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Calculator Products Division

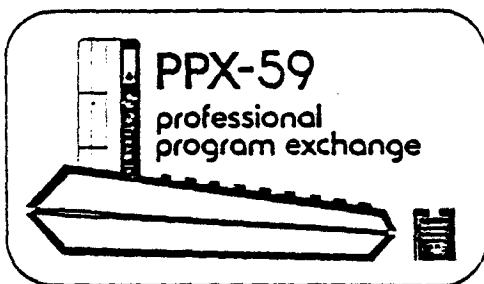
## Submission Abstract

Program Title <b>MAJIC SQUARES</b>		Rev. <b>A</b>
Abstract of Program <b>3x3, 4x4 &amp; 5x5 MAJIC SQUARES ARE PRINTED IN MATRIX FORMAT IF ALL CELL NUMBERS ARE INTEGERS &gt;0 &lt;10000. ALL OTHER SQUARES ARE LISTED.</b> <b>USER SPECIFIES TOTAL OF SQUARE OR LOWEST OR HIGHEST NUMBER IN THE SQUARE, INCREMENT SIZE AND SQUARE SIZE.</b> <b>4x2 &amp; 5x2 ARE MULTIMAJIC:- ALL SYMMETRICAL ARRANGEMENT OF CELLS ARE MAJIC AS WELL AS ALL ROWS, COLUMNS AND DIAGONALS</b>		
User Benefits: <b>FAST AND ACCURATE MAJIC SQUARES. MATRIX OUTPUT FOR POPULAR RANGE OF SQUARES.</b>		
Category <b>91</b> Number	Required Progs.	Prog. <b>708</b> Steps
		PC-100A Needed <input checked="" type="checkbox"/> Library Module ID <b>ANY</b> <input type="checkbox"/>
Submittal Agreement <p>All of the information forwarded herewith is contributed to Texas Instruments on a nonconfidential, nonobligatory basis; no relationship, confidential or otherwise, express or implied, is established with Texas Instruments by this contribution. Texas Instruments may use, copyright, distribute, publish, reproduce or sell this information in any way it chooses, without compensation to me. To my knowledge, this data is not copyrighted, and contribution of this information to Texas Instruments by me does not breach any obligation to any other person or organization relating to proprietary or confidential information.</p>		Submission Checklist <input checked="" type="checkbox"/> Recorded Magnetic Cards <input checked="" type="checkbox"/> Submission Abstract <input checked="" type="checkbox"/> Program Description <input checked="" type="checkbox"/> User Instructions <input checked="" type="checkbox"/> Sample Problem <input checked="" type="checkbox"/> Listing <input type="checkbox"/> <input type="checkbox"/>
Signature <u><i>James W. Roe</i></u> Name <b>JIM ROE</b> Address <b>75 KINGSLAKE RD</b> City <b>WILLOWDALE ONTARIO CANADA</b>		Date <u><b>SEPT 12/78</b></u> Tel. No. <u><b>416-491-1055</b></u> Zip <u><b>M2J 3E6</b></u>

## IMPORTANT

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## Program Description

Program Title: **MAJIC SQUARES** Rev. **A**

Method, Equations, Sketches, Limitations, References, Error Recovery:

NUMBERING OF CELLS STARTS IN TOP LEFT HAND CORNER

$$3^2$$

1	2	3
4	5	6
7	8	9

$4^2$  &  $5^2$  NUMBERED IN SIMILAR MANNER

### BASIC SQUARES

8	1	6	1	15	14	4	17	24	1	8	15.
3	5	7	12	6	7	9	23	5	7	14	16.
4	9	2	8	10	11	5	4	6	13	20	22.
			13	3	2	16	10	12	19	21	3.
							11	18	25	2	9.

3x3

4x4

5x5

ALL  $4^2$  &  $5^2$  ARE MULTIMAJIC - ANY SYMMETRICAL ARRANGEMENT OF CELLS IS MAJIC AS WELL AS ALL ROWS, COLUMNS & DIAGONALS.

i.e  $4^2$ :  $1+4+13+16 = 34$   $12+14+5+3 = 34$

$5^2$ :  $24+16+2+10+13 = 65$

ERROR RECOVERY: REENTER CORRECT VALUE. IF A, B OR C IS INTERRUPTED WITH R/S YOU MAY HAVE TO 3 AND OP 17 AND START OVER. MEMORY SIZE VARIES DURING RUNNING.

