

PROGRAM DESCRIPTION I

Program Title TRUE BATTLESHIP
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Program Description, Equations, Variables

This program replaces one player in the battleship game. It places its ship (in a different way with different seeds!) and then plays against you. It can be played without card reader replacing program lines 329, 333 & 557 (7 P<=>S) with XEQTEX (execution is slower)

Necessary Accessories 3 M. Modules; card reader (optional)

Operating Limits and Warnings PLAY FAIR !!

Reference(s) NONE

This program has been verified only with respect to the numerical example given in Program Description II. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

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The following information was supplied by our reviewer for your use with this program. The comments are intended to be helpful in avoiding any complications that may inadvertently arise.

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Flag 21 must be clear before running the program when the printer is not attached, and set if the printer is attached.

(CONTINUATION PAGE)

THE BATTLESHIP GAME IS PLAYED THIS WAY:

EACH PLAYER HAS TWO SEAS OF 10×10 SQUARES. ONE IS HIS OWN; THE OTHER HIS OPONENT'S.

IN HIS OWN SEA; AT THE BEGINNING OF THE GAME HE HAS TO PLACE ALL HIS 10 SHIPS.

IN THE OTHER SEA HE PUTS THE SHIPS OF HIS OPONENT DURING THE ~~PLAY~~ GAME AS HE FINDS THE SHIPS BY MAKING ONE SHOOT AT A TIME.

HOW HAVE THE SHIPS TO BE PLACED ?

• FIRST: - THERE ARE 10 SHIPS

1	OF 4 SQUARES
2	OF 3 SQUARES
3	OF 2 SQUARES
4	OF 1 SQUARE

(ALL SHIPS ARE LINEAR; NOT FORMING ANGLES)

• SECOND: - THE SHIPS CAN'T BE PLACED SO THAT THEY ARE ASIDE; WITH NO PLANK SPACE BETWEEN THEM. (NOT BY SIDES NEITHER BY CORNERS)

• EXAMPLE: IF A SHIP OF TWO SQUARES IS PLACED IN SQUARES 77 and 78 all SQUARES 66, 67, 68, 69, 79, 89, 88, 87, 86 and 76 HAVE TO BE LEFT BLANK AND CAN'T BE OCCUPIED BY ANY OTHER PART OF A SHIP

WHEN THE TWO PLAYERS HAVE FINISHED PLACING THEIR OWN FLEETS; ONE PLAYER BEGINS AND SHOOTS FIRST. THE LAST SHOT WILL BE DONE BY THE OTHER ONE. THE FINAL OBJECTIVE IS TO SINK ALL THE OPONENT'S SHIPS BEFORE HE SINKS OURS.

A PLAYER SHOOTS BY INDICATING WHERE HE DOES EX. PLACE 74 IS 7TH ROW AND 4TH COLUMN. THE OTHER PLAYER HAS TO ANSWER. THERE ARE THREE POSSIBILITIES.

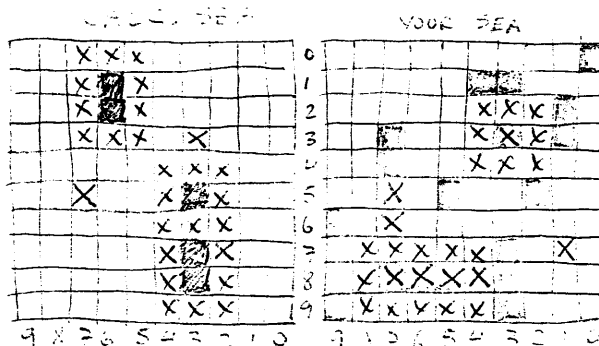
1. - THE SHOT HIT NO SHIP. THE ANSWER IS "WATER"
2. - THE SHOT HIT A PART OF A SHIP BUT THIS SHIP HAS OTHER PARTS WHICH ARE NOT YET SUNK THE ANSWER IS "HIT"
3. - THE SHOT HIT THE LAST NOT YET SUNK PART OF A SHIP OR IT HIT A SHIP OF 1 SQUARE THE ANSWER IS "SUNK"

ONCE ANSWERED; THE OTHER PLAYER SHOOTS.

