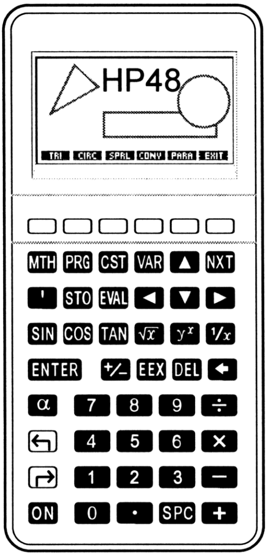
Richard's Plain Geometry

Owner's Manual

We reserve the right to make minor adjustments or changes in the contents of the manuals, software or pricing from time to time as we see fit.



Richard's Plain Geometry

Owner's Manual

Manufactured in the United States of America

published by **Software by D'Zign**
Tollhouse, California, U.S.A., April 1997

ISBN 0-944889-19-0

kermit

Kermit protocol was developed at Columbia University Center for Computing Activities. The Kermit programs are provided "as-is", with no warranty of any kind. Columbia University, the individual programmers, and the contributing institutions make no claim as to their correct operation or the accuracy of the documentation.

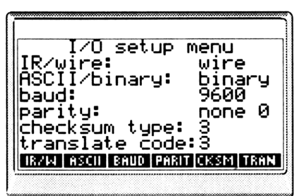
downloading the library

There are two files on the disk, LIBRARY and SETUP, which will be transferred to your HP48 later. The rest of the files are used in the PC.

For kermit to work correctly the parameters must be matched between the PC and the 48. If you are not already familiar with the procedure, read about it in your 48 Users' Manual before continuing. When you are sure you understand the process, connect your calculator to the PC with a serial cable (HP 82222A) and, from your program directory in the HP48, download the library to the calculator as follows:

48SX

The first thing to do is match the settings on the 48 and PC. In the I/O program of the 48**SX** they should look the same as those shown to the right. If they don't, they may be changed by using the menu keys as toggles. Note that this transfer is made in **binary** mode, with the translate code set to **3**.



48GX

This should be setup as shown to the right; enter the I/O program and scroll down to transfer, use the cursor keys to scroll through and make changes until the display looks like this picture.

On the **SX** you have to again stroke [↰] [PRG] to have [RECV] in the menu.

on the computer
In DOS, start KERMIT and set the port. Our example uses PORT 2, because we have a mouse hooked up to port 1. You need to know your PC's setup to decide which port to use. If you do *not* have a mouse on your PC you probably need to use PORT 1.

At the first kermit prompt, `MS-Kermit>`, type `SET PORT` (one or two, see above) and stroke

[Enter]

When the prompt appears again, type `SET BAUD 9600` and stroke

[Enter]

At the third Kermit prompt, type `SEND LIBRARY`. Your screen should look like this:

```
                MS-DOS Kermit 3.0
IBM-PC MS-Kermit: 3.01 20 March 1990
Copyright (C) Trustees of Columbia University 1982. 1990.

Type ? or HELP for help

MS-Kermit>SET PORT 2
MS-Kermit>set baud 9600
MS-Kermit>send library_
```

At the same time, more or less, on the 48 stroke [RECV] and on the PC stroke

[Enter]

installing the library

Your PC screen will show the information as the sending is in progress, and the percent transferred. When the transfer has been completed, you should still be in Kermit, and have the prompt, `MS-Kermit>`.

Type in `SEND SETUP`, and then stroke

[Enter]

Stroke **RECV** on the HP48. When transfer is complete type Q and stroke return, to exit Kermit, and go back to the calculator to complete the installation of the new programming.

Stroke the [VAR] key (*on the GX, you have to stroke* [ON] *first, to leave the I/O display*) to return to the main menu bar and you should see two new listings, **SETUP** & **LIBRA**, to the left of your regular program selection menu, in the menu bar. Stroke the [ ] key under **LIBRA**, then stroke ['] and the [ ] key under **LIBRA** again. Stroke (*SX:* [↰] [DEL], *GX:* [↰] [EEX]) and then stroke [0] [STO].

Turn the calculator off, then on again, and it should sort of 'blink'. Stroke [VAR] to return to the main menu, and stroke the [ ] key under **SETUP**. When the program stops running your normal menu for program selection will be displayed.

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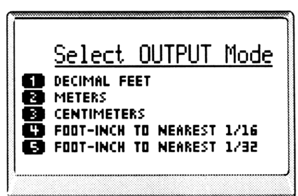
setting the parameters

This program offers the angle options of working in either decimal degrees (D.dd) or degrees, minutes and seconds (D.MS). The options for length measurements include decimal feet, metric (output may be in meters or centimeters) or foot-inch-fraction.

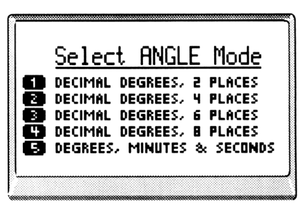
The main menu shows variable keys for each of the programs:

TRI CIRC SPRL CONV PARA EXIT

Parameters are set by stroking the PARA key to bring up the selection display, and the selection is made by stroking the numeric key that corresponds to your choice. For instance, to select meters, stroke 2 .



