

04189D Program Description I

Program Title "4-5-6" (DICE GAME)

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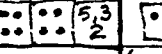
City RICHMOND State CA Zip Code 94803

Program Description, Equations, Variables

RULES for 4-5-6

- Player throws the 3 dice until he gets a NATURAL or CRAPS or a DOUBLE-plus* CRAPS loses immediately.
- If you don't get at least a DOUBLE, throw the dice again. (Exceptions: 4-5-6 and 1-2-3)
- You then continue to throw the 3 dice until you get another NATURAL or CRAPS or a DOUBLE-plus. If the NATURAL or DOUBLE-plus is higher than your first throw, you WIN EVEN MONEY; if it is the same, THROW DICE AGAIN; if it is less than your first throw, you LOSE YOUR BET.
- If you throw  or , you BECOME BANKER.

RANKING OF DICE COMBINATIONS

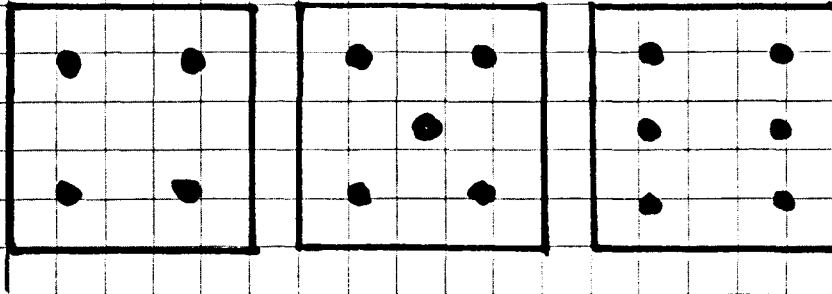
NATURAL - 456 - HIGHEST THROW	—	WINS BANKER POSITION
NATURAL - 666 - HIGHEST TRIPLE	—	WINS BANKER POSITION
NATURAL - any TRIPLE	—	THE ONLY WAY TO BEAT IT IS WITH A HIGHER TRIPLE OR 456.
NATURAL - DOUBLE-plus 	—	EXAMPLE  ,  , etc.
DOUBLE-plus	—	(highest to lowest):
 ,  , 		 ,  , 
NOTHING — NO MATCH AT ALL	—	THROW ALL 3 DICE AGAIN.
CRAPS - DOUBLE-plus 	—	EXAMPLE  ,  , etc.
CRAPS - 123 - LOWEST THROW	—	LOSE IMMEDIATELY!

* DOUBLE-plus = , , , etc.

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)



Sample Problem(s) 4 PLAYERS, PLAYER D STARTS AS BANKER SEED .123456789

INITIALIZE	.123456789	[f] [E] →	1.1 (INITIALIZING SETS PLAYER A AS BANKER)
BANKER-PLAYER D	4	[E] →	4.4
PLAYER A BETS 50¢	.50	[A] →	133. (DOUBLE-PLUS 3) * - 0.50, 19.50 (AMOUNT LEFT)
PLAYER B BETS 1.00	1	[B] →	115. (DOUBLE-PLUS 5) TRY TO BEAT IT.
PLAYER B'S 2ND THROW		[B] →	125. (NO MATCH) TRY AGAIN.
			134. (NO MATCH) TRY AGAIN.
			366. (DOUBLE-PLUS 3) 1.00 WIN, 21.00
PLAYER C BETS 25¢	.25	[C] →	145. (NO MATCH) TRY AGAIN
			155. (DOUBLE-PLUS 5) * - 0.25, 19.75
PLAYER A BETS 50¢	.50	[A] →	336. (DOUBLE-PLUS 3) NATURAL, TRY TO BEAT IT.
PLAYER A'S 2ND THROW		[A] →	125. (NO MATCH) TRY AGAIN
			111. (TRIPLE) 0.50 WIN, 20.00
PLAYER B BETS 1.00	1	[B] →	156. (NO MATCH) TRY AGAIN.
			346. (NO MATCH) TRY AGAIN.
			256. (NO MATCH) TRY AGAIN
			125. (NO MATCH) TRY AGAIN.
			344. (DOUBLE-PLUS 3) TRY TO BEAT IT
PLAYER B'S 2ND THROW.		[B] →	445. (DOUBLE-PLUS 5) 1.00 WIN, 22.00
HOW MUCH HAS the BANKER (PLAYER D) WON OR LOST?			
PLAYER D'S BANK = R4		[RCL] [4] →	18.25
etc.			