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Sample Problem (Sketch if Desired)



SOLUTION:

Input	Function	Display	Comments
0,50165	SIZE 052 XEQ TBAT R/S	SEED? PLACE FLEET	ASUME YOU PLACED THE SEA AT RIGHT (ABOVE) WAIT SOME 8 MIN
YES	R/S	YOU BEGIN? SHOOT	CULD ALSO HAVE ANSWERED NO
33	R/S	WATER 71	YOU SHOOT, CALC ANSWERS CALCULATOR SHOTS
53	XEQ A (WATER) R/S	SHOOT SUNK 85	YOU ANSWER, CALC READY YOU CAN SET A CROSS ON SQUARES 42 43 44 52 54 62 63 64 FOR SHIPS CANT BE PLACED THERE
57	XEQ B (HIT) R/S	SHOOT WATER 84	
73	XEQ A (WATER) R/S	SHOOT HIT 86	
74	XEQ B (HIT) R/S	SHOOT WATER 87	
72	XEQ C (SUNK) R/S	SHOOT WATER 33	
83	XEQ C (SUNK) R/S	SHOOT SUNK 67	
26	XEQ A (WATER) R/S	SHOOT HIT 57	
16	XEQ A (WATER) R/S	SHOOT SUNK	and no en

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USER INSTRUCTIONS

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				SIZE: (HP-41C) 052
STEP	INSTRUCTIONS	INPUT	FUNCTION	DISPLAY
1.	ENTER PRGM; (CHECK STATUS			
2.	BEGIN GAME		XEQ(BAT)	SEED?
3.	KEY IN SEED ($10 \leq S < 1$)	SEED	R/S	PLACE FLEET
4.	PLACE YOUR OWN FLEET ON A PEACE OF PAPER AND SKETCH A SEA FOR THE CALCULATOR (YOU HAVE SOME 8-9 MINUTES)			YOU BEGIN?
5.	ANSWER			
5.1	YES	YES	R/S	SHOOT
	SHOOT	LOCATION	R/S	(CALC. ANSWER)
	and no on			
5.2	NO	NO	R/S	(CALCULATOR'S SHOOT)
	YOUR ANSWER (A B or C)		XEQ(A; B or C)	SHOOT
	and no on			

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	LBL T BAT			51	1		
	SF 27				+		
	FIX 0				1E2		
	CLR 6				MOD		
	CF 29				10		
	TSEED ?				/		
	PROMPT				INT		
	T PLACE FEET				STC 50		
	AVIEW				LAST X		
10	STO 21			60	-		
	4				CHS		
	STO 22				10		
	LBL 07				*		
	5				LBL C		
	RCL 22				1009		
	-				+		
	1E3				STO 51		
	/				LBL b		
	1				RCL IND 50		
20	+			70	RCL 51		
	STO 33				INT		
	LBL 06				1		
	XEQ TSP				+		
	XEQ TPL				101X		
	ISG 53				/		
	GTO 06				FRC		
	DSE 22				10		
	GTO 07				*		
	BEEP				INT		
30	GTO 15			80	X=0?		
	LBL TRD				GTO a		
	RCL 21				ISG 51		
	9821				GTO b		
	*				RCL 50		
	1211327				1		
	+				+		
	FRC				10		
	STO 21				MOD		
40	RTN			90	STO 50		
	LBL TSP				CLX		
	XEQ TRD				GTO C		
	1E2				LBL a		
	*				RCL 50		
	INT				10		
	STO 36				*		
	XEQ TRE				RCL 51		
	X=0?				INT		
	GTO 04				+		
	LBL 08				STO 36		
50	RCL 36			100	LBL 04		

searches for
unused space
for a ship big
as R22 and
stores the places
in R24 R25 R26
& R23

