Valley) and the cut angles;
5. Find the o.c., Incremental Jack adjustment, Jack lengths and cut angles on the "Irregular" pitched side;
6. Find the o.c., Incremental Jack adjustment, Jack lengths and cut angles on the "Regular" pitched side.

Note: After completing this example, you may need to reset the Preferences back to "IRJK OC-OC" if you do not normally figure jacks in this manner.

KEY INPUT & DISPLAY

1. Review Preferences until you find "Jack Descend":

On/C On/C — **0**

Conv Stor *(Prefs)* — **FRAC 0-1/16$_{Inch}$**

(If not at 1/16, press ⊕ until 1/16 is displayed)

Stor — **AREA Std.**

Stor — **VOL Std.**

Stor — **HDRM 6$_{Feet}$ 8$_{Inch}$**

Cont'd on page 41

Stor — **RAKE dESCEnd**

Stor — **AW outSidE**

Stor — **JACK dESCEnd**

Set Preference to “Ascend”:

(+) *(plus sign)* — **JACK ASCEnd**

2. Set Preference to “Jacks Mate”:

Stor — **IRJK OC-OC**

(+) *(plus sign)* — **IRJK JAC-JAC**

3. Find common rafter length:

7 Inch Pitch — **PTCH 7_{Inch}**

6 Feet Run — **RUN 6_{Feet} 0_{Inch}**

Diag — **DIAG 6_{Feet} $11\text{-}3/8_{Inch}$**

4. Enter Irregular Pitch and find Irregular Hip/Valley rafter length and cut angles:

8 Inch Conv Hip/V *(Ir/Pitch)* — **IPCH 8_{Inch}**

Hip/V — **IH/V 8_{Feet} $8\text{-}1/2_{Inch}$**

Hip/V — **PLMB 23.70˚**

Hip/V — **LEVL 66.30˚**

Hip/V — **CHK1 41.19˚**

Hip/V — **CHK2 48.81˚**

5. Display the o.c. and find the Irregular Incremental Jack adjustment and Irregular Jack lengths and cut angles:

Conv Jack *(Ir/Jack)* — **IJOC STORED 16_{Inch}***

Jack — **INCR 1_{Feet} $4\text{-}13/16_{Inch}$**

Jack — **IJ1 1_{Feet} $4\text{-}13/16_{Inch}$**

Jack — **IJ2 2_{Feet} $9\text{-}5/8_{Inch}$**

Jack — **IJ3 4_{Feet} $2\text{-}1/2_{Inch}$**

Jack — **IJ4 5_{Feet} $7\text{-}5/16_{Inch}$**

Jack — **IJ5 6_{Feet} $3\text{-}11/16_{Inch}$**

Jack — **PLMB 33.69˚**

Jack — **LEVL 56.31˚**

Jack — **CHK1 41.19˚**

6. Find the o.c., Regular Incremental Jack adjustment and Regular Jack lengths and cut angles:

Jack — **JKOC 14_{Inch}***

Jack — **INCR 1_{Feet} $6\text{-}1/2_{Inch}$**

Jack — **JK1 1_{Feet} $6\text{-}1/2_{Inch}$**

Jack — **JK2 3_{Feet} $1\text{-}1/16_{Inch}$**

Cont’d on page 42

Jack	JK3 4_{Feet} $7\text{-}9/16_{Inch}$
Jack	JK4 6_{Feet} $2\text{-}1/16_{Inch}$
Jack	JK5 6_{Feet} $11\text{-}3/8_{Inch}$
Jack	PLMB 30.26˚
Jack	LEVL 59.74˚
Jack	CHK1 48.81˚

7. Reset Jack rafter Preference Settings:

On/C On/C	0
Conv Stor Stor Stor Stor Stor Stor Stor	JACK ASCEnd

Set Preference to “Descend”:

+ *(plus sign)*	JACK dESCEnd

Set Preference to “Jacks On-center”:

