



51772 Program Description I

Page 1 of 5

Program Title 67 - TEXAS SIMULATORContributor's Name PHILIPPE LEMAIREAddress RUE DE L'AVIATION 20City CHENÉECountry BELGIUM Postal Code B-4600

Program Description, Equations, Variables THIS PROGRAM ALLOWS YOU TO USE
HP 67 CALCULATOR IN ALGEBRAIC NOTATION. IF YOU WANT
KNOW HOW MUCH ARE 2 AND 3, YOU MUST MAKE
 $2 + 3 =$ AND THE CALCULATOR ANSWERS 5. YOU CAN
USE BRACKETS LIKE IN ALGEBRA P.E. IF YOU WILL
KNOW THE RESULT OF $(3+5) \times (7+12)$. IT IS NOT
NECESSARY FOR $3 \times 5 + 7 \times 12$ BECAUSE MULTIPLICATION
IS AN "HIGHER PRIORITY" THAN ADDITION IN CONVENTIONAL
ALGEBRA. WHEN YOU PRESS AN OPERATOR

OF AN HIGHER PRIORITY THAN THE PREVIOUS
AN IMPLICIT BRACKET IS OPEN. WHEN IT IS
NOT THE CASE THE PREVIOUS OPERATION
IS COMPLETED; P.E. WHEN YOU PRESS +
IN $3 \times 5 + 7 \times 12$ THE RESULT IS OF 3×5
APPEARS ON THE DISPLAY.

FOR ONE OPERAND OPERATIONS YOU CAN
USE HP ONE OPERAND FUNCTIONS.

OPER.	PRIORITY
ADD.	0
SUB.	0
MULT.	1
DIV.	1
Y^X	2
$\sqrt{Y}$	2

YOU CAN USE REGISTERS ZERO TO NINE FOR STORAGE

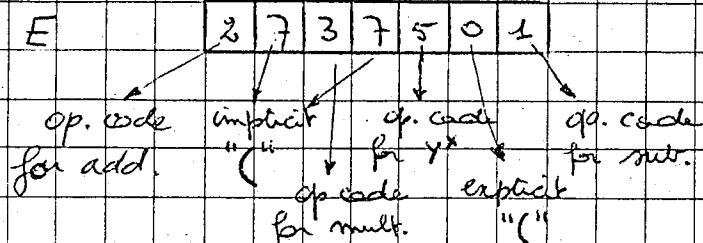
Operating Limits and Warnings WHEN YOU HAVE DONE SOME MISTAKE DON'T
FORGET TO PRESS "CLEAR"

THE NUMBER OF WAITING OPERATIONS CANNOT EXCEED 5
AT ANY MOMENT.

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.

NEITHER HP NOR THE CONTRIBUTOR MAKES ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND WITH REGARD TO THIS PROGRAM MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER HP NOR THE CONTRIBUTOR SHALL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE FURNISHING, USE OR PERFORMANCE OF THIS PROGRAM MATERIAL.

Sketch ~~SKIP~~ UNTIL YOU READ SAMPLE PROBLEMS



Sample Problem(s) 1) HOW MUCH IS $45 + 7 \times 17^{(6-4)}$?
 2) HOW MUCH IS $\sin(180 - 4 \times 17)$?

Solutions 1) $45 \rightarrow 45$; $7 \rightarrow 7$; $17 \rightarrow 17$; $6 \rightarrow 6$; $4 \rightarrow 4$; *

IF YOU WANT SEE THE STACKS

1) REL E $\rightarrow$ 2 7 3 7 5 0 1 (See sketch)

2) P $\rightarrow$ S

4 REG $\rightarrow$ 45, 7, 17, 6, ...

P $\rightarrow$ S

YOU CAN RESUME 4 $\rightarrow$ 2; E $\rightarrow$ 2068

YOU DON'T NEED TO PRESS ")" BEFORE "="

TAKE THE SAME PROBLEM, PROCEED LIKE ABOVE

~~SKIP~~ UNTIL *, THEN 4 E $\rightarrow$ 2068

2) 180 A $\rightarrow$ 180; 4 C $\rightarrow$ 4; 17 E $\rightarrow$ 172;
 $\sin \rightarrow 0.93$