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
101	RCL 36			151	STO IND 40		
	STO 37				X < 0?		
	24				GTO 14		
	STO 23				1		
	RDN				X < Y?		
	STO IND 23				GTO 14		
	CF 05				RCL 38		
	CF 06				10		
	CF 07				*		
110	XEQ TRD			160	RCL 39		
	ST+ X				+		
	INT				STO 41		
	STO 34				XEQ RE		
	XEQ TRD				X < 0?		
	15				GTO 14		
	X > Y?				1		
	SF 05				ST+ 35		
	LBL 09				ST+ 23		
	1				RCL 41		
120	STO 35			170	STO IND 23		
	LBL 10				STO 37		
	RCL 35				GTO 10		
	RCL 22				LBL 14		
	X = Y?				FS? C 06		
	RTN				GTO 17		
	LBL 11				1		
	RCL 37				ST+ 34		
	10				SF 06		
	/				RCL 36		
130	INT			180	STO 37		
	STO 38				GTO 11		
	LAST X				LBL 17		
	-				FS? C 07		
	CHS				GTO 08		
	10				SF 07		
	*				FS? 05		
	STO 39				GTO 20		
	FS? 05				SF 05		
	GTO 12				GTO 22		
140	38			190	LBL 20		
	GTO 13				CF 05		
	LBL 12				LBL 22		
	39				24		
	LBL 13				STO 23		
	STO 40				RCL 36		
	RCL IND 40				STO 37		
	-1				GTO 09		
	RCL 34				LBL TPL		
	Y > X				RCL 22		
450	+			200	23		places the chips

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
201	+			251	RCL 30		
	1E3				+		
	/				2		
	24				-		
	+				X < 0?		
	STO 23				GTO 03		
	LBL 05				9		
	RCL 22				X < Y?		
	RCL IND 23				GTO 03		
210	XEQ TST			260	RDN		
	ISG 23				10		
	GTO 05				*		
	RCL 23				RCL 32		
	FRC				+		
	24				STO 41		
	+				XEQ TRE		
	STO 23				X ≠ 0?		
	LBL 19				GTO 03		
	RCL IND 23				5		
220	10			270	RCL 41		
	/				XEQ TST		
	INT				LBL 03		
	STO 30				ISG 31		
	LAST X				GTO 02		
	-				LBL 01		
	CHS				ISG 28		
	10				GTO 00		
	*				ISG 23		
	STO 29				GTO 19		
230	1, 043			280	RTN		
	STO 28				LBL TRE		the recall routine
	LBL 00				10		
	RCL 28				/		
	INT				RCL IND X		
	RCL 29				X < Y		
	+				FRC		
	2				10		
	-				*		
	X < 0?				10 → X		
240	GTO 01			290	/		
	9				INT		
	X < Y?				10		
	GTO 01				/		
	RDN				FRC		
	STO 32				10		
	1, 003				*		
	STO 31				RTN		
	LBL 02				LBL TST		the store routine
	RCL 31				10		
250	INT			300	/		

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
301	INT X<>Y LAST X FRC 10 * 10 AX X ST+IND Y RTN			351	LBL C 1 RCL 22 X=Y? GTO 23 23 + RCL 35 STC IND Y		players names is sunk
310	LBL 15 1234 STO 42 20, 2 STO 20 1 STO 22 4 STO 33 CF00		game begins	360	RCL 22 LBL 23 1 - 10 AX ST -42 1 ST -20 RCL 42 X=0?		
320	YOU BEGIN? AON PROMPT A OFF ASTO X GTO IND X LBL YES SF 00 7 P<>S			370	GTO 24 LBL 25 RCL 42 RCL 33 1 - 10 AX /		
330	GTO 18 LBL NO LBL 50 7 P<>S CLA RCL 22 1 X=Y? GTO 21 ARCL 35			380	INT X#0? GTO 26 DSE 33 GTO 25 LBL 26 XEQ TPL 1 STO 22 GTO 18 LBL 24 RCL 20		
340	TONE 0 PROMPT LBL 21 RCL 33 STO 22 XEQ TSP 1 STO 22 ARCL 24 TONE 0			390	FRC X=0? GTO 10 1 E2 * 1 X=Y? FS: 00 GTO 27 GTO 18		
350	PROMPT			400	LBL 10		