A similar display appears next, giving you the angle options. Notice that the decimal degree option gives you four choices of accuracy . . . The Degree, Minutes and Seconds option is to 0.0".



Stroke the corresponding numeric key.

triangle solutions

Surveyors are constantly needing the solution to a triangle to solve field problems. With this in mind, we have included a triangle solution program that is not only easy to use, but also offers more ways to solve a triangle than any other triangle program available.

using the program

It is *always* a good idea to make a sketch of the triangle before beginning. As you will see (next page), the program does not use the parts of the triangle in the order you are probably used to.

```
Side 1 = 8.3640
Angle 1 = 36°12'30.0"
Side 2 = 3.8172
Angle 2 = 120°40'52.7"
Side 3 = 5.7450
Angle 3 = 23°06'37.3"
AREA = 9.4301
SIDE ANGL AREA      MORE EXIT
```

There is very little else to know about this program. To use it, just stroke the ▭ key below the menu listing that corresponds to the part you are entering, and enter three parts, in order.

using the area as one of the parts

If one of the known parts is the area, it should be input first, followed by any two adjacent parts.

two solutions

```
Side 1 = 57.4492
Angle 1 = 84°28'17.9"

Side 2 = 83.6400
Angle 2 = 36°12'30.0"

Side 3 = 96.8000
Angle 3 = 59°19'12.1"

AREA = 2391.3505


2nd Solution:
Side 1 = 83.6400
Angle 1 = 36°12'30"

Side 2 = 38.1740
Angle 2 = 120°40'47.9"

Side 3 = 57.4492
Angle 3 = 23°06'42.1"
```

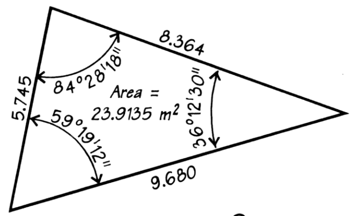
There are two configurations that will always have a possible second answer, *SIDE-SIDE-ANGLE* and *AREA-SIDE-SIDE*. When there is a second solution the menu prompt bar will change to show

`[ ] [2ND] [ ] [ ] [MORE] [EXIT]`

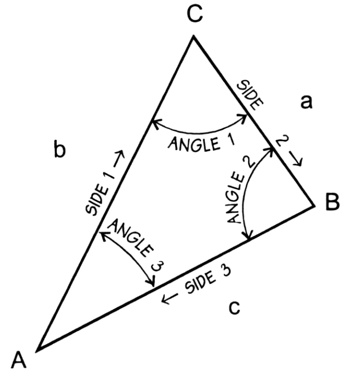
If the first solution was the correct one for your triangle, either stroke **MORE** to begin a new triangle, or stroke **EXIT** to leave the program.

If you want the second solution to be output, just stroke **2ND**. The printed output is shown to the left.

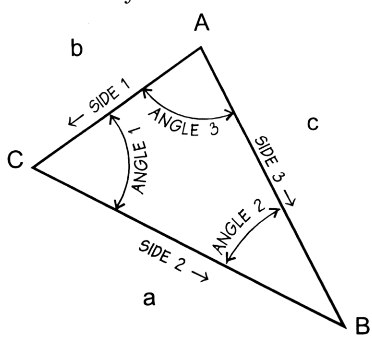
The triangle shown to the right will be used for the examples. It should be noted that the output will vary slightly, depending on the number of places input, particularly in the input of the angles.



The notations for angles and sides is familiar to HP users, but is not the standard, or *textbook* notation which you have learned in trigonometry (side **a** opposite angle **A**, side **b** opposite angle **B**, and side **c** opposite angle **C**). The sides and angles are numbered, in order, going around the triangle.



The example triangle (top) shows this style of labeling, compared to the standard notation for sides and angles. ***Side 1*** may be assigned to any side that is convenient to use, depending upon the available information about the triangle. It should be located at a side where the known information then falls into position for solution by one of the routines.



In the example, the assigned designations go clockwise, if it will better fit the information available, the labeling may go anticlockwise instead, as shown to the left.

NOTE! There is no solution for a triangle where the three angles are the only known parts, since this condition can produce an infinite number of similar triangles.

side 1, side 2, side3

THREE SIDES KNOWN is one of the most used solutions for triangles, particularly since the accuracy of electronic distance measurement trilateration has, for the most part, replaced triangulation in several types of surveys.