Stor	IRJK JAC-JAC
+	IRJK OC-OC

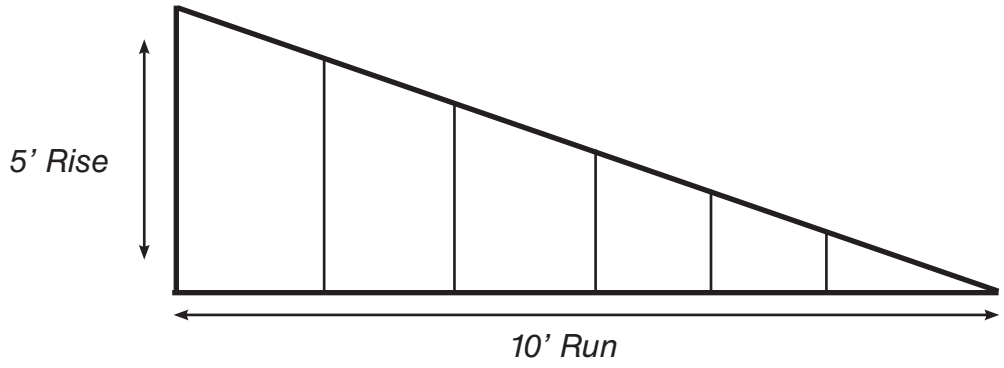
Exit Preference Settings:

On/C	0

*The stored On-center spacing is used as the maximum allowable spacing. Therefore, it is assigned to the side with the largest entered pitch. In this example, the “Irregular” side pitch is larger than the “Regular” side pitch; thus, the Irregular side is calculated using the maximum On-center value (16 Inches). If the Regular pitch side had the larger pitch, it would require the larger (16 Inches) On-center.

RAKE-WALL - NO BASE

Example: Find each stud size in a Rake-Wall with a peak (rise) of 5 Feet, and a length (run) of 10 Feet. Use 16 Inches as your spacing.



Note: The wall has no base.

KEY INPUT & DISPLAY

1. Enter Rise and Run and display o.c. spacing:

On/C On/C	0
5 Feet Rise	RISE 5_{Feet} 0_{Inch}
1 0 Feet Run	RUN 10_{Feet} 0_{Inch}
Rcl 5*	OC STORED 16_{Inch}

*If 16-Inch is not displayed, enter 1 6 Inch Stor 5.