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
401	T A TIE			451	RCL 24		
	GTO 28				XEQ TST		
	LBL 27				GTO 18		
	T I WON				LBL 31		
	AVIEW				T YOU WON		
	TONE 6				GTO 28		
	TONE 6				LBL 3		
	TONE 8				1		
	AVIEW				ST+ 22		
410	TONE 7			460	ST- 26		
	TONE 7				2		
	TONE 9				RCL 22		
	AVIEW				X=Y?		
	TONE 9				GTO 35		
	TONE 8				22		
	TONE 7				T		
	TONE 5				RCL 35		
	TONE 5				STO INDY		
	TONE 6				GTO 36		
420	AVIEW			470	LBL 35		
	X<>Y				CF 05		
	X<>Y				CF 06		
	TONE 4				RCL 24		
	TONE 4				10		
	TONE 6				/		
	TONE 6				INT		
	TONE 8				RCL 25		
	TONE 8				10		
	AVIEW				/		
430	X<>Y			480	INT		
	X<>Y				X=Y 2		
	TONE 9				SF 05		
	TONE 9				XEQ TRD		
	AVIEW				ST+X		
	GTO 28				INT		
	LBL A				STO 34		
	RCL 26				LBL 34		
	FRC				RCL 24		
	X=0?				STO 35		
440	GTO 31			490	LBL 36		
	RCL 22				10		
	1				/		
	X=Y?				INT		
	GTO 32				STO 38		
	S				LAST X		
	RCL 35				-		
	XEQ TST				CHS		
	GTO 33				10		
	LBL 32				*		
450	S			500	STO 39		

player's answer
is HITplayer's answer
is WATER

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
501	FS ? 05			551	SF 05		
	GTO 29				GTO 34		
	38				LBL 38		
	GTO 30				CF 05		
	LBL 29				GTO 34		
	39				LBL 18		
	LBL 30				? P > S		
	STO 40				TUNE 3		
	RCL IND 40				TUNE 5		
510	-1			560	T SHOOT		
	RCL 34				PROMPT		
	Y > X				STO 41		
	+				XEQ TRE		
	X < 0 ?				STO 47		
	GTO 33				5		
	1				X < > Y		
	X < Y ?				X ≠ Y ?		
	GTO 33				X = 0 ?		
	RDN				GTO 39		
520	STO IND 40			570	6		
	RCL 38				X < > Y		
	10				X = Y ?		
	*				GTO 48		
	RCL 39				? 01		
	+				ST - 20		
	XEQ TRE				X < > Y		
	5				1		
	X = Y ?				X = Y ?		
	GTO 33				GTO 40		
530	RCL 38			580	SF 08		
	10				CF 09		
	*				CF 10		
	RCL 39				LBL 41		
	+				RCL 41		
	STO 35				10		
	GTO 18				/		
	LBL 34				INT		
	RCL 24				STO 43		
	STO 35				LAST X		
540	GTO 35			590	-		
	LBL 33				CHS		
	FS ? C 06				10		
	GTO 37				*		
	SF 06				STO 44		
	1				LBL 47		
	ST + 34				FS ? 08		
	GTO 34				GTO 42		
	LBL 37				43		
	FS ? 05				GTO 43		
550	GTO 29			600	LBL 42		