OPERATING LIMITS and WARNINGS:

For practical purposes, the maximum bet "permissible" is \$1.00.

* CRAPS → LOSE BET

"4 5 6"

1 ☐ PLAYERA ☐ PLAYERB ☐ PLAYERC ☐ PLAYERD

☐ 1ST THROW? ☐ ENTER BET. ☐ BANKER ID

INITIALIZE (SEED) 2 ☐

STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	Load PROGRAM — Sides 1 + 2		☐ ☐	
2	INITIALIZE (INPUT SEED $0 < S < 1$)	SEED	☐ f ☐ E	1.1
3	OPTIONAL: TO CHANGE BANKER ID.	PLAYER #	☐ E ☐	n.n
4	PLAYER PLACES HIS BET and THROWS the DICE	\$\$ (BET)	☐ A ☐ or	
			☐ B ☐ or	
			☐ C ☐ or	
			☐ D ☐	3 DICE.
	AFTER 3 DICE (XYZ.) ARE OUTPUT, THE FOLLOWING POSSIBILITIES OCCUR:		☐ ☐	
	4A) NO MATCH → DICE ARE THROWN AGAIN, AUTOMATICALLY		☐ ☐	
	4B) CRAPS (SEE PAGE 1) — LOSE BET →		☐ ☐	- BET.
			☐ ☐	BANK BAL.
	4C) NATURAL 456 or 666. — WIN BANKER POSITION →		☐ ☐	n.n
	4D) NATURAL or DOUBLE-plus →		☐ ☐	3 DICE.
	• If 3 DICE are DISPLAYED again, ☐ GTO STEP 5		☐ ☐	
	• If 4B) or 4C) occur, ☐ GTO STEP 4		☐ ☐	
5	(SAME) PLAYER THROWS DICE AGAIN	—	☐ A ☐ or	
			☐ B ☐ or	
			☐ C ☐ or	
			☐ D ☐	3 DICE
	AFTER 3 DICE (XYZ.) ARE OUTPUT, THE FOLLOWING POSSIBILITIES OCCUR:		☐ ☐	
	5A) NO MATCH — DICE ARE THROWN AGAIN, AUTOMATICALLY		☐ ☐	
	5B) CRAPS (SEE PAGE 1) — SEE ABOVE (4B)		☐ ☐	
	5C) NATURAL 456 or 666 — SEE ABOVE (4C)		☐ ☐	
	5D) NATURAL or DOUBLE-plus		☐ ☐	
	If $XYZ.2 = XYZ.1$ DICE ARE THROWN AGAIN, AUTOMATICALLY		☐ ☐	
	If $XYZ.2 > XYZ.1$ WIN BET →		☐ ☐	BET.
			☐ ☐	BANK BAL.
	If $XYZ.2 < XYZ.1$ LOSE BET →		☐ ☐	- BET.
			☐ ☐	BANK BAL.
6	OPTIONAL: TO RECALL ANY PLAYER'S BANK BALANCE: ☐ RCL 1, ☐ RCL 2, ☐ RCL 3, OR ☐ RCL 4		☐ ☐	(BANK BAL.)
7	FOR NEXT PLAYERS TURN ☐ GTO STEP 4		☐ ☐	