Cont’d on page 43

2. Find stud lengths:

Conv Rise *(R/Wall)* — RWOC STORED 16 Inch

Rise — RW1 4 Feet 4 Inch

Rise — RW2 3 Feet 8 Inch

Rise — RW3 3 Feet 0 Inch

Rise — RW4 2 Feet 4 Inch

Rise — RW5 1 Feet 8 Inch

Rise — RW6 1 Feet 0 Inch

Rise — RW7 0 Feet 4 Inch

Rise — BASE 0 Feet 0 Inch

3. Find Rake-Wall angle of incline:

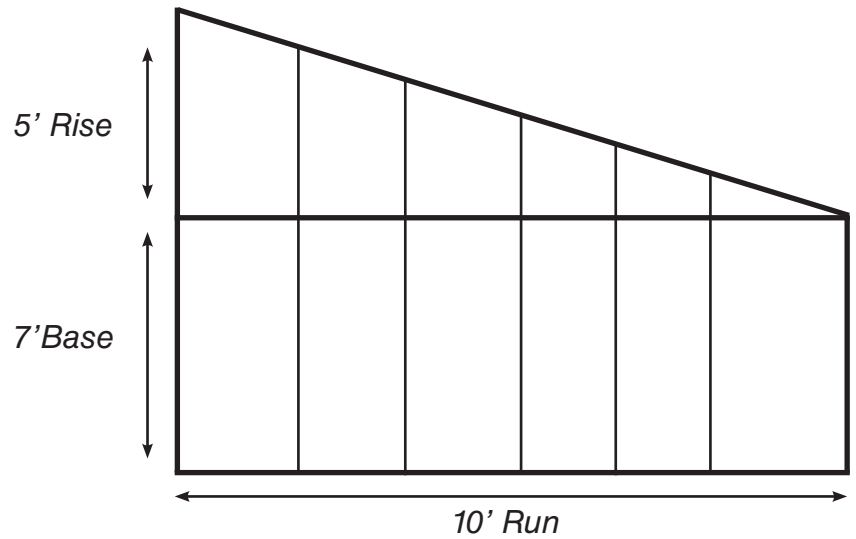
Rise — RW 26.57°

Note: By setting the Rake "Ascend" Preference, you may view Rake-Wall stud lengths from smallest to largest size.

Note: You can also solve if you only know the Rise and Pitch, Run and Pitch, or Diagonal and Pitch. Simply enter the known values via Pitch, Rise, Run, or Diag keys, similar to Step #1 above, then solve for Rake-Wall stud lengths, as seen in Step #2.

RAKE-WALL - WITH BASE

Example: Find each stud size in a Rake-Wall with a peak (rise) of 5 Feet, a length (run) of 10 Feet, and base of 7 Feet. Use 16 Inches as your On-center spacing.



KEY INPUT & DISPLAY

1. Enter Rise, Run and o.c spacing:

On/C On/C — 0

5 Feet Rise — RISE 5 Feet 0 Inch

1 0 Feet Run — RUN 10 Feet 0 Inch

Rcl 5* — OC STORED 16 Inch

*If 16-Inch is not displayed, enter 1 6 Inch Stor 5.

Cont'd on page 44

2. Enter base, then find stud lengths and angle of incline:

7 Feet Conv Rise *(R/Wall)*	BASE 7_{Feet} 0_{Inch}
Rise	RWOC STORED 16_{Inch}
Rise	RW1 11_{Feet} 4_{Inch}
Rise	RW2 10_{Feet} 8_{Inch}
Rise	RW3 10_{Feet} 0_{Inch}
Rise	RW4 9_{Feet} 4_{Inch}
Rise	RW5 8_{Feet} 8_{Inch}
Rise	RW6 8_{Feet} 0_{Inch}
Rise	RW7 7_{Feet} 4_{Inch}
Rise	BASE 7_{Feet} 0_{Inch}
Rise	RW 26.57°

Roofing Materials

Remember to press On/C On/C *to clear entries in between problems.*

The Roof function solves for the amount of bundles and squares for standard gable-end style roofs. Bundles are based on a coverage area of 33.33 Square Feet, and squares are based on 100 Square Feet.

ROOF COVERING - ENTERING PITCH, LENGTH AND WIDTH

Example: Find the roof area and number of roofing squares, number of bundles and 4 x 8 sheets required for a 12 inch Pitch roof covering a floor area of 16 Feet by 13 Feet. Also calculate the plan area.

KEY INPUT & DISPLAY

1. Enter Pitch and floor area*:

On/C On/C	0
1 2 Inch Pitch	PTCH 12_{Inch}
1 6 Feet Length	LNTH 16_{Feet} 0_{Inch}
1 3 Feet Width	WDTH 13_{Feet} 0_{Inch}

2. Find roof area:

Conv Diag *(Roof)*	ROOF $294.1564_{SQ\ Feet}$

3. Find number of roofing squares:

Diag	SQRS 2.94

4. Find number of bundles:

Diag	BNDL 8.82

5. Display bundle size/area:

Diag	B-SZ $33.33_{SQ\ Feet}$

6. Find number of 4 x 8 sheets:

Diag	4x8 9.19

Cont'd on page 45

7. Display stored Pitch:

Diag — PTCH STORED 12 Inch

8. Find floor/plan area:

Diag — PLAN 208 SQ Feet

*If you know the floor area (and do not need to calculate it), once you have entered the Pitch, enter the area and label it as Square Feet, then press Conv Diag. For example, if the plan/floor area is 100 Square Feet, enter 1 0 0 Feet Feet Conv Diag.