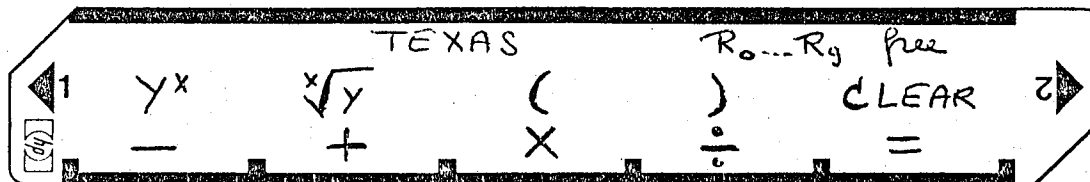
Reference(s) NONE



51772

User Instructions

Page 3 of 5



STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	LOAD SIDE 1 AND SIDE 2			
2	PRESS SUCCESSIVELY THE KEYS THAT CORRESPOND TO THE OPERATIONS YOU HAVE TO MAKE:			
	-		A	
	+		B	
	x		C	
	÷		D	
	y ^x		f A	
	√y		f B	
	(		f C	
	)		f D	
	=		E	
3	IF YOU WANT STORE A DATA IN REGISTER N (N ≥ 0, N ≤ 9)	DATA	STO N	DATA
4	IF YOU WANT RECALL A DATA FROM REGISTER N (N ≥ 0, N ≤ 9)	OLD DATA	REL N	STORED DATA
5	IF YOU WANT MAKE ANY OPERATION WITH 1 ARGUMENT PROCEED JUST LIKE WITH A HP (SEE USER'S GUIDE) THE FUNCTIONS OF 2 ARGUMENTS THAT ARE NOT ON THE CARD CANNOT BE USED.			
6	IF YOU MAKE AN ERROR BY ENTERING A NUMBER	DATA RIGHT DATA	CLX	0.00
7	IF YOU MAKE ANY OTHER ERROR		f E	



51/72

Program Listing I

Page 4 of 5

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	*LBL 2	32 25 15	CLEAR FLAGS, REGISTERS S ₀ → E. INIT. INDEX		ST I	35 33	HALT IF 'S' implicit.
	CF 3	35 61 03			R↓	35 53	
	CF 1	35 61 01			F? 2	35 71 02	
	PZ 8	31 42		060	RTN	35 22	
	CL REG	31 43			GTO d	22 31 14	DO NOTHING BUT MUST COUNTER BALANCE INSTR. 49
	PZ 5	31 42			*LBL 7	31 25 07	
	1	01			R↑	35 54	
	0	00			1	01	
	ST I	35 33			+	61	
010	R↑	35 53			R↑	35 53	
	RTN	35 22	APPLY ") " UNTIL R _E = 0		RTN	35 22	y^x E
	*LBL E	31 25 15			*LBL 5	31 25 05	
	F? 1	35 71 01			YX	35 63	
	GSB e	32 22 15		070	RTN	35 22	
	CF 3	35 61 03			*LBL 6	31 25 06	$\sqrt{x} y$ E
	RCL E	34 15			1/2	35 62	
	2=0	31 51			YX	35 63	
	GTO 0	22 00			RTN	35 22	
	R↑	35 53			*LBL 1	31 25 01	- U + T X O ÷ N
	GSB d	32 22 14			-	51	
020	GTO E	22 15			RTN	35 22	
	*LBL 0	31 25 00	IF THE OPERATION IS "C". HALT POP NEXT OPERATION CODE FROM THE STACK		*LBL 2	31 25 02	
	R↑	35 53			+	61	PUSH OPER. CODE FOR "C" ON OPERATIONS STACK AND TEST IF "C" IS NOT ERRONEOUS.
	RTN	35 22		080	RTN	35 22	
	*LBL d	32 25 14			*LBL 3	31 25 03	
	F? 1	35 71 01			X	71	
	GSB e	32 22 15			RTN	35 22	- U + T X O ÷ N
	CF 3	35 61 03			*LBL 4	31 25 04	
	GSB 1	31 22 01			÷	81	
030	2≠0	31 61			RTN	35 22	
	GTO 0	22 00	AFTER STEP 50, HP 67's Stack is Z OPERAND 2 Y OPERATION CODE X OPERAND 1		*LBL c	32 25 13	PUSH OPER. CODE FOR "C" ON OPERATIONS STACK AND TEST IF "C" IS NOT ERRONEOUS.
	R↑	35 53			F? 1	35 71 01	
	RTN	35 22		090	GSB e	32 22 15	
	*LBL 1	31 25 01			1	01	
	RCL E	34 15			0	00	- U + T X O ÷ N
	1	01			F? 3	35 71 03	
	0	00			COS ⁻¹	32 63	
	÷	81			RCL E	34 15	
	INT	31 83			X	71	P U T O P E R.
040	SAD E	33 15			STO E	33 15	
	CLX	44	REGISTERS		R↓	35 53	
	LAST X	35 82			RTN	35 22	
	TRAC	32 83			*LBL A	31 25 11	- U + T X O ÷ N
	1	01		100	F? 1	35 71 01	
	0	00			GSB e	32 22 15	
	X	71			CF 3	35 61 03	
	RTN	35 22			1	01	P U T O P E R.
	*LBL 0	31 25 00			GTO 0	22 00	
	DSZ	31 33			*LBL B	31 25 12	
050	REL(i)	34 24			F? 1	35 71 01	
	2Z 7	35 52	REGISTERS		GSB e	32 22 15	P U T O P E R.
	2Z 1	35 24			CF 3	35 61 03	
	R↓	35 53			2	02	
	2Z 7	35 52		110	GTO 0	22 00	
	GSB(i)	31 22 24			*LBL C	31 25 13	P U T O P E R.
	R↑	35 54			F? 1	37 71 01	