LIMITATIONS: - TOTAL CANNOT EXCEED 9,999,999,999 AND RETAIN ACCURACY.

- PGM ALWAYS IN STD. FORMAT

-  $\Delta$ , HIGH, LOW & TOTAL MAY BE SPECIFIED NEGATIVE AND OR NON-INTEGER

REFERENCE: 'MAJIC SQUARES & CUBES' BY W.S. ANDREWS DOVER 1960 (STILL IN PRINT)

RUNNING TIME: VARIES FROM 20-70 SECONDS.





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3	9	8	0	9	2
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PPX-59

professional  
program exchange

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## Sample Problem

### Statement of Example

GENERATE A 5X5 MAGIC SQUARE  
WHO'S TOTAL = 10,000. INCREMENT IN STEPS OF 10

**See Continuation Sheet**

ENTER	PRESS	OUTPUT/MODE (see legend below)	COMMENT
S	E	S	SE = S <sup>2</sup>
10			4E = 4 <sup>2</sup>
10000	D	10	3E = 3 <sup>2</sup>
	C		INCREMENT
			N'C' - TOTAL
			SPECIFIED
		2040 2110 1880 1950	N'A' - LOW NO.
		2100 1920 1940 2010	SPECIFIED
		1910 1930 2000 2070	
		1970 1990 2060 2080	N'B' - HIGH NO.
		1980 2050 2120 1890	SPECIFIED.
		2020.	} 5 <sup>TH</sup> COLUMN
		2030.	
		2090.	
		1900.	
		1960.	
		10000.      TOT	

Modes: n\* - Printed only (n) - Displayed Briefly (Pause)  
 (n)\* - Printed and displayed

**Over**

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Sample Problem (cont'd)

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ENTER	PRESS	OUTPUT/MODE (see legend below)	COMMENT
3 <sup>2</sup> Δ = 59 TOTAL = 59			
3	E		
59	VD		
59	C		
		196.6666667 01	} CELL NUMBER
		-216.3333333 02	
		78.6666667 03	
		-98.3333333 04	
		19.6666667 05	
		137.6666667 06	
		-39.3333333 07	
		255.6666667 08	
		-157.3333333 09	
		59. TOT	
4 <sup>2</sup> Δ = 59 LOW = 59			
4	E		
59	VD		
59	A		
		59 885 826 236	
		708 354 413 531	
		472 590 649 295	
		767 177 118 944	
		2006. TOT	

Modes: n\* - Printed only (n) - Displayed Briefly (Pause)  
(n)\* - Printed and displayed

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LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS
000	76	LBL		054	92	RTN		108	29	29	
001	18	C'		055	76	LBL		109	85	+	
002	01	1		056	17	B'		110	42	STD	
003	44	SUM		057	69	OP		111	07	07	
004	27	27		058	00	00		112	43	RCL	
005	44	SUM		059	00	0		113	29	29	
006	28	28		060	42	STD		114	85	+	
007	73	RC*		061	27	27		115	42	STD	
008	28	28		062	18	C'		116	09	09	
009	29	CP		063	18	C'		117	43	RCL	
010	67	EQ		064	18	C'		118	29	29	
011	23	LNK		065	87	IFF		119	85	+	
012	55	+		066	03	03		120	42	STD	
013	28	LOG		067	86	STF		121	08	08	
014	59	INT		068	18	C'		122	43	RCL	
015	42	STD		069	69	OP		123	29	29	
016	00	00		070	05	05		124	85	+	
017	69	OP		071	92	RTN		125	42	STD	
018	20	20		072	76	LBL		126	10	10	
019	22	INV		073	86	STF		127	43	RCL	
020	28	LOG		074	69	OP		128	29	29	
021	76	LBL		075	05	05		129	85	+	
022	29	CP		076	92	RTN		130	42	STD	
023	85	+		077	76	LBL		131	11	11	
024	32	X:T		078	10	E'		132	43	RCL	
025	01	1		079	00	0		133	29	29	
026	00	0		080	42	STD		134	85	+	
027	00	0		081	01	01		135	42	STD	
028	49	PRD		082	43	RCL		136	05	05	
029	26	26		083	29	29		137	43	RCL	
030	08	8		084	85	+		138	29	29	
031	77	GE		085	42	STD		139	85	+	
032	23	LNK		086	15	15		140	42	STD	
033	02	2		087	43	RCL		141	13	13	
034	85	+		088	29	29		142	43	RCL	
035	76	LBL		089	85	+		143	29	29	
036	23	LNK		090	42	STD		144	85	+	
037	01	1		091	14	14		145	42	STD	
038	75	-		092	43	RCL		146	03	03	
039	59	INT		093	29	29		147	43	RCL	
040	44	SUM		094	85	+		148	29	29	
041	26	26		095	42	STD		149	85	+	
042	95	=		096	04	04		150	42	STD	
043	65	x		097	43	RCL		151	02	02	
044	01	1		098	29	29		152	43	RCL	
045	00	0		099	85	+		153	29	29	
046	97	DSZ		100	42	STD		154	95	=	
047	00	00		101	12	12		155	42	STD	
048	29	CP		102	43	RCL		156	16	16	
049	25	CLR		103	29	29		157	92	RTN	
050	48	EXC		104	85	+		158	76	LBL	
051	26	26		105	42	STD					
052	84	OP*		106	06	06					
053	27	27		107	43	RCL					