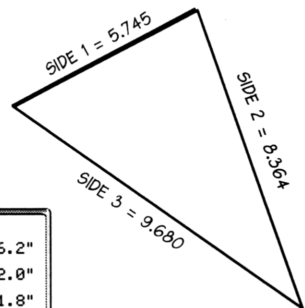
keystrokes:

TRI

5 . 7 4 5 SIDE

8 . 3 6 4 SIDE

9 . 6 8 SIDE

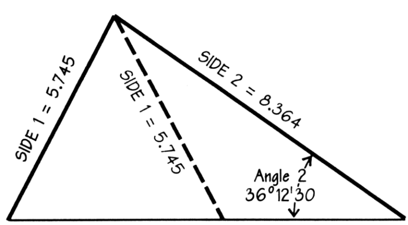


output display:

```
Side 1 = 5.7450
Angle 1 = 84°28'16.2"
Side 2 = 8.3640
Angle 2 = 36°12'32.0"
Side 3 = 9.6800
Angle 3 = 59°19'11.8"
AREA = 23.9138
SIDE | ANGL | AREA |      | MORE | EXIT
```

side 1, side 2, angle 2

TWO SIDES AND THE FOLLOWING ANGLE KNOWN has two possible solutions. When this configuration is used , both solutions may be output. The second solution will not necessarily show the parts in the same order as the input.



output display:

```
Side 1 = 5.7450
Angle 1 = 84°28'22.7"
Side 2 = 8.3640
Angle 2 = 36°12'30.0"
Side 3 = 9.6802
Angle 3 = 59°19'07.3"
AREA = 23.9139
     | 2ND |      |      | MORE | EXIT
```

keystrokes:

MORE

5 . 7 4 5 SIDE

8 . 3 6 3 6 4 SIDE

3 6 . 1 2 3 ANGL

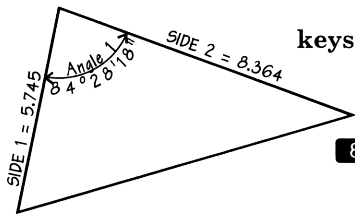
keystroke:

2ND

```
Side 1 = 8.3640
Angle 1 = 36°12'30.0"
Side 2 = 3.8172
Angle 2 = 120°40'52.7"
Side 3 = 5.7450
Angle 3 = 23°06'37.3"
AREA = 9.4301
SIDE | ANGL | AREA |      | MORE | EXIT
```

side 1, angle 1, side 2

TWO SIDES AND THE INCLUDED ANGLE KNOWN is resolved by finding the third side, and then solving the triangle as shown on the previous page, three sides known.

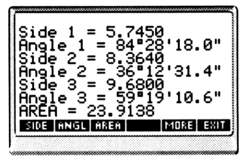


keystrokes:

TRI

5 . 7 4 5 SIDE
8 4 . 2 8 1 8 ANGL
8 . 3 6 4 SIDE

output display:



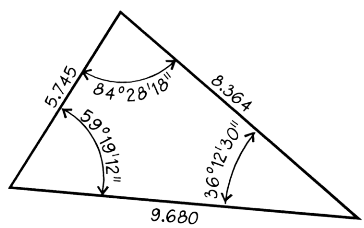
side 1, angle 1, angle 2

ONE SIDE AND THE TWO FOLLOWING ANGLES KNOWN
This solution first solves for the third angle. The remainder of the triangle is solved as Angle, Side, Angle to determine the other missing sides.

keystrokes:

TRI

5 . 7 4 5 SIDE
8 4 . 2 8 1 8 ANGL
3 6 . 1 2 3 ANGL

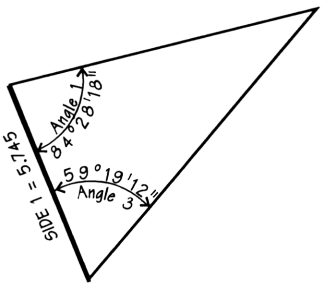


printed output:

```
Side 1 = 5.7450
Angle 1 = 84°28'18.0"

Side 2 = 8.3641
Angle 2 = 36°12'30.0"

Side 3 = 9.6801
Angle 3 = 59°19'12.0"

AREA = 23.9142
```

angle 3, side 1, angle 1

TWO ANGLES AND THE INCLUDED SIDE ARE KNOWN
This solution is also used as a secondary solution to some of the other routines, after the problem has first been reduced to these three known parts.



keystrokes:

TRI

5 9 . 1 9 1 2 ANGL
5 . 7 4 5 SIDE
8 4 . 2 8 1 8 ANGL

output display:

```
Side 1 = 5.7450
Angle 1 = 84°28'18.0"
Side 2 = 8.3641
Angle 2 = 36°12'30.0"
Side 3 = 9.6801
Angle 3 = 59°19'12.0"
AREA = 23.9142
SIDE ANGL AREA  MORE EXIT
```

area, side 1, angle 1

THE AREA, ONE SIDE AND ONE ANGLE KNOWN is the first of the three routines in this program which allow the area to be used as one of the known parts. Whenever the area *is* one of the parts, *it is input first*.