ROOF COVERING - ENTERING RISE, RUN (NO PITCH) AND AREA

Example: Find the roof covering, Pitch and plan area if the Rise is 12 Feet and Run is 13 Feet. The length of the floor area is 60 Feet and the width is 30 Feet.

KEY INPUT & DISPLAY

1. Enter Rise, Run, length and width:

On/C On/C	0
1 2 Feet Rise	RISE 12 Feet 0 Inch
1 3 Feet Run	RUN 13 Feet 0 Inch
6 0 Feet Length	LNTH 60 Feet 0 Inch
3 0 Feet Width	WDTH 30 Feet 0 Inch

2. Find roof area, number or roofing squares, number of bundles, stored bundle size, number of 4 x 8 sheets, Pitch and plan area:

Conv Diag *(Roof)*	ROOF 2449.635 SQ Feet
Diag	SQRS 24.50
Diag	BNDL 73.49
Diag	B-SZ 33.33 SQ Feet
Diag	4x8 76.55
Diag	PTCH STORED 11-1/16 Inch
Diag	PLAN 1800 SQ Feet

Basic D:M:S and Trigonometry Examples

Remember to press On/C On/C to clear entries in between problems.

CONVERTING DEGREES: MINUTES: SECONDS

Example: Convert 25˚ 44’ 24” to decimal degrees:

KEY INPUT & DISPLAY

On/C On/C	0
2 5 ▪ 4 4 ▪ 2 4	DMS 25.44.24
Conv ▪ *(dms ‹› deg)*	25.74˚

Cont’d on page 46

Example: Convert 25.74° to D:M:S

KEY INPUT & DISPLAY

On/C On/C	**0**
2 5 . 7 4 Conv . *(dms ‹› deg)*	**DMS 25.44.24**

Note: Improperly formatted entries will be redisplayed in the correct convention after any operator key is pressed. For example, 30˚ 89’ entered will be corrected and displayed at 31˚ 29’ 0” or 31.48333˚.

TIME CALCULATIONS USING D:M:S

Example: Add 10 Hour 40 Minutes 30 Seconds to 12 Hours 18 Minutes 25 Seconds:

KEY INPUT & DISPLAY

On/C On/C	**0**
1 0 . 4 0 . 3 0	**DMS 10.40.30**
+ 1 2 . 1 8 . 2 5 =	**DMS 22.58.55**

Appendix A - Default Stored Values

STORED VALUE	DEFAULT SETTING
Desired Riser Height	7-1/2 INCH
Desired Tread Width	10 INCH
Floor Height	10 INCH
On-center Spacing	16 INCH
Weight per Volume	1.5 Ton Per CU YD
Block Area	128. SQ INCH
Block Length	16 INCH
Footing Area	264. SQ INCH
Spring (Crown) Angle	45.00°

After a Clear All (On/C ⊗*), your calculator will return to the default settings.*

Peforming a Full Reset (Press Off *, then hold* ⊗ *while pressing* On/C *) will also restore the default settings.*

Appendix B - Preference Settings

PREFERENCE SETTING	DEFAULT SETTING
Fractional Resolution	1/16
Area Display	Standard
Volume Display	Standard
Stairway Headroom	6 Feet 8 Inch
Rake Wall	Descending
Arched Wall	Outside
Jack Rafters	Descending
Irregular Jack Spacing	OC-OC
Exponent	Off
Meter Linear Display	0.000
Decimal Degree Display	0.00°
Fractional Mode	Standard

Peforming a Full Reset (Press Off *, then hold* ⊗ *while pressing* On/C *) will restore the default settings. Replacing the batteries will also cause these settings to reset.*