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
601	44			651	6		
	LBL 43				RCL 47		
	STO 46				-		
	RCL IND 46				RCL 41		
	-1				XEQ TST		
	RCL 45				RCL 20		
	Y X				FRC		
	+				X F 0?		
	X < 0?				GTO 50		
610	GTO 44			660	RCL 20		
	9				INT		
	X < Y?				X = 0?		
	GTO 44				GTO 16		
	X < Y?				1.		
	STO IND 46				FS? 00		
	RCL 43				X F Y?		
	10				GTO 31		
	*				GTO 50		
	RCL 44				LBL 44		
620	+			670	FS? C 09		
	STO 48				GTO 45		
	XEQ TRE				1		
	5				ST + 45		
	X < Y				SF 09		
	X = Y?				GTO 41		
	GTO 44				LBL 45		
	6				FS? C 10		
	X = Y?				GTO 40		
	GTO 46				SF 10		
630	TONE 9			680	CF 08		
	T HIT				GTO 41		
	AVIEW				LBL 46		
	RCL 47				RCL 48		
	-				10		
	RCL 41				/		
	XEQ TST				INT		
	GTO 50				STO 43		
	LBL 39				LAST X		
	TONE 9				-		
640	T WATER			690	CHS		
	AVIEW				10		
	RCL 20				*		
	INT				STO 44		
	X = 0?				GTO 47		
	GTO 27				LBL 48		
	GTO 50				T BAD SHOT		
	LBL 40				TONE 9		
	TONE 9				AVIEW		
	T SUNK				GTO 50		
650	AVIEW			700	LBL 28		

PROGRAM LISTING

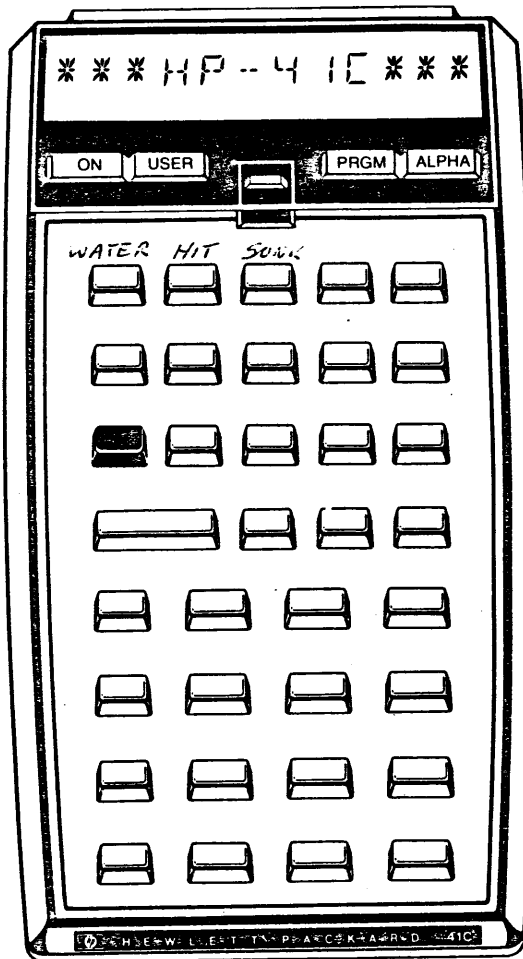
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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
701	AVIEW PSE PSE TGAME OVER PROMPT LBL TEX 1009 ENTER 9.1 ENTER LBL 99 ISG Y X<>IND 2 X<>IND Y X<>IND 2 ISG Z GTO 99 RTN END			51			
710			Subroutine for use without card reader replace prgm lines 329, 333 & 557 (7P47S) BY KEW TEX	60			
20				70			
30				80			
40				90			
50				00			

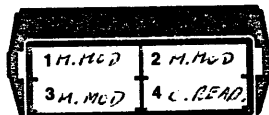
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KEYBOARD CARD LABELING



KEYBOARD

SYSTEM CONFIGURATION



CARD



PROGRAM REGISTERS NEEDED: 202

ROW 1 (1 : 5)