## MERGED CODES

62	RT	72	STD	83	GTO
63	IF	73	RCL	84	CP
64	OP	74	SUM	92	INV

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LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS
159	33	X2		214	22	INV		269	58	FIX	
160	32	X1T		215	90	LST		270	03	3	
161	01	1		216	03	3		271	69	OP	
162	07	7		217	69	OP		272	17	17	
163	42	STD		218	17	17		273	32	X1T	
164	00	00		219	76	LBL		274	42	STD	
165	10	E'		220	98	ADV		275	28	28	
166	32	X1T		221	98	ADV		276	22	INV	
167	76	LBL		222	43	RCL		277	86	STF	
168	97	DSZ		223	01	01		278	03	03	
169	97	DSZ		224	85	+		279	22	INV	
170	00	00		225	43	RCL		280	86	STF	
171	16	A'		226	02	02		281	04	04	
172	19	D'		227	85	+		282	22	INV	
173	76	LBL		228	43	RCL		283	86	STF	
174	16	A'		229	03	03		284	05	05	
175	74	SM*		230	87	IFF		285	86	STF	
176	00	00		231	03	03		286	40	IND	
177	61	GTD		232	69	OP		287	28	28	
178	97	DSZ		233	85	+		288	91	R/S	
179	76	LBL		234	43	RCL		289	76	LBL	
180	43	RCL		235	04	04		290	11	A	
181	75	-		236	87	IFF		291	87	IFF	
182	01	1		237	04	04		292	03	03	
183	05	5		238	69	OP		293	32	X1T	
184	65	X		239	85	+		294	87	IFF	
185	43	RCL		240	43	RCL		295	04	04	
186	29	29		241	05	05		296	33	X2	
187	95	=		242	76	LBL		297	87	IFF	
188	61	GTD		243	69	OP		298	05	05	
189	11	A		244	95	=		299	34	IX	
190	76	LBL		245	32	X1T		300	91	R/S	
191	53	(		246	03	3		301	76	LBL	
192	75	-		247	07	7		302	12	B	
193	03	3		248	03	3		303	87	IFF	
194	00	0		249	02	2		304	03	03	
195	65	X		250	03	3		305	42	STD	
196	43	RCL		251	07	7		306	87	IFF	
197	29	29		252	69	OP		307	04	04	
198	95	=		253	04	04		308	43	RCL	
199	55	+		254	32	X1T		309	87	IFF	
200	04	4		255	69	OP		310	05	05	
201	95	=		256	06	06		311	44	SUM	
202	61	GTD		257	98	ADV		312	91	R/S	
203	11	A		258	98	ADV		313	76	LBL	
204	76	LBL		259	91	R/S		314	13	C	
205	22	INV		260	76	LBL		315	87	IFF	
206	43	RCL		261	14	D		316	03	03	
207	28	28		262	42	STD		317	52	EE	
208	75	-		263	29	29		318	87	IFF	
209	02	2		264	91	R/S		319	04	04	
210	95	=		265	76	LBL					
211	69	OP		266	15	E					
212	17	17		267	32	X1T					
213	01	1		268	22	INV					

