

Program Description I

Program Title	NUMBER GUESSER GAME		
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Program Description, Equations, Variables

The object of this NUMBER GUESSING game is to try and discover a secret (random) number between X and Y (which are also random).

- The display shows your guess as N (too high) or -N. (too low) and then shows X.Y in the display.
- You have the option of changing "Y" to any number between 50 and 999.
- Your HP-67 will also tell you your HIGH, LOW, and AVERAGE SCORES
- When you guess the secret number correctly, the HP-67 will display (flashing) that NUMBER and then the number of guesses you needed for that game.

Operating Limits and Warnings

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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Program Description II

Sketch(es)

NUMBER GUESSER

Sample Problem(s) Play 3 games of NUMBER GUESSER.

INITIALIZE
(DISPLAY WILL KEEP FLASHING ZERO.)

FOR SAMPLE GAMES ONLY,

DO THE FOLLOWING:

.88558855 →
10.55 (the secret number is HIDDEN!)

1st GUESS 30 → 30., 10.55

2nd GUESS 25 → 25., 10.55

Next GUESS 20 → 20., 10.55

Next GUESS 15 → -15., 10.55

Next GUESS 17 → -17., 10.55

Next GUESS 18 → -18., 10.55

Next GUESS 19 → 19.0***, 7.***

It took 7 guesses to discover
that the secret number was 19.

NEW GAME → 7.99

1st GUESS 70 → 70., 7.99

Next GUESS 60 → 60., 7.99

Next GUESS 50 → 50., 7.99

Next GUESS 30 → -30., 7.99

Next GUESS 40 → 40.0***, 5.***

For the 3rd game, let's change the
maximum number to 500.

500 automatically goes to →
8.500

1st GUESS 200 → 200., 8.500

Next GUESS 100 → -100., 8.500

Next GUESS 150 → 150., 8.500

Next GUESS 125 → 125., 8.500

Next GUESS 120 → -120., 8.500

Next GUESS 123 → 123.0***, 6.***

DISPLAY HIGH, LOW, AVERAGE SCORES

→ 7. (high score)

5. (low, best score)

6.00 (average)

Reference(s) This game is based on a program using a
competitor's special DATA-MAN calculator.

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	Load sides 1 and 2 of PROGRAM CARD			
2	INITIALIZE (OPTIONAL: YOU MAY START WITH YOUR OWN SEED $0 < S < 1$)	(SEED)		0. FLASHING
3	INPUT <u>ANY</u> NUMBER (THIS WILL <u>STOP</u> THE FLASHING <u>ZERO</u> AND START A NEW GAME.)	N		X.Y *
4	OPTIONAL: You may change "Y" (any number $50 < Y < 999$) THIS AUTOMATICALLY STARTS A NEW GAME.	Y		X.Y
5	MAKE YOUR GUESSES	GUESS		{ ± GUESS X.Y
5A	If you <u>guess</u> the secret number:			N.O # of GUESSES
6	CONTINUE STEP 5 UNTIL YOU GUESS the SECRET NUMBER (5A)			
7	For a new game.			X.Y
7A	Then <u>GTO</u> STEP 5 (OR STEP 4)			
8	TO DISPLAY (AT ANY TIME) THE HIGH, LOW, AND AVERAGE SCORES			HI SCORE LO SCORE AVG. SCORE
	* X.y shows the two numbers between which is the hidden number.			