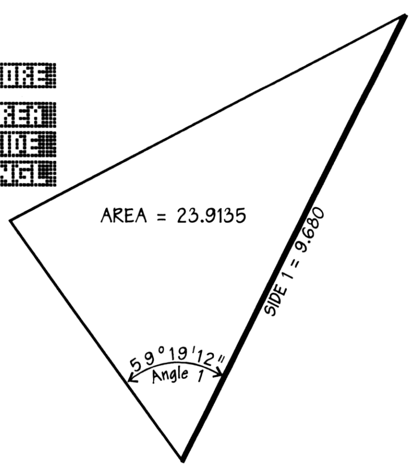
keystrokes:

MORE

2 3 . 9 1 3 5 AREA
9 . 6 8 SIDE
5 9 . 1 9 1 2 ANGL

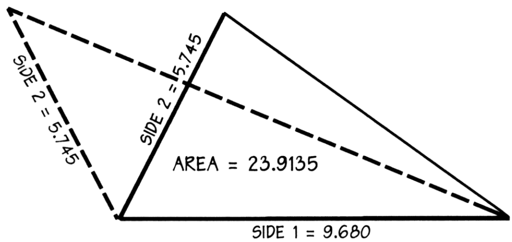
printed output:

```
Side 1 = 9.6800
Angle 1 = 59°19'12.0"

Side 2 = 5.7449
Angle 2 = 84°28'18.0"

Side 3 = 8.3640
Angle 3 = 36°12'30.0"

AREA = 23.9135
```



area, side 1, side 2

AREA AND TWO SIDES KNOWN is another problem with two possible solutions. When this configuration is used , both solutions may be output. The second solution will not necessarily show the parts in the same order as the input.



keystrokes:

MORE
2 3 . 9 1 3 5 AREA
9 . 6 8 SIDE
5 . 7 4 5 SIDE

output display:

```
Side 1 = 9.6800
Angle 1 = 59°19'07.1"
Side 2 = 5.7450
Angle 2 = 84°28'20.6"
Side 3 = 8.3639
Angle 3 = 36°12'32.3"
AREA = 23.9135
|      | END |     |     | MORE | EXIT |
```

prompt bar:

| | END | | | MORE | EXIT |

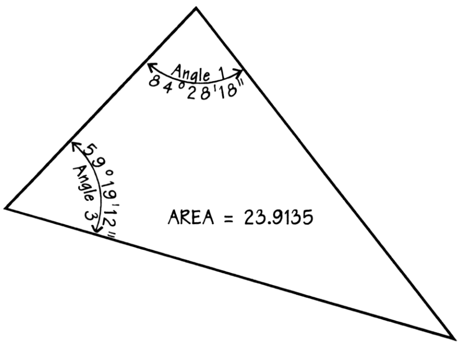
keystroke:

END

```
Side 1 = 9.6800
Angle 1 = 120°40'52.9"
Side 2 = 5.7450
Angle 2 = 37°55'29.4"
Side 3 = 13.5448
Angle 3 = 21°23'37.7"
AREA = 23.9135
| SIDE | ANGL | AREA |     | MORE | EXIT |
```

area, angle 3, angle 1

AREA AND TWO ANGLES KNOWN is first solved for the included side, and then solved as Angle, Side, Angle. The first angle input is treated as Angle 3, the second as Angle 1.

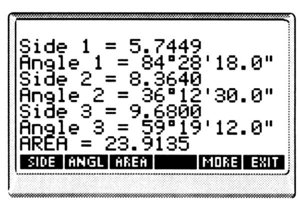


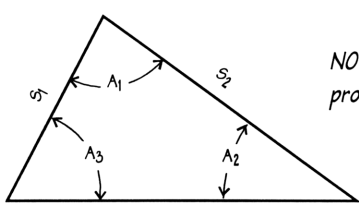
keystrokes:

TRI

2 3 . 9 1 3 5 AREA
5 9 . 1 9 1 2 ANGL
8 4 . 2 8 1 8 ANGL

output display:





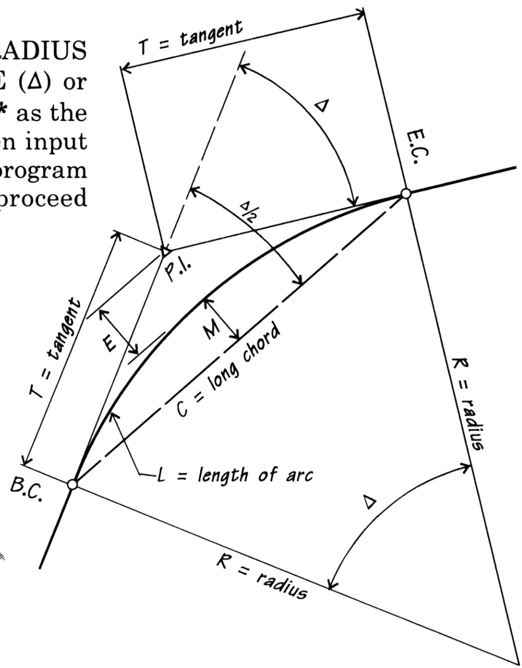
NOTE! Areas are calculated by this program using the equation

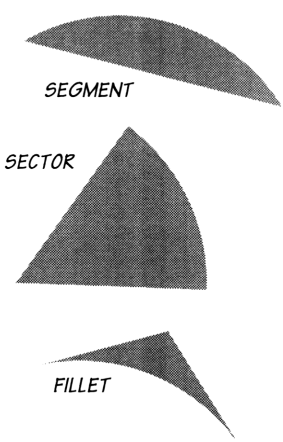
Area = ½($S_1 S_2 \sin A_3$)

circular curves

This program solves circular curves for the unknown parts of the curve, as well as the areas normally used by surveyors. It will also calculate curve layouts by several methods, but let's look at the curve *solutions* first. Access the program by stroking [CIRC]. The menu, [Δ] [R] [L] [T] [C] [D] [NXT] [M] [E], allows a full range of input options.