MERGED CODES

62	72	83
63	73	84
64	74	92

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LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS
320	53			375	29	29		430	42	STD	
321	87	IFF		376	85	+		431	07	07	
322	05	05		377	42	STD		432	43	RCL	
323	54	)		378	05	05		433	29	29	
324	91	R/S		379	43	RCL		434	85	+	
325	76	LBL		380	29	29		435	42	STD	
326	42	STD		381	85	+		436	12	12	
327	75	-		382	42	STD		437	43	RCL	
328	43	RCL		383	03	03		438	29	29	
329	29	29		384	43	RCL		439	85	+	
330	65	x		385	29	29		440	42	STD	
331	08	8		386	85	+		441	08	08	
332	95	=		387	42	STD		442	43	RCL	
333	61	GTO		388	06	06		443	29	29	
334	32	XIT		389	43	RCL		444	85	+	
335	76	LBL		390	29	29		445	42	STD	
336	52	EE		391	85	+		446	04	04	
337	75	-		392	42	STD		447	43	RCL	
338	43	RCL		393	01	01		448	29	29	
339	29	29		394	43	RCL		449	85	+	
340	65	x		395	29	29		450	42	STD	
341	01	1		396	95	=		451	25	25	
342	02	2		397	42	STD		452	43	RCL	
343	95	=		398	08	08		453	29	29	
344	55	+		399	32	XIT		454	85	+	
345	03	3		400	61	GTO		455	42	STD	
346	95	=		401	97	DSZ		456	16	16	
347	61	GTO		402	76	LBL		457	43	RCL	
348	32	XIT		403	34	FX		458	29	29	
349	76	LBL		404	32	XIT		459	85	+	
350	32	XIT		405	02	2		460	42	STD	
351	32	XIT		406	06	6		461	21	21	
352	01	1		407	42	STD		462	43	RCL	
353	00	0		408	00	00		463	29	29	
354	42	STD		409	00	0		464	85	+	
355	00	00		410	42	STD		465	42	STD	
356	00	0		411	03	03		466	17	17	
357	42	STD		412	43	RCL		467	43	RCL	
358	02	02		413	29	29		468	29	29	
359	43	RCL		414	85	+		469	85	+	
360	29	29		415	42	STD		470	42	STD	
361	85	+		416	24	24		471	13	13	
362	42	STD		417	43	RCL		472	43	RCL	
363	09	09		418	29	29		473	29	29	
364	43	RCL		419	85	+		474	85	+	
365	29	29		420	42	STD		475	42	STD	
366	85	+		421	20	20		476	09	09	
367	42	STD		422	43	RCL		477	43	RCL	
368	04	04		423	29	29		478	29	29	
369	43	RCL		424	85	+		479	85	+	
370	29	29		425	42	STD		480	42	STD	
371	85	+		426	11	11					
372	42	STD		427	43	RCL					
373	07	07		428	29	29					
374	43	RCL		429	85	+					