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001a	g LBL a	32 25 11	INITIALIZE		h CF 2	35 61 02	
	DSP 0	23 00			h F? 2	35 71 02	
	.	83			f GSB 1	31 22 01	÷ by 100 or 1000
	5	05		060	÷	81	X.Y
	2	02			+	61	
	8	08			STO C	33 13	
	4	04			RCL A	34 11	
	1	01			RCL 1	34 01	HIDDEN NUMBER =
	6	06			f GSB 0	31 22 00	$(R_1 - N_2) \cdot N_6$
010	3	03			-	51	
	h F? 3	35 71 03			h ABS	35 64	This is altered slightly,
	+	61			f GSB 0	31 22 00	if necessary, so $HN > RA$
	STO 0	33 00			X	71	
	9	09		070	g X < Y	32 71	
	9	09			f GSB 3	31 22 03	
	STO D	33 14			h F? 1	35 71 01	
	0	00			f GSB 3	31 22 03	
	STO 2	33 02			h F? 1	35 71 01	
	STO 3	33 03			f GSB 3	31 22 03	
020	STO 4	33 04			RCL B	34 12	Make sure $HN < R_B$
	STO 5	33 05			f GSB 2	31 22 02	
	h CF 1	35 61 01			2	02	
7	f LBL 7	31 25 07	INITIALIZATION LOOP		-	51	
	f GSB 0	31 22 00		080	f P < S	31 42	
	CLX	44			STO 5	33 05	
	h PAUSE	35 72	CONTINUE FLASHING		f P < S	31 42	
	h F? 3	35 71 03	UNTIL KEYBOARD ENTRY		CLX	44	
	h F? 3	35 71 03			RCL C	34 13	
	GTO 7	22 07			h RTN	35 22	
030A	f LBL A	31 25 11	NEW GAME		GTO E	22 15	
	0	00		0	f LBL 0	31 25 00	RANDOM # GENERATOR
	h STO I	35 33	NOTE: ☒ A AUTOMATICALLY		RCL 0	34 00	
	RCL D	34 14	AFTER ☒ A AND ☒ C		9	09	
	SEX	43		090	9	09	
	2	02			7	07	
	DSP 2	23 02	SF 2 if $R_D > 100$		X	71	
	g X < Y	32 71			g FRAC	32 83	
	h SF 2	35 51 02			h STO 0	33 00	
040	f GSB 0	31 22 00	"X"		1	01	
	STO A	33 11			0	00	
	f GSB 0	31 22 00			X	71	
	f GSB 0	31 22 00			1	01	
	+	61	"Y" = $(N_1 + N_2) \cdot N_3$		+	61	
	STO 1	33 01	$\cdot N_4$ if F1 is set	100	f INT	31 83	
	f GSB 0	31 22 00			h RTN	35 22	
	X	71		1	f LBL 1	31 25 01	ADJ. DIVISOR for LARGE "Y"
	h F? 1	35 71 01			1	01	
	f GSB 0	31 22 00			0	00	
	h F? 1	35 71 01			X	71	
050	X	71	Make sure "Y" $\leq R_D$		DSP 3	23 03	
	RCL D	34 14			h RTN	35 22	
	f GSB 2	31 22 02		2	f LBL 2	31 25 02	CHECK for $X > Y$, etc.
	STO B	33 12			g X > Y	32 81	
	SEX	43		110	GTO 2'	22 02	
	2	02			h X < Y	35 52	
	g X > Y	32 81	DSP 3 if "Y" ≥ 100 DSP 2 if "Y" < 100	2'	f LBL 2	31 25 02	

REGISTERS

0 SEED	1 $N_1 + N_2$	2 LO SCORE	3 HI SCORE	4 GAME COUNTER	5 TOTAL GUESSES	6 USED	7	8	9
S0	S1	S2	S3	S4	S5 HIDDEN NUMBER	S6	S7	S8	S9
A "X"	B "Y"	C X.Y	D max. no. (Y)	E GUESS	I GUESS COUNTER				