You *must* input the RADIUS or CENTRAL ANGLE (Δ) or DEGREE OF CURVE* as the first of the parts. Then input ***any*** other part. The program will automatically proceed with the calculations.





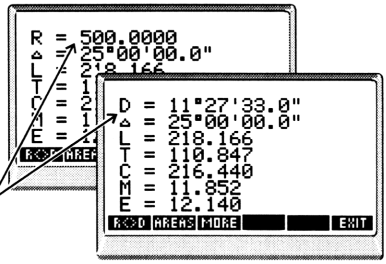
Curve Nomenclature

The parts of a typical horizontal (circular) curve are shown above

*Use of RADIUS or DEGREE OF CURVE varies in different geographical locations. Since they are both functions of each other, they can **not** both be used as the two required parts (for input) in this program.

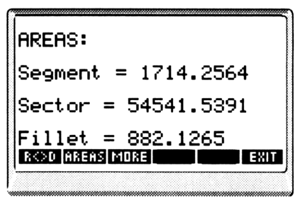
Calculation of the curve data will bring up the secondary menu, R<>D AREAS MORE EXIT, as well as display the output.

The first function, R<>D , acts as a toggle for the first line of the display, displaying either the Radius or the Degree of Curve.



When the printer is used, both are printed, but because the display only allows 7 lines, the radius is normally output.

The second menu function, AREAS , calculates and displays the areas.

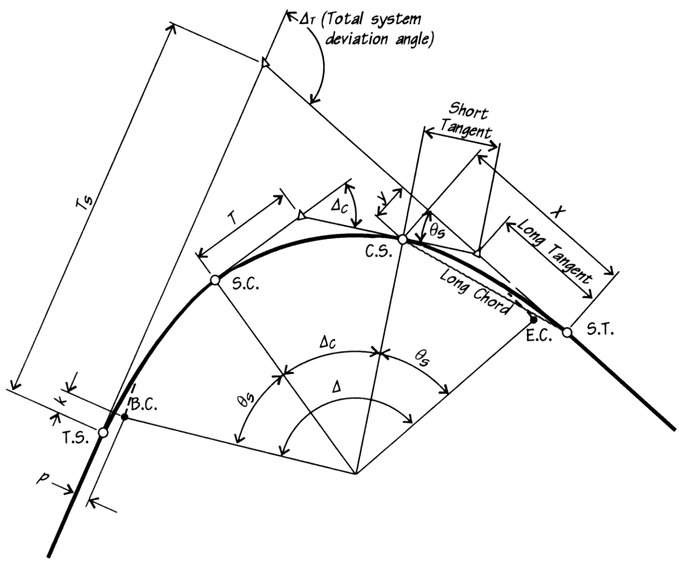


The MORE key returns you to the input menu without having to first exit and start the program over, when you are calculating the data for more than one curve.

spiral curves

On railways, and often on highways, a transition curve is used between a tangent and a circular curve to more smoothly apply a superelevation for the curved portion. The curve used for this purpose is usually a spiral curve.

Commonly, there is an *entrance* spiral, a circular curve, and then an *exit* spiral, forming a ***spiral system***. The parts of such a system and the nomenclature used within this manual are shown below:



In a spiral system, the circular portion which would normally be at right angles to the two tangents is modified by the amount of arc length subtended by an angle equal to θs. This original point of tangency would occur at a distance of k from the T.S. and the S.T., at an offset distance of p.

The length of the spiral is designated as Ls. Note that the distance, X, is the tangent distance to the S.C. (the tangent distance to any point on the spiral is usually shown as x). The offset at the S.C. is Y, and to any point, y. Values to any point on the spiral can be calculated using the same formulas as for the total spiral, since θs is the variable. The formulas used in this program are as follows:

T_S = total tangent distance = $(R_C + p) \tan\Delta/2 + k$

$p = y_S - R_C \sin \theta_S$, $k = x_S - R_C \sin \theta_S$, $\theta_S = \frac{L_S D_C}{200}$

$$X = L_S \left(1 - \frac{\delta_S^2}{10} + \frac{\delta_S^4}{216} - \frac{\delta_S^6}{9360} + \frac{\delta_S^8}{685440} - \frac{\delta_S^{10}}{76204800} \cdots \right)$$

$$Y = L_S \left(\frac{\delta_S}{3} - \frac{\delta_S^3}{42} + \frac{\delta_S^5}{1320} - \frac{\delta_S^7}{75600} + \frac{\delta_S^9}{6894720} \cdots \right)$$

