Co-ordinate 'Inverse' Program 1
or Azimuth and Distance from Co-ordinates

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This program allows you to enter two co-ordinate pairs and calculate the azimuth and distance between them. The far point (or To point) is entered first, followed by the near point (or From point). The result will give the azimuth from the From point to the To point.

You want the azimuth and distance between two points, whose co-ordinates are known. We want the azimuth from the near point (1) to the far point (2). The co-ordinates of the far point are: (E2, N2), and the co-ordinates of the near point are (E1, N1).

Line	Instruction	Display	User Programming Instructions
V0001	LBL V		
V0002	CLΣ		⬅ CLEAR Σ (4)
V0003	Σ+		
V0004	360		
V0005	STO i		
V0006	STOP		R/S
V0007	Σ–		⬅ Σ–
V0008	Σy		➡ SUMS Σy
V0009	Σx		➡ SUMS Σx
V0010	y, x → θ, r		⬅ → θ, r
V0011	x < > y		
V0012	x < 0?		➡ x ? 0
V0013	RCL+ i		
V0014	→HMS		➡ →HMS
V0015	x < > y		
V0016	STOP		R/S

Notes

(1)   To run the program, enter the co-ordinates of the far (To) point, (E2, N2). Key in E2, press the ENTER key, key in N2 and press XEQ V.

     Enter the co-ordinates of the near (From) point (E1, N1). Key in E1, press the ENTER key, key in N1, then press the R/S key.

     At this point, the lower part of the stack will contain the following values.

Stack Register	Contents
Y	Azimuth of the line in degrees, minutes and seconds (HP notation)
X	Distance of the line

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Sample Computation

Enter far point's co-ordinates:	E2	205 123.456	Press Enter
	N2	123 456.789	Press XEQ V

The calculator displays 360.000000

Enter near point's co-ordinates:	E1	206 654.321	Press Enter
	E1	132 654.987	Press R/S

Stack will now contain:	189.265706	in the Y register (azimuth, DMS)
	9,324.719518	in the X register (distance)

The length of the line is 9324.720. The azimuth of the line is 189° 26' 57".056 (if you need it to that level of precision!)

Storage Registers Used

i   360, used for correcting negative azimuths.

Statistical Registers: Σx = Y or N co-ordinates, or ΔY or ΔN

                                  Σy = X or E co-ordinates, or ΔX or ΔE

Labels Used

Label V   Length = 60   Checksum = BB0A.