

01838D Program Description I

Program Title	DRAW POKER		
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Program Description, Equations, Variables The 5 lettered keys on your HP-67 or -97 (A-B-C-D-E) are used to deal yourself a five-card POKER HAND. From this hand, you may reject any (or all) of the cards and draw new ones. You then calculate how much you have won or lost depending on the amount of your bet and the "quality" of your hand. This program uses a unique system of scoring to give you the same odds as in real poker! It works by comparing each card against the others to determine the number of pairs in your hand:

5 OF A KIND = 10 PAIRS	FULL HOUSE = 4 PAIRS	3 OF A KIND = 3 PAIRS
4 OF A KIND = 6 PAIRS	STRAIGHT = special	1-2 PAIRS = 1-2 PAIRS

Since it was impossible to program the calculator to compare 5 different cards in a RANDOM SEQUENCE to one of the five possible "straights," the author decided to let the player determine if he won! (There are some things that a human can still do better and faster - e.g. DETERMINE WHETHER 5 CARDS IN RANDOM SEQUENCE, IF RE-ARRANGED, WOULD EQUAL A "STRAIGHT.") Since it is harder to obtain a "straight" with this program than in real poker, the "odds" are doubled if you make it: 7 instead of $3\frac{1}{2}$!

Operating Limits and Warnings NONE! The player is cautioned, however, against using the "DRAW" feature of this program to CHEAT. If you desire maximum satisfaction from obtaining a particular winning poker hand, Do NOT CHEAT. Allow the laws of chance and probability to do "their thing" on your poker hands!!!

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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Sketch(es)	EXAMPLES OF POKER HANDS	[RANKED IN ORDER OF HIGHEST TO LOWEST]				
FIVE OF A KIND	=	9♥	9♠	9♦	9♣	JOKER
FOUR OF A KIND	=	8♥	2♦	8♠	8♦	8♣
FULL HOUSE	=	A♥	3♥	3♦	A♣	A♦
STRAIGHT	=	2♠	3♦	4♥	5♥	6♣
THREE OF A KIND	=	2♥	3♥	4♦	3♠	3♦
TWO PAIRS	=	A♥	9♦	8♣	8♥	9♥
ONE PAIR	=	7♦	7♥	6♥	2♣	3♦

Sample Problem(s)

NOTE: After you have written the program into the calculator's memory, do the following:

GTO 0 0 3 7 → 037 23.00 (DSP 0)

FOR DEMONSTRATION PURPOSES ONLY:

ADD R/S → 038 84 (R/S)

Switch to "RUN." Press f CL REG

EXAMPLE #1 —

	Keystrokes:	Output:	
Input seed.	1 2 3 4 5 f E	→	0.0
Make your bet (\$5).	5 f A	→	5. **
"Turn over" CARD #1	A	→	20000. (CARD #1 = 2)
CARD #2	B	→	25000. (CARD #2 = 5)
CARD #3	C	→	25900. (CARD #3 = 9)
CARD #4	D	→	25950. (CARD #4 = 5)
CARD #5	E	→	25958. (CARD #5 = 8)

You have decided that you will EXCHANGE the first, third, and fifth CARDS (2, 9, 8)

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** Normally, the display will flash twice and then calculate a new seed. Now, however, we have inserted an R/S for DEMONSTRATION PURPOSES; therefore, the display comes to a HALT; it does not FLASH.

Reference(s)

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EXAMPLE #1 - continued

DRAW (to replace CARD #1)	A →	95958.	
DRAW (to replace CARD #3)	C →	95958.	(CARD 3 REMAINS 9)
DRAW (to replace CARD #5)	E →	95955.	
Wow! A Full House!			
Calculate your winnings.	f C →	25.	WON FOR FULL HOUSE
		25.00	TOTAL

EXAMPLE #2 -

Make your bet. (\$10)	10	f A →	10.	**
"Turn over" CARD #1		A →	80000.	(CARD #1 = 8)
CARD #2		B →	84000.	(CARD #2 = 4)
CARD #3		C →	84100.	(CARD #3 = 1)
CARD #4		D →	84150.	(CARD #4 = 5)
CARD #5		E →	84152.	(CARD #5 = 2)

EXCHANGE the last three cards (1,5,2).

DRAW (to replace CARD #3)	C →	84952.
DRAW (to replace CARD #4)	D →	84992.
DRAW (to replace CARD #5)	E →	84999.

Three of a kind is not too bad, considering what cards you started with.

Calculate your winnings.	f C →	40.	FOR 3 OF A KIND.
		65.00	TOTAL

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EXAMPLE #3 —

Make your bet (\$25).	25	[f]	[A]	→	25. **	
"Turn over" CARD #1			[A]	→	30000.	(CARD #1=3)
CARD #2			[B]	→	31000.	(CARD #2=1)
CARD #3			[C]	→	31600.	(CARD #3=6)
CARD #4			[D]	→	31680.	(CARD #4=8)
CARD #5			[E]	→	31681.	(CARD #5=1)

On a "hunch," you decide to EXCHANGE the first, second, and fifth cards (3,1,1).