## MERGED CODES

62	STO	63	STO	64	STO
72	STO	73	RCL	74	RCL
83	GTO	84	RCL	92	INV



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LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS
481	05	05		536	44	SUM		591	28	28	
482	43	RCL		537	75	-		592	17	B'	
483	29	29		538	43	RCL		593	01	1	
484	85	+		539	29	29		594	44	SUM	
485	42	STD		540	65	x		595	28	28	
486	10	10		541	02	2		596	17	B'	
487	43	RCL		542	04	4		597	01	1	
488	29	29		543	95	=		598	44	SUM	
489	85	+		544	61	GTO		599	28	28	N
490	42	STD		545	34	FX		600	17	B'	
491	01	01		546	76	LBL		601	01	1	
492	43	RCL		547	54	)		602	44	SUM	
493	29	29		548	75	-		603	28	28	
494	85	+		549	43	RCL		604	17	B'	
495	42	STD		550	29	29		605	00	0	
496	22	22		551	65	x		606	98	ADV	
497	43	RCL		552	06	6		607	98	ADV	
498	29	29		553	00	0		608	98	ADV	
499	85	+		554	95	=		609	43	RCL	
500	42	STD		555	55	+		610	05	05	
501	18	18		556	05	5		611	99	PRT	
502	43	RCL		557	95	=		612	43	RCL	
503	29	29		558	61	GTO		613	10	10	
504	85	+		559	34	FX		614	99	PRT	
505	42	STD		560	76	LBL		615	43	RCL	
506	14	14		561	94	+/-		616	15	15	
507	43	RCL		562	00	0		617	99	PRT	
508	29	29		563	42	STD		618	43	RCL	
509	85	+		564	28	28		619	20	20	
510	42	STD		565	17	B'		620	99	PRT	
511	19	19		566	17	B'		621	43	RCL	
512	43	RCL		567	17	B'		622	25	25	
513	29	29		568	61	GTO		623	99	PRT	
514	85	+		569	98	ADV		624	61	GTO	
515	42	STD		570	76	LBL		625	98	ADV	
516	15	15		571	93	.		626	76	LBL	
517	43	RCL		572	00	0		627	19	D'	
518	29	29		573	42	STD		628	98	ADV	
519	85	+		574	28	28		629	98	ADV	
520	42	STD		575	17	B'		630	98	ADV	
521	06	06		576	17	B'		631	29	CP	
522	43	RCL		577	17	B'		632	43	RCL	
523	29	29		578	17	B'		633	01	01	
524	85	+		579	61	GTO		634	22	INV	
525	42	STD		580	98	ADV		635	59	INT	
526	02	02		581	76	LBL		636	22	INV	
527	43	RCL		582	95	=		637	67	EQ	
528	29	29		583	00	0		638	22	INV	
529	95	=		584	42	STD		639	87	IFF	
530	42	STD		585	27	27		640	03	03	
531	23	23		586	42	STD		641	65	x	
532	32	XIT		587	28	28					
533	61	GTO		588	17	B'					
534	97	DSZ		589	01	1					
535	76	LBL		590	44	SUM					

## MERGED CODES

62	STO	83	GTO
63	RCL	84	INV
64	SUM	92	IFF

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LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS	LOC	CODE	KEY	COMMENTS
642	87	IFF		697	76	LBL		001	18	C'	
643	04	04		698	25	CLR		022	29	CP	
644	85	+		699	43	RCL		036	23	LNK	
645	87	IFF		700	23	23		056	17	B'	
646	05	05		701	32	XIT		073	86	STF	
647	45	YX		702	04	4		078	10	E'	
648	91	R/S		703	22	INV		159	33	X2	
649	76	LBL		704	28	LOG		168	97	DSZ	
650	65	X		705	77	GE		174	16	A'	
651	43	RCL		706	95	=		180	43	RCL	
652	02	02		707	61	GTO		191	53	(	
653	77	GE		708	22	INV		205	22	INV	
654	35	1/X		709	00	0		220	98	ADV	
655	61	GTO		710	00	0		243	69	OP	
656	22	INV		711	00	0		261	14	D	
657	76	LBL		712	00	0		266	15	E	
658	35	1/X		713	00	0		290	11	A	
659	43	RCL		714	00	0		302	12	B	
660	08	08		715	00	0		314	13	C	
661	32	XIT		716	00	0		326	42	STO	
662	04	4		717	00	0		336	52	EE	
663	22	INV		718	00	0		350	32	XIT	
664	28	LOG		719	00	0		403	34	FX	
665	77	GE						536	44	SUM	
666	94	+/-						547	54	)	
667	61	GTO						561	94	+/-	
668	22	INV						571	93	.	
669	76	LBL						582	95	=	
670	85	+						627	19	D'	
671	43	RCL						650	65	X	
672	01	01						658	35	1XX	
673	77	GE						670	85	+	
674	24	CE						678	24	CE	
675	61	GTO						690	45	YX	
676	22	INV						698	25	CLR	
677	76	LBL									
678	24	CE									
679	43	RCL									
680	12	12									
681	32	XIT									
682	04	4									
683	22	INV									
684	28	LOG									
685	77	GE									
686	93	.									
687	61	GTO									
688	22	INV									
689	76	LBL									
690	45	YX									
691	43	RCL									
692	03	03									
693	77	GE									
694	25	CLR									
695	61	GTO									
696	22	INV									

## MERGED CODES

62	STO	83	GTO
63	RCL	84	INV
64	SUM	92	INV