PREFERENCE SETTING	OPTIONS
1) Fractional Resolution	– *1/16 (displays fractional values to the nearest 16th of an Inch) – 1/32 – 1/64 – 1/2 – 1/4 – 1/8
2) Area Display Format	– *Standard (if units entered are the same - e.g., Feet x Feet - the answer will remain in this format (Square Feet), but if units entered are different - e.g., Inches x Feet area answer will be displayed in Square Feet) – Square Feet (area answers always displayed in Square Feet, regardless of unit entry - e.g., Inches x Inches = Square Feet)

PREFERENCE SETTING	OPTIONS
	– Square Feet (area answers displayed in Square Feet regardless of unit entry - e.g., Inches x Inches) – Square Yards (area answers always displayed in Square Yards - e.g., Feet x Feet = Square Yards) – Square Meters (area answers always displayed in Square Meters - e.g., Feet x Feet = Square Meters)
3) Volume Display Format	– *Standard (if units entered are the same - e.g., Feet x Feet x Feet - the answer will remain in this format (cu. ft), but if units entered are different - e.g., Feet x Feet x Inches - volume answer will always be displayed in Cubic Yards) – Cubic Yards (answers always displayed in Cubic Yards, regardless of unit entry - e.g., Feet x Feet x Feet = Cubic Yards) – Cubic Feet (vol. answers always displayed in Cubic Feet, regardless of unit entry - e.g., Inches x Inches x Inches = Cubic Feet) – Cubic Meters (answers always displayed in Cubic Meters, regardless of unit entry - e.g., Feet x Feet x Feet)
4) Stairwell—Headroom Height	– *6 Feet 8 Inch (default) – Use + or – key to increase or decrease above value by 1 Inch
5) Rake-Wall Descending	– *Descending (Rake-Wall studs are or Ascending displayed from largest to smallest size) – Ascending (Rake-Wall studs are displayed from smallest to largest size)
6) Arched Wall Outside	– *Outside (Arched walls are calculate or Inside for outside of the arc) – Inside (Arched walls are calculated for inside of the arc)
7) Jack Rafters Descending	– *Descending (Jack rafters are or Ascending displayed from largest to smallest size) – Ascending (Jack rafters are displayed from smallest to largest size)
8) Irregular Jack Rafters	– *OC-OC (On-center spacing maintained O-C or Mate on both regular and irregular sides) – JAC-JAC (regular/irregular Jack rafters “mate” at the hip valley, e.g., On-center spacing not maintained on both sides)
9) Exponent Off or On	– *Off (Exponential Mode is Off; turns on Auto-ranging; e.g., if display can’t show seven digits, will display in next largest unit). – On (Exponential Mode is On)
10) Meter Linear Display	– *0.000 (linear Meter answers are always displayed to third decimal place) – FLOAt (linear Meter answers are displayed to the maximum number of decimal places - e.g., 1.234 M + 2.56 M = 3.794 M)
11) Decimal Degree Display	– *0.00° Display – FLOAt
12) Fractional Mode	– *Standard (fractions are displayed to the nearest fraction) – Constant (fractions are displayed in the set fractional resolution)

Appendix C - Battery Info

The Victor C6000 is powered by two LR44 batteries.

The calculator is packaged with a battery insulator tab, which must be removed from the battery case on the back of the calculator before use.

Appendix D - Warranty

The Victor C6000 comes with a Limited 2 Year Warranty.

Your new VICTOR construction calculator is guaranteed to the original purchaser for two years for all parts and labor, providing repair work is performed at an authorized VICTOR Service Center and the units are sent by prepaid mail. For Service Centers outside the USA please consult your local office supply Dealer or Victor's Web Site. Warranty repair requires a copy of the original purchase invoice or receipt to be packed with the machine.

Any warranty, statutory or otherwise, dose not include service and or replacement or repair of parts when damage or defect is a result of accident, abuse, or the elements.

To register your warranty please email us your registration through our website or by emailing it to registration@victortech.com.

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