LT = long tangent = $X - Y \cot \theta_S$, LC = long chord = $\sqrt{X^2+Y^2}$

and ϕ_S = deflection angle = $\frac{1}{3}\theta_S - C_S$ *or* $\frac{1}{3}(l / l_S)^2\theta_S - C_S$,
where $C_S = 0.0031\theta_S + 0.0023\theta_S^5(10)^{-5}$

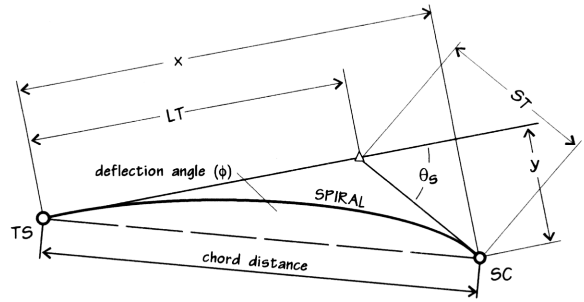
Note: In the above the D_C, θ_S and Δ are in degrees, and $\delta_S = \theta_S$, expressed in radians.

This program allows the user to calculate the total system, or just the data for the spiral. We will look first at the spiral itself. To calculate the spiral it is necessary to know the ***spiral length*** and either the

circular portion radius or the ***spiral angle***

The *degree of curvature* for the circular portion may be input instead of the radius, if you are in a region where it is more commonly used than the radius, but the degree and the radius are two forms of the **same function**, not two parts of the input.

The degree of curvature is also the basis of a number of spiral tables, and must be used to obtain additional information that is ***not*** included in the tables being used.



TYPICAL ENTRANCE SPIRAL

using the program

The program is accessed by stroking

SPL

Input the length of the spiral, stroke

LS

THEN

Input the radius of the circular portion and stroke

RC

OR

Input the degree of curve for the circular portion and stroke

DC

OR

Input the spiral angle and stroke

θS

The spiral data will be output at this point. To calculate the data for a total spiral *system*, continue as follows:

Input the total deflection angle (ΔT) for the total spiral system and stroke

ΔT

This will output the remainder of the data for the system. It should be noted that this is a *symmetrical* spiral system, in that the entrance and exit spirals have the same length.

keystroke example

As an example of how the program works, we will use a spiral which has a length of 20 m and a degree of curvature of 8°. For the second set of calculations, we'll further assume that the total system on which these spirals will be used has a total central angle (Δ_S) of 12°30'.

Enter the program and bring up the menu prompt bar by stroking

SPL

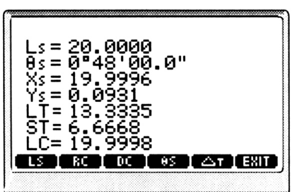
prompt bar:

LS RC DC θS ΔT EXIT

keystrokes:

2 0 LS
8 DC

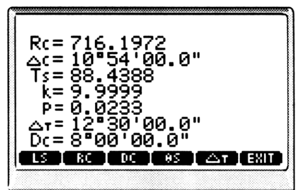
output display:



keystrokes:

1 2 . 3 ΔT

output display:



The non-standard radius was caused by the use of the degree of curvature as the criteria. Often this would be a preliminary calculation, and the system would now be recalculated using an even radius for the circular part.

keystroke:

EXIT

conversions

Often, one of the things that has to be done is a translation of the architect's dimensions to decimal units. This will simplify all of the math involved and, in general, matches the numbers up with the equipment used. The input may be in foot-inch-fraction, metric, etc., but the answer is converted before output.

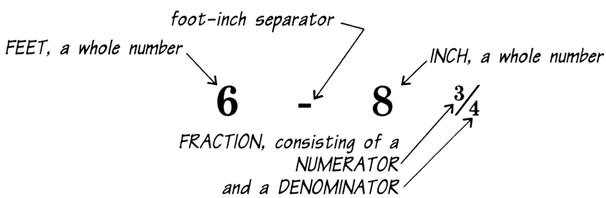
As you browse through the different programs in this product, you'll see that some of them contain a menu selection, [CONV]. When the *input selection* (in [PARA]) is foot-inch-fraction, stroking the key under [CONV] will bring up the menu

[FT] [+] [-] [×] [/] [EXIT] (NXT) [FT↑] [MET↑] [→MET] [RESET] [ACUM]

input/output

The input and output are determined by the settings in [PARA], or may be changed as often as necessary by stroking NXT [RESET] while in the [CONV] menu, to bring up the dimension selection displays (see page 3). Most commonly, conversions will be to or from foot-inch-fraction, or "architect's numbers", so let's look at how these dimensions work.

For the example, we'll use the dimension, 6'-8¾". The parts are:



The menu key to the far left, [FT], is used to input the feet (input the number, stroke the ▭ key under [FT]). This will automatically bring up the secondary menu.

[/2] [/4] [/8] [/16] [/32] [INCH]

For *whole* inches (when there is no fraction in the dimension), input the number and stroke [INCH]. When there is a fraction, input the inches, SPC, then the *numerator* of the fraction and stroke the ▭ key under the denominator.