0 Free	1 Free	2 Free	3 Free	4 Free	5 Free	6 Free	7 Free	8 Free	9 Free
S0 DA	S1 TA	S2 ST	S3 AC	S4 K	S5 Unused	S6 but	S7 cleared	S8 by	S9 GSB e
A Unused but cleared by GSB 2	B Unused but cleared by GSB 3	C Used	D Used	E Operations Stack	I Index				



51772

Program Listing II

Page 5 of 5

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	PSBE	32 22 15			+	61	
	CF3	35 61 03	X	170	STO E	33 15	
	3	03			GTO 0	22 00	
	GTO 0	22 00			*LBL 9	31 25 09	
	*LBL D	31 25 14			REL C	34 13	
	F? 1	37 71 01			SF 2	35 51 02	
	PSBE	32 22 15			PSB d	32 22 14	
120	CF3	35 61 03			REL D	34 14	
	4	04			GTO 8	22 08	
	GTO 0	22 00			*LBL 0	31 25 00	
	*LBL a	32 25 11			REL C	34 13	
	F? 1	35 71 01		180	REL D	34 14	
	PSBE	32 22 15			REL E	34 15	
	CF3	35 61 03			1	01	
	5	05			0	00	
	GTO 0	22 00			X	71	
	*LBL b	32 25 12			+	61	
130	F? 1	35 71 01			STO E	33 15	
	PSBE	32 22 15			R4	35 53	
	CF3	35 61 03			STO (C)	33 24	
	6	06			ISZ	31 34	
	*LBL 0	31 25 00		190	RTN	35 22	
	*LBL 8	31 25 08			R/S	84	
	STO D	33 14					
	R4	35 53					
	STO C	33 13					
	REL E	34 15					
140	1	01					
	0	00					
	÷	81					
	FRAC	32 83					
	1	01					
	0	00					
	X	71					
	2=0	31 51					
	GTO 0	22 00					
	1	01					
150	+	61					
	2	02					
	÷	81					
	INT	31 83					
	REL D	34 14					
	2=0	31 51					
	GTO 0	22 00					
	1	01					
	+	61					
	3	03					
160	÷	81					
	INT	31 83					
	2<0	32 71					
	GTO 9	22 09					
	REL E	34 15					
	1	01					
	0	00					
	X	71					
	F	07					
					R/S	84	

LABELS					FLAGS	SET STATUS		
A	B	C	D	E	0	FLAGS	TRIG	DISP
-	+	X	÷	=	/	ON OFF		
y ^x	*√y	(	)	CLEAR	1 INITIALIZAT.	0 ☐ ☒	DEG ☒	FIX ☒
0 Used	1 POP OP CODE	2 +	3 X	4 ÷	2) implicit.	1 ☒ ☐	GRAD ☐	SCI ☐
5 y ^x	6 *√y	7 NOP	8 Used	9 Used.	3 (erroneous	2 ☐ ☒	RAD ☐	ENG ☐
						3 ☐ ☒		n 2