ROW 2 (5 : 8)



ROW 3 (8 : 12)



ROW 4 (12 : 21)



ROW 5 (21 : 26)



ROW 6 (26 : 31)



ROW 7 (31 : 35)



ROW 8 (35 : 40)



ROW 9 (40 : 46)



ROW 10 (46 : 53)



ROW 11 (53 : 62)



ROW 12 (63 : 69)



ROW 13 (69 : 79)



ROW 14 (80 : 86)



ROW 15 (87 : 93)



ROW 16 (94 : 102)



ROW 17 (102 : 109)



ROW 18 (109 : 114)



ROW 19 (114 : 122)



ROW 20 (123 : 131)



ROW 21 (132 : 140)



ROW 22 (140 : 147)



ROW 23 (148 : 156)



ROW 24 (157 : 163)



ROW 25 (163 : 170)



ROW 26 (171 : 177)



ROW 27 (178 : 184)



ROW 28 (184 : 189)



ROW 29 (190 : 196)



ROW 30 (196 : 200)



ROW 31 (201 : 208)



ROW 32 (209 : 214)



ROW 33 (215 : 222)



ROW 34 (223 : 230)



ROW 35 (230 : 238)



ROW 36 (239 : 246)



ROW 37 (246 : 254)



ROW 38 (255 : 263)



ROW 39 (264 : 270)



ROW 40 (271 : 277)



ROW 41 (277 : 281)



ROW 42 (282 : 291)



ROW 43 (292 : 298)



ROW 44 (298 : 308)



ROW 45 (308 : 314)



ROW 46 (314 : 321)



ROW 47 (321 : 323)



ROW 48 (324 : 328)



ROW 49 (328 : 332)



ROW 50 (332 : 339)



ROW 51 (340 : 345)



ROW 52 (346 : 353)



ROW 53 (354 : 360)



ROW 54 (361 : 369)



ROW 55 (370 : 377)



ROW 56 (378 : 384)



ROW 57 (384 : 389)



ROW 58 (390 : 397)



ROW 59 (398 : 401)



ROW 60 (401 : 405)



ROW 61 (406 : 412)



ROW 62 (413 : 419)



ROW 63 (420 : 427)



ROW 64 (428 : 435)



ROW 65 (436 : 443)



ROW 66 (444 : 448)



ROW 67 (449 : 454)



ROW 68 (454 : 457)



ROW 69 (457 : 464)



ROW 70 (465 : 471)



ROW 71 (471 : 478)



ROW 72 (479 : 486)



ROW 73 (486 : 493)



ROW 74 (494 : 502)



ROW 75 (502 : 507)



ROW 76 (508 : 515)



ROW 77 (515 : 522)



ROW 78 (523 : 529)



ROW 79 (530 : 536)



ROW 80 (537 : 542)



ROW 81 (543 : 548)



ROW 82 (549 : 554)



ROW 83 (554 : 560)



ROW 84 (560 : 564)



ROW 85 (564 : 573)



ROW 86 (573 : 580)



ROW 87 (580 : 587)



ROW 88 (588 : 596)



ROW 89 (596 : 601)



ROW 90 (602 : 609)



ROW 91 (610 : 616)



ROW 92 (617 : 623)



ROW 93 (624 : 631)



ROW 94 (631 : 636)



ROW 95 (637 : 640)



ROW 96 (641 : 647)



ROW 97 (648 : 654)



ROW 98 (654 : 660)



ROW 99 (660 : 667)



ROW 100 (668 : 673)



ROW 101 (674 : 679)



ROW 102 (679 : 685)



ROW 103 (686 : 694)



ROW 104 (694 : 697)



ROW 105 (697 : 704)



ROW 106 (704 : 706)



ROW 107 (706 : 711)



ROW 108 (712 : 717)



ROW 109 (718 : 719)