To show the process as a single keystroke procedure, the input for 6'-8¾" would be:

prompt menu: FT | + | - | × | / | EXIT

keystrokes:

FEET INPUT → 6 FT

prompt menu: /2 | /4 | /8 | /16 | /32 | INCH

keystrokes:

FRACTION and NUMERATOR INPUT → 8 SPC 3 /4

the other menu keys

+ After completing a conversion, this key will add the currently displayed answer to the previously calculated number, displaying the total. The output will be in whatever units have been selected, regardless of the mode of the input.

- Similar to the function above, this key subtracts the currently displayed number from the previously calculated one, displaying the new total.

× You can multiply the currently displayed output by a number. Input the number, stroke the ▭ key under this menu listing.

/ You can divide the currently displayed output by a number. Input the number, stroke the ▭ key under this menu listing.

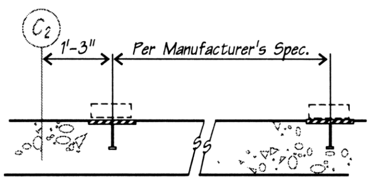
FT This key, and the next one, are used primarily when the *output* is set to foot-inch-fraction. If decimal feet are input and this key stroked, the output will display the value as foot-inch-fraction.

METR If a metric number (input is ***centimeters***) is input and this key stroked, the number is displayed as foot-inch-fraction.

CMET This key will display the currently calculated answer in centimeters, if needed as a check.

Some examples of these functions are shown below, and then we will look at the functions **ACUM** and **RESET**.

In this first example, you need to layout the embedded plates to later hold down a piece of equipment. You're working in foot-inch-fractions, but the equipment base was made in Holland, and the dimension is given as 2.339 meters. From the MAIN menu:



keystrokes:

NXT **CONV**

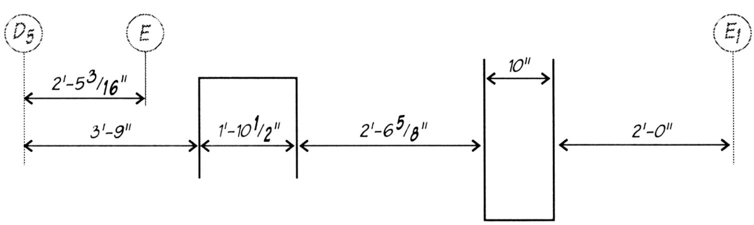
prompt menu:

FT | + | - | × | ÷ | EXIT

keystrokes:

2 3 3 9 NXT **METR**

displayed output: 7'- 8 1/8"



In this example, we need to calculate the distance between lines E and E_1 from the given dimensions. From the Main menu:

keystrokes:

NXT **CONV**

prompt menu:

FT | + | - | × | ÷ | EXIT

keystrokes:

3 **FT**

prompt menu:

/2 | /4 | /8 | /16 | /32 | INCH

keystrokes:

9 **INCH**

displayed output:

3'- 9"

prompt menu:

FT | + | - | × | ÷ | EXIT

keystrokes:

2 **FT**

prompt menu:

/2 | /4 | /8 | /16 | /32 | INCH

keystrokes:

5 SPC 3 /16

displayed output:

2'- 5 3/16"

keystroke:

-

displayed output:

1'- 3 13/16"

prompt menu:
FT + - × ÷ EXIT

keystrokes:

1 FT

prompt menu:
/2 /4 /8 /16 /32 INCH

keystrokes:

1 0 SPC 1 /2

displayed output:

1'- 10 1/2"

keystroke:

+

displayed output:

3'- 2 5/16"

prompt menu:
FT + - × ÷ EXIT

keystrokes:

2 FT

prompt menu:

/2 /4 /8 /16 /32 INCH

keystrokes:

6 SPC 5 /8

displayed output:

2'- 6 5/8"

keystroke:

+

displayed output:

5'- 8 15/16"

prompt menu:
FT + - × ÷ EXIT

keystrokes:

0 FT

prompt menu:
/2 /4 /8 /16 /32 INCH

keystrokes:

1 0 INCH

displayed output:

0'- 10"

keystroke:

+

displayed output:

6'- 6 15/16"

keystrokes:

2 NXT FT

displayed output:

2'- 0"

keystroke:

+

displayed output:

8'- 6 15/16"

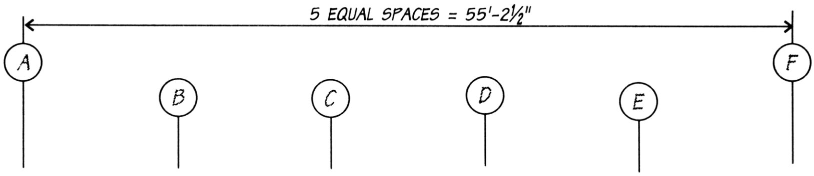
In this last example, we began by subtracting the portion left of the E line first. As a check on the calculation, do it again, this time adding the total string and then subtracting the 2'-3 5/16".