DRAW (to replace CARD #1)	[A]	→	91681.
DRAW (to replace CARD #2)	[B]	→	97681.
DRAW (to replace CARD #5)	[E]	→	97685.

Your "hunch" paid off! You ended up with a STRAIGHT.

Calculate your winnings. [f] [C] → 97685. (flashing)

You must now let your calculator "know" whether or not you made a STRAIGHT:

{ If you did, press "+"
 { If you missed, press "-"

You did make the STRAIGHT. [f] [C] → 195370. (2x 97685)
 175. FOR YOUR STRAIGHT,
 240.00 TOTAL

EXAMPLE #4 —

Make your bet (\$100).	100	[f]	[A]	→	100. **	
"Turn over" CARD #1			[A]	→	40000.	(CARD #1=4)
CARD #2			[B]	→	47000.	(CARD #2=7)
CARD #3			[C]	→	47700.	(CARD #3=7)
CARD #4			[D]	→	47740.	(CARD #4=4)
CARD #5			[E]	→	47746.	(CARD #5=6)

Try for a Full House. EXCHANGE your last card.

DRAW (to replace CARD #5). [E] → 47745. (You missed!)
 Calculate your winnings. [f] [C] → 300. FOR TWO PAIR
 540.00 TOTAL

1	BET and DEAL	WIN or LOSE?	RCL \$	(SEED)	2
CARD #1	CARD #2	CARD #3	CARD #4	CARD #5	

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	Load side 1 and side 2.			
2	Input a seed: any positive number.	SEED	f E	0.0
3	PLACE YOUR BET and DEAL!			
	== Your bet may be any integer wager (whole dollar amount) of any reasonable number (e.g. - up to ONE BILLION DOLLARS!)	BET		
			f A	BET.
				flashing*
4	"TURN OVER" YOUR CARDS.			
	== NOTE: This must be done during the one-second pauses during which your BET or HAND is displayed.			
			A	A0000.**
			B	AB000.
			C	ABCOO.
			D	ABCD0.
			E	ABCDE.
				flashing*
5	Decide which CARD(s) you wish to EXCHANGE and repeat STEP 4. (See example.)			
6	Calculate whether you have WON or LOST.		f C	\$. TOTAL \$.00 ~OR~
6A	If your hand contains NO PAIRS OF CARDS, the program will flash your hand again. DETERMINE if your hand consists of a "STRAIGHT" (12345, 23456, etc.)			ABCDE. flashing*
	IF IT DOES → (+)		+	\$. TOTAL \$.00
	IF NOT → (-)		-	
7	For a NEW HAND, go to STEP 3.			
8	To display the number of hands "WON"		RCL 6	# won
9	To display the number of hands "LOST"		RCL 0	# LOST
10	To display the TOTAL AMOUNT won or lost		f D	TOTAL \$.00
	* "flashing" - This means that the display pauses (flashes) twice and then calculates a new SEED. This process keeps repeating.			
	** A = "CARD" #1, B = "CARD" #2, etc.			

