

UR1974-06

Calculation of areas from AMG coordinates.

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A programme (9A4; V = 2121) has been compiled for the Wang 700 computer to enable the calculation of any area bounded by straight sides where the coordinates of the vertices are known.

Each vertex is defined by its easting and northing. These pairs of coordinates are entered in turn in sequence around the perimeter. Any vertex may be chosen as the starting point.

OPERATION

- (1) PRIME, GO
- (2) The number 1 will be displayed in the Y-register. The first coordinate may now be keyed; press GO. Repeat this operation until all coordinates have been entered. The coordinates will be printed in sequence, followed by the area.
- (3) To continue, repeat operation (2).

PROGRAMME MODIFICATION

Units of area

The area may be printed as km^2 , ha or m^2 . The programme alterations needed to produce values in any desired unit or combination of units are given below:

Unit(s) required			Alteration	
km^2	ha	m^2	Step	Alter to
X			-	-
X	X		148	0001
X	X	X	148	0001
			203	0000
X		X	148	0000
	X		120	0001
	X	X	120	0001
			203	0000
		X	120	0000

km^2 - printed to the nearest 0.01 km^2 (hectare). To print to the nearest km^2 :

124	RECALL DIRECT
130	+

ha - printed to the nearest 0.1 ha (1000 m^2). To print to the nearest ha:

191	3
197	0900

To obtain a printout in hectares (or m^2) without altering the programme, press SF 01 (or SF 00) after the area in km^2 has been printed out. The values for the area in these units will be printed on succeeding lines. This technique should be used for printing more than one unit when calculating the area of a hexagon, or for printing more than two units when calculating

the area of a pentagon, due to the limitation of paper width.

Calculation of areas bounded by three, or by more than four straight sides

The programme alterations necessary to calculate the area of triangles, pentagons and hexagons are given below. For areas bounded by more than six sides two or more calculations must be performed.

3 SIDES		5 SIDES		6 SIDES	
Step	Alter to	Step	Alter to	Step	Alter to
018	GO	020	0007	020	0007
019	GO	021	0007	021	0007
068	0001	079	0009	022	0007
078	SEARCH	089	GO	023	0007
079	4	090	GO	079	0009
		092	0001	089	GO
		102	SEARCH	090	GO
		103	4		

CALCULATION OF AREAS FROM COORDINATES GIVEN IN UNITS OTHER THAN METRES

If the coordinates are in feet or yards, alter programme step 120 to 0000, and steps 170, 171 to 0014, 0207 (for feet) and 0001, 0213 (for yards).

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EXAMPLES OF PRINTOUT:

Area ABD:

400000 5400000 402000 5400000 400000 5398000 2.00 km²
 200.0 ha
 2000000 m²

Area ABCD:

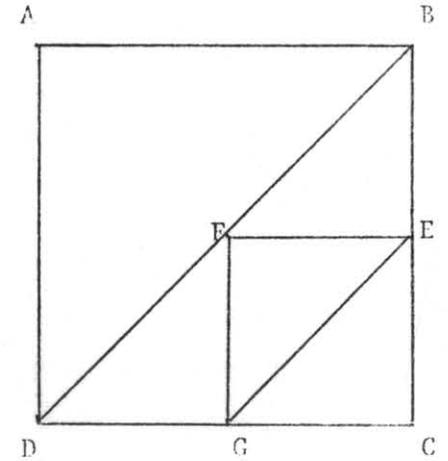
400000 5400000 402000 5400000 402000 5398000 400000 5398000 4.00 km²
 400.0 ha
 4000000 m²

Area ABEGD:

400000 5400000 402000 5400000 402000 5399000 401000 5398000 400000 5398000 3.50 km²
 350.0 ha
 3500000 m²

Area ABFEGD:

400000 5400000 402000 5400000 402000 5399000 401000 5399000 401000 5398000 400000 5398000 3.00 km²
 300.0 ha
 3000000 m²



PROGRAMME 9A4 (v = 2121)

000	04 08	050	07 00	100	04 00	150	04 08	200	02 01
001	07 00	051	04 04	101	00 15	151	00 07	201	01 12
002	04 12	052	00 01	102	04 08	152	07 01	202	04 13
003	01 02	053	04 04	103	07 03	153	06 00	203	04 07
004	01 08	054	00 02	104	04 15	154	05 15	204	07 00
005	01 10	055	04 08	105	00 01	155	04 11		
006	04 13	056	07 02	106	04 05	156	07 00		
007	07 01	057	04 15	107	00 09	157	05 04		
008	06 04	058	00 05	108	06 01	158	05 11		
009	05 15	059	04 05	109	04 05	159	04 08		
010	04 11	060	00 01	110	00 12	160	00 00		
011	07 00	061	06 01	111	06 02	161	04 15		
012	05 04	062	04 05	112	06 05	162	00 15		
013	00 07	063	00 04	113	04 00	163	07 12		
014	00 07	064	06 02	114	00 15	164	07 05		
015	00 07	065	04 14	115	04 08	165	06 00		
016	00 07	066	00 15	116	07 04	166	06 05		
017	00 07	067	04 15	117	07 02	167	04 11		
018	00 07	068	00 07	118	04 03	168	09 00		
019	00 07	069	04 05	119	00 15	169	04 12		
020	05 14	070	00 03	120	04 15	170	00 02		
021	05 14	071	06 01	121	00 15	171	01 15		
022	05 14	072	04 05	122	07 05	172	04 13		
023	05 14	073	00 06	123	04 12	173	07 07		
024	04 08	074	06 02	124	04 00	174	06 04		
025	07 01	075	06 05	125	06 00	175	04 12		
026	04 05	076	04 00	126	06 05	176	11 06		
027	00 01	077	00 15	127	04 12	177	04 13		
028	04 01	078	04 15	128	04 06	178	07 11		
029	00 03	079	00 01	129	04 11	179	06 04		
030	04 01	080	04 05	130	06 02	180	04 12		
031	00 05	081	00 05	131	04 12	181	11 08		
032	04 01	082	06 01	132	00 02	182	04 13		
033	00 07	083	04 05	133	02 04	183	04 07		
034	04 01	084	00 08	134	01 15	184	07 00		
035	00 09	085	06 02	135	04 13	185	04 08		
036	04 01	086	06 05	136	07 07	186	00 01		
037	00 11	087	04 00	137	06 04	187	04 15		
038	04 05	088	00 15	138	04 12	188	00 15		
039	00 02	089	04 07	139	11 06	189	07 05		
040	04 01	090	07 04	140	04 13	190	04 12		
041	00 04	091	04 15	141	07 11	191	07 02		
042	04 01	092	00 11	142	06 04	192	06 00		
043	00 06	093	04 05	143	07 03	193	06 05		
044	04 01	094	00 07	144	07 00	194	04 12		
045	00 08	095	06 01	145	04 12	195	04 04		
046	04 01	096	04 05	146	11 08	196	04 11		
047	00 10	097	00 10	147	04 13	197	09 01		
048	04 01	098	06 02	148	04 07	198	04 12		
049	00 12	099	06 05	149	07 00	199	00 02		