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Program Listing II

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STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	h R↓	35 53			h RTN	35 22	
	h RTN	35 22		170	GTO E	22 15	
3	f LBL 3	31 25 03	ADJ. HN SO HN > RA	5	f LBL 5	31 25 05	CORRECT GUESS
	f GSB 0	31 22 00			DSP 1	23 01	
	1	01			f - x -	31 84	
	.	83			RCL 2	34 02	
	9	09			f x = 0	31 51	
120	X	71			h RCL I	35 34	
	+	61			h RCL I	35 34	
	f INT	31 83			STD + 5	33 61 05	STORE BEST SCORE in R ₂
	h RTN	35 22			g x ≤ y	32 71	
D	f LBL D	31 25 14	RCL HI, LO, AVG SCORES	180	STD 2	33 02	
	DSP 0	23 00			RCL 3	34 03	
	RCL 3	34 03			g x ≤ y	32 71	STORE HIGH SCORE in R ₃
	h PAUSE	35 72			h R↓	35 53	
	RCL 2	34 02			STD 3	33 03	
	h PAUSE	35 72			1	01	
130	RCL 5	34 05			STD + 4	33 61 04	132 R ₄
	RCL 4	34 04			DSP 0	23 00	
	÷	81			h RCL I	35 34	
	DSP 2	23 02			f - x -	31 84	
	h RTN	35 22		190	h RTN	35 22	
E	f LBL E	31 25 15	GUESS	C	f LBL C	31 25 13	CHANGE MAX "Y"
	h F? 3	35 71 03			h F? 3	35 71 03	
	h F? 3	35 71 03			h F? 3	35 71 03	
	GTO 9	22 09	Error		GTO 9	22 09	Error
	STD E	33 15			h CE 1	35 61 01	
140	f ISZ	31 34			STD 6	33 06	
	RCL B	34 12			5	05	
	EEEX	43			0	00	
	2	02			g x > y	32 81	Error if R ₆ < 50
	g x ≤ y	32 71	SF2 if R ₅ > 100	200	GTO 9	22 09	
	h SF 2	35 51 02			EEEX	43	
	RCL E	34 15			3	03	
	RCL A	34 11			RCL 6	34 06	
	g x > y	32 81	GTO 4 if R _A > R _E		g x > y	32 81	
	GTO 4	22 04	↑		GTO 9	22 09	Error if R ₆ ≥ 1000
150	RCL B	34 12	IS GUESS BETWEEN X, Y		g x = y	32 51	
	RCL E	34 15	↓		GTO 9	22 09	
	g x > y	32 81	GTO 4 if R _B < R _E		STD D	33 14	
	GTO 4	22 04			1	01	
	f P ↔ S	31 42		210	5	05	SF1 if R _D ≥ 150
	RCL 5	34 05			0	00	
	f P ↔ S	31 42			g x ≤ y	32 71	
	RCL E	34 15			h SF 1	35 51 01	
	g x = y	32 51	GTO 5 if CORRECT GUESS		GTO A	22 11	
	GTO 5	22 05					
160	g x ≤ y	32 71	CHS if GUESS is TOO LOW				
	CHS	42					
	DSP 0	23 00					
	h PAUSE	35 72					
4	f LBL 4	31 25 04	GUESS WAS OUTSIDE X, Y	220			
	RCL C	34 13					
	DSP 2	23 02					
	h F? 2	35 71 02					
	DSP 3	23 00					

LABELS

FLAGS

SET STATUS

A NEW GAME	B	C CHG MAX #	D RECALL HI, LO, AVG.	E GUESS	0	FLAGS	TRIG	DISP
a INITIALIZE	b	c	d	e	1 LARGE "Y"	ON OFF		
0 RNG	1 ADJ. DIVISOR for LG. "Y"	2 CHECK X > Y etc.	3 ADJ. HN SO HN > RA	4 GUESS OUTSIDE LIMITS	2 USED	0 ☐ ☒	DEG ☒	FIX ☒
5 CORRECT GUESS	6	7 INITIALIZATION LOOP	8	9 ERROR	3 Keyboard Entry?	1 ☐ ☒	GRAD ☐	SCI ☐
						2 ☐ ☒	RAD ☐	ENG ☐
						3 ☐ ☒		n <u>3</u>