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01828D			COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS		
001	*	g LBL e	32 25 15		h STO I	35 33			
		↑	41		RCL (i)	34 24			
		↑	41		f x≠0	31 61			
		1	01	060	GTO 8	22 08			
		.	83		h RCL I	35 34			
		4	04		1	01			
		9	09		-	51			
		2	02		g 10 ^x	32 53			
		7	07		RCL E	34 15			
010		+	61		1	01			
		RCL E	34 15		0	00			
		+	61		X	71			
		9	09		f INT	31 83			
		.	83	070	STO (i)	33 24	STO CARD AND		
		9	09		f x=0	31 51	DSP IN A-E		
		7	07		GTO 7	22 07	POSITION.		
		X	71		X	71			
		g FRAC	32 83		DSP 0	23 00			
		STO E	33 15		STO + 9	33 61 09			
020		CL 7	44		RCL 9	34 09	-THIS IS YOUR		
		DSP 1	23 01		GTO 0	22 00	HAND!		
		h RTN	35 22	*	f LBL 8	31 25 08			
*		g LBL a	32 25 11		h RCL I	35 34			
		STO A	33 11	080	1	01			
		0	00		-	51			
		STO 1	33 01		g 10 ^x	32 53			
		STO 2	33 02		X	71			
		STO 3	33 03		STO - 9	33 51 09	CANCEL CARD		
		STO 4	33 04		0	00	SHOWN AND DEAL		
030		STO 5	33 05		STO (i)	33 24	A 2ND CARD.		
		STO 8	33 08		h RCL I	35 34			
		STO 9	33 09		GTO 9	22 09			
		RCL A	34 11	*	f LBL 7	31 25 07	IF X=0,		
*		f LBL 0	31 25 00	090	g GSB e	32 22 15	CALCULATE X.		
		g GSB e	32 22 15		h RCL I	35 34			
		h R↓	35 53		GTO 9	22 09			
		DSP 0	23 00	*	g LBL c	32 25 13	YOUR HAND IS		
		h PAUSE	35 72		RCL 5	34 05	NOW COMPLETE.		
		h PAUSE	35 72		RCL 4	34 04			
040		GTO 0	22 00		f GSB 4	31 22 04	HOW MUCH DID		
*		f LBL A	31 25 11		RCL 3	34 03	YOU WIN OR LOSE?		
		5	05		f GSB 4	31 22 04			
		GTO 9	22 09		RCL 2	34 02			
*		f LBL B	31 25 12	100	f GSB 4	31 22 04	← COMPARE CARDS		
		4	04		RCL 1	34 01	TO DETERMINE IF		
		GTO 9	22 09		f GSB 4	31 22 04	THERE ARE ANY		
*		f LBL C	31 25 13		RCL 5	34 05	PAIRS.		
		3	03		f GSB 4	31 22 04			
		GTO 9	22 09		RCL 3	34 03			
050	*	f LBL D	31 25 14		f GSB 4	31 22 04			
		2	02		RCL 1	34 01			
		GTO 9	22 09		f GSB 4	31 22 04			
*		f LBL E	31 25 15		RCL 4	34 04			
		1	01	110	f GSB 4	31 22 04			
		GTO 9	22 09		RCL 2	34 02			
*		f LBL 9	31 25 09		f GSB 4	31 22 04			
REGISTERS									
0 # of LOSSES	1 CARD #1	2 CARD #2	3 CARD #3	4 CARD #4	5 CARD #5	6 # of WINS	7 TOTAL \$	8 # of PAIRS	9 CURRENT "HAND"
S0	S1	S2	S3	S4	S5	S6	S7	S8	S9
A BET.	B	C	D	E SEED	I USED				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS	
	RCL 5	34 05			1	01		
	f GSB 4	31 22 04		170	STO + 6	33 61 06		
	RCL 8	34 08	Rg → # OF PAIRS		GTO fd	22 31 14		
	f X ≠ 0	31 61		*	f LBL 1	31 25 01	YOU LOST!	
	GTO 3	22 03			RCL A	34 11	YOUR BET X2	
	h SF 1	35 51 01			2	02		
	5	05			X	71		
120	h STD I	35 33			CHS	42		
	f GSB 5	31 22 05			f - x -	31 84		
	h F? 1	35 71 01			STO + 7	33 61 07		
	GTO 1	22 01			1	01		
*	f LBL 6	31 25 06	FI WAS CLEARED, NOW YOU MUST LET THE CALCULATOR KNOW IF YOU MADE YOUR "STRAIGHT"	180	STO + 0	33 61 00	DSP WINNINGS	
	RCL 9	34 09		*	g LBL d	32 25 14		
	↑	41			RCL 7	34 07		
	h PAUSE	35 72	YES → +		DSP 2	23 02		
	h PAUSE	35 72	NO → -		R/5	84		
	f X = 0	31 51						
130	GTO 1	22 01						
	RCL 9	34 09						
	2	02						
	X	71						
	g X = y	32 51						
	GTO 2	22 02		190				
	GTO 6	22 06						
*	f LBL 4	31 25 04	COUNTS NUMBER OF PAIRS IN YOUR HAND.					
	g X ≠ y	32 61						
	h RTN	35 22						
140	1	01						
	STO + 8	33 61 08						
	h R ↓	35 53						
	h RTN	35 22						
*	f LBL 5	31 25 05	DETERMINES IF IT IS POSSIBLE FOR YOU TO HAVE A "STRAIGHT".	200				
	RCL (i)	34 24						
	g X = y	32 51						
	h CF 1	35 61 01						
	h R ↓	35 53						
	f DSZ	31 33						
150	GTO 5	22 05						
	h RTN	35 22						
*	f LBL 3	31 25 03	YOU'VE WON!					
	RCL 8	34 08						
	1	01	# OF PAIRS + 1	210				
	+	61	X YOUR BET					
	RCL A	34 11						
	X	71						
	f - x -	31 84						
	STO + 7	33 61 07						
160	1	01						
	STO + 6	33 61 06						
	GTO fd	22 31 14						
*	f LBL 2	31 25 02	YOU'VE WON!					
	RCL A	34 11						
	7	07	YOUR BET X7	220				
	X	71	FOR A STRAIGHT.					
	f - x -	31 84						
	STO + 7	33 61 07						
LABELS				FLAGS		SET STATUS		
A CARD #1	B CARD #2	C CARD #3	D CARD #4	E CARD #5	0	FLAGS	TRIG	DISP
a BET + DEAL	b	c WIN OR LOSE?	d RCL \$	e (SEED)	1 used	ON OFF	DEG ☒	FIX ☒
0 DSP LOOP	1 LOSE	2 WIN - STRAIGHT	3 WIN - PAIRS	4 COUNT PAIRS	2	0 ☐ ☒	GRAD ☐	SCI ☐
5 USED	6 DSP LOOP	7 ZERO "CANCEL"	8 2ND CARD	9 DSP CARDS	3	1 ☐ ☒	RAD ☐	ENG ☐
						2 ☐ ☒		n <u>2</u>
						3 ☐ ☒		