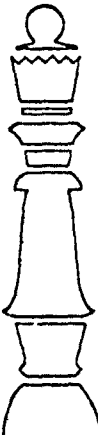


## QUEEN BOARD

This game is based on the moves of a chess queen. A queen will be allowed to move only to the left, down, or diagonally to the left. The object of the game is to be the first player to move the queen to the lower left-hand corner of the chess board (square 158), by alternating moves between you and the calculator. You start by placing the queen on any square on the top row or right-hand column. This is your first move. The play then alternates.

The playing board is numbered as follows:



61	71	81	91	41	31	21	11
92	82	72	62	52	42	32	22
103	93	83	73	63	53	43	33
114	104	94	84	74	64	54	44
125	115	105	95	85	75	65	55
136	126	116	106	96	86	76	66
147	137	127	117	107	97	87	77
158	148	138	128	118	108	98	88

Start Zone

Start Zone

You tell the calculator your moves by keying in the number of the square you start on or move to. Press **GSB 1** and the calculator responds with the square it moves to. Square 158 is the winning square.

The program does not check for illegal moves. If you win (by moving to square 158), the program will respond with 168 (the calculator acknowledges the loss by displaying a nonexistent square).

The program is in FIX 0 mode, for integer display.

## Reference:

This program is based on an HP-65 Users' Library program by Jacob R. Jacobs. Some interesting comments on the theory of "Queen Board" may be found in: Gardner, M., "Mathematical Games", Scientific American, vol 236, no 3., p. 134, March 1977.

01 #LRL1	Current position $R_1$	50 RTN	158 = $R_2$ ?
02 FIX0		51 #LRL8	
03 ST01		52 1	
04 CSRR		53 5	
05 1		54 8	
06 X=Y?		55 X=Y?	
07 CT08		56 CT06	
08 7		57 3	
09 ST08		58 1	
10 #LRL9		59 -	
11 RCL1	$7 \rightarrow R_0$	60 X=Y?	127 = $R_2$ ?
12 RCL8		61 CT06	
13 EEX		62 1	
14 1		63 -	
15 x		64 X=Y?	
16 +		65 CT06	
17 ST02		66 5	
18 CSRR		67 1	
19 1		68 -	
20 X=Y?		69 X=Y?	
21 CT07	Yes, recall $R_2$	70 CT06	75 = $R_2$ ?
22 RCL8		71 2	
23 ST+2		72 -	
24 RCL2		73 X=Y?	
25 CSRR		74 CT06	
26 1		75 2	
27 X=Y?		76 9	
28 CT07		77 -	
29 RCL8		78 X=Y?	
30 EEX		79 CT09	
31 1	$10K + R_2 \rightarrow R_2$	80 3	44 = $R_2$ ?
32 x		81 -	
33 ST+2		82 X=Y?	
34 RCL2		83 CT06	
35 CSRR		84 RTN	
36 1		85 #LRL6	
37 X=Y?		86 1	
38 CT07		87 RTN	
39 DSZ			
40 CT09			
41 RCL1	Default move $10 + R_1 \rightarrow R_1$		
42 #LRL8			
43 EEX			
44 1			
45 ST+1			
46 RCL1			
47 RTN			
48 #LRL7			
	Test for good position		

REGISTERS					
0 Indirect	1 Used	2 Used	3	4	5
6	7	8	9	0	1
2	3	4	5	16	17
18	19	20	21	22	23
24	25	26	27	28	29

## Winning Game

You Move To-

Calculator Moves To-

41  
73  
127  
158

51  
83  
137

44  
75  
127  
158

54  
85  
137

## Notes:

1. Step 49 is "RCL 2".
2. Replace step 79 ("GTO 9") by "GTO 6".

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	Key in the program.			
2	Key in your starting position (first move).	Move	A <del>158</del>	Calc's Move
3	Repeat step 2 until someone wins.			
	Display of 158: calculator wins			
	Display of 168: you win			
4	To begin new game, repeat step 2 with new starting position.			

## Example:

Keystrokes:

Outputs:

55 ~~158~~ ~~TX~~ → A →

75.

(You start on 55, and the calculator, after deep and careful thought, moves to 75).

97 ~~158~~ ~~TX~~ → A →

127.

(You respond with 97, and the calculator, showing no mercy moves to 127).

148 ~~158~~ ~~TX~~ → A →

158.

(You try 148, hoping the calculator's batteries run down before it can respond, but no luck—it wins by moving to 158).

## QUEEN BOARD

### USER INSTRUCTIONS

1. Reload card. (ON-RUN).
2. Key in position, press A.
3. Repeat step #2 until someone wins:
  - a. Display of 158, calculator wins.
  - b. Display of 168, player wins.
4. For a new game, repeat step #2 with a new starting position.