So, If we want to know the total distance:
keystrokes:

1 2 FT 6 SPC 9 /16 5 ×

output: 62'- 8 13/16"

Or, you may find that the plans give you something like this:



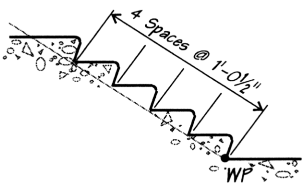
keystrokes:

5 5 FT 2 SPC 1 /2 5 /

output: 11'- 0 1/2"

accumulation

This keystroke, ACUM, appears on the second page of the conversions menu, and does a special job. You use the other functions exactly as you did in the preceeding examples, but if you have stroked this key first, the answers are stored into a file which will be recalled or printed out.



For example, you've calculated the spacing for the stair layout as shown to the right, and want to mark off the spacing along the sloped layout line.

You can eliminate cumulative error by marking all of the dimensions continuously, rather than one at a time, so you need to add up the string of dimensions. Instead of adding the 1'-0½" to itself for each new mark, you can use the *accumulate* function.

keystrokes:

NXT CONV NXT ACUM

prompt menu:

FT + - × / EXIT

keystrokes:

1 FT

prompt menu:

/2 /4 /8 /16 /32 INCH

keystrokes:

0 SPC 1 /2

displayed output:

1'- 0 1/2"

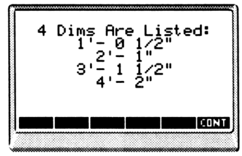
keystroke:

4 × EXIT

printed output:

```
4 Dims are Listed:
  1'- 0 1/2"
    2'- 1"
  3'- 1 1/2"
    4'- 2"
```

The example showed the printed output on the last page. If you are not using a printer, the display will be as shown to the right, and when there are more than five stored dimensions, stroking the CONT key displays another group of five.



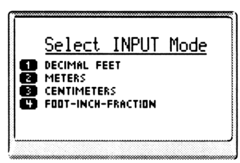
Accumulate may be used to store any combination of calculations, including multiply and divide. When used for multiplying, it actually adds the number to the last results *n* times, recording each intermediate answer.

Dividing by *n*, the result is calculated as 1 *n*th of the number and then added *n* times accumulating the number. This is like saying "take one fifth of the displayed number, and then add it to the last number. Add it a total of five times"

When the EXIT key is stroked, and accumulate has been selected for the calculations, the resulting list is output (and cleared). As noted above, it will be automatically printed out or displayed in groups of five items, depending on the mode of the printer.

reset

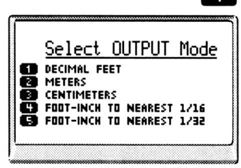
In the examples, we have shown the output in foot-inch-fraction, but you may have wanted the output to be something else.



keystroke:

4

In the example at the top of page 21, for instance, you may want the answer to be output in decimal feet and accumulated, so that the chain could just be laid on the floor deck to mark off the grid points.

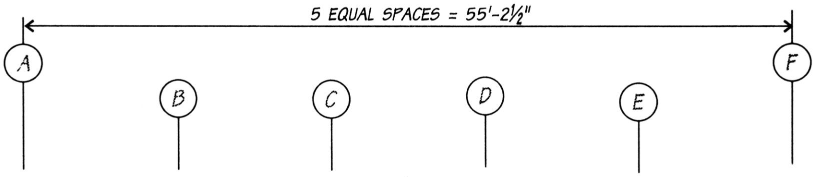


keystroke:

1

Stroking the RESET key brings up the two dimension selection displays (see page 3) so that you may change the mode. In this case you would select input of foot-inch (4) and output of decimal feet (1).

Looking again at that example, but with the changes in output that we want to make, first change the input and output settings as shown on page 21.

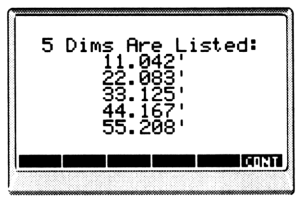


keystrokes:

NXT ACUM
5 5 FT
2 SPC 1 /2
5 /

output: 55.208'

display output:



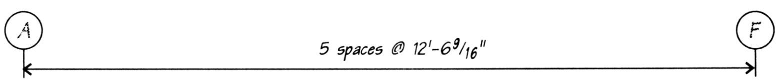
keystrokes:

EXIT

keystrokes:

EXIT

If you had wanted to layout the grid lines between A and F in the example at the bottom of page **2**-4, you could have used ACUM, as shown below:

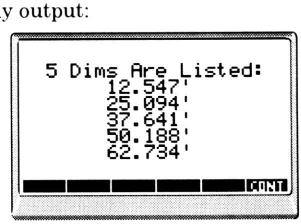


keystrokes:

NXT ACUM
1 2 FT
6 SPC 9 /16
5 ÷

output: 62.734'

display output:



keystrokes:

EXIT

keystrokes:

EXIT

On the next page, we've included a couple of practice problems.

ISBN 0-944889-19-0