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	e	g LBLE	32 25 15	INITIALIZE		5	05
		h r	35 73			h STO I	35 33
		+	61			f GSB 0	31 22 00
		f LOG	31 53	060		GTO 4	22 04
		f CL REG	31 43	3		f LBL 3	31 25 03
		f P S	31 42			h SF 3	35 51 03
		f CL REG	31 43			f P S	31 42
		STOE	33 15			f GSB 0	31 22 00
		9	09			f P S	31 42
010		9	09	4		f LBL 4	31 25 04
		7	07			h F? 2	35 71 02
		STOD	33 14			GTO 9	22 09
		2	02			qx=y	32 51
		0	00	070		GTO 7	22 07
		STO 1	33 01			h F? 1	35 71 01
		STO 2	33 02			h F? 2	35 71 02
		STO 3	33 03			GTO 4	22 04
		STO 4	33 04			h F? 3	35 71 03
		1	01			R 5	84
020	E	f LBLE	31 25 15			RCL (i)	34 24
		h CF 2	35 61 02			RCL 5	34 05
		h CF 3	35 61 03			qx=y	32 51
		STO B	33 12			GTO 4	22 04
		RCL B	34 12			h F? 0	35 71 00
		1	01			GTO 5	22 05
		0	00			qx>y	32 81
		÷	81			GTO 6	22 06
		+	61			6	06
		DSP 1	23 01			RCL 9	34 09
030		R 5	84			qx=y	32 51
A		f LBL A	31 25 11			GTO 8	22 08
		1	01			GTO 9	22 09
		GTO 1	22 01			f LBL 5	31 25 05
B		f LBL B	31 25 12			qx>y	32 81
		2	02			GTO 8	22 08
		GTO 1	22 01			h CF 0	35 61 00
C		f LBL C	31 25 13			f P S	31 42
		3	03			f GSB 2	31 22 02
		GTO 1	22 01			f P S	31 42
040	D	f LBL D	31 25 14			h F? 0	35 71 00
		4	04			GTO 9	22 09
		f LBL 1	31 25 01			GTO 8	22 08
		STO C	33 13			6	f LBL 6
		h STO I	35 33			100	6
		h R	35 53			f P S	31 42
		h F? 3	35 71 03			RCL 9	34 09
		h F? 3	35 71 03			f P S	31 42
		GTO 4	22 04			qx≠y	32 61
		f P S	31 42			GTO 8	22 08
050		STO (i)	33 24			9	f LBL 9
		f P S	31 42			h SF 2	35 51 02
		GTO 3	22 03			8	f LBL 8
4		f LBL 4	31 25 04			DSP 2	23 02
		h F? 3	35 71 03			RCL C	34 13
		GTO 3	22 03			h STO I	35 33
		1	01			f P S	31 42

REGISTERS

0 ONE OR MORE DICE = 1	1 PLAYER A BANK	2 PLAYER B BANK	3 PLAYER C BANK	4 PLAYER D BANK	5 DISPLAY	6	7 DIE #1	8 DIE #2	9 DIE #3
S0 " (1ST THROW)	S1 BET	S2 BET	S3 BET	S4 BET	S5 DIE #1 (1ST THROW)	S6	S7 DIE #1 (1ST THROW)	S8 DIE #2 (1ST THROW)	S9 DIE #3 (1ST THROW)
A USED	B BANKER ID	C PLAYER ID	D 997	E SEED	I USED				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	RCL(i)	34 24	BET		RCL0	34 00	
	FP←S	31 42		170	FX≠0	31 61	GSB 6 if one or more DICE = 1
	HF?2	35 71 02	LOSE?		FGSB6	31 22 06	
	CHS	42			4	04	
	WPAUSE	35 72	DISPLAY ± BET		5	05	NATURAL
	STO+(i)	33 61 24			6	06	
	RCL(i)	34 24			RCL5	34 05	
120	STO A	33 11			HRTN	35 22	
	HRL	35 53		0'	FLBL0	31 25 00	PLACE DICE IN ORDER
	RCLB	34 12	BANKER ID		qx=y	32 51	
	HSTOI	35 33			HSFI	35 51 01	DOUBLE
	HRL	35 53		180	qx≤y	32 71	
	STO-(i)	33 51 24	SUBTRACT(ADD) TO BANKER'S TOTAL		wx≤y	35 52	
	RCLA	34 11			HRTN	35 22	
	HRTN	35 22		1	FLBL1	31 25 01	RANDOM DIE GENERATOR
0	FLBL0	31 25 00	THROW DICE		1	01	
	DSP0	23 00			RCL E	34 15	
130	0	00			RCLD	34 14	
	STO 0	33 00			X	71	
	HCF0	35 61 00			qFRAE	32 83	
	HCF1	35 61 01			STOE	33 15	
	FGSB1	31 22 01		190	G	06	
	STO7	33 07	1st DIE (x)		X	71	
	FGSB1	31 22 01			1	01	
	STO8	33 08	2nd DIE (y)		+	61	
	FGSB1	31 22 01			LINT	31 83	
	STO9	33 09	3rd DIE (z)		qx=y	32 51	STO+0 if x=1
140	RCL7	34 07			STO+0	33 61 00	
	FGSB0'	31 22 00			HRTN	35 22	
	RCL8	34 08	Place DICE in ORDER	2	FLBL2	31 25 02	CHECK for TRIPLE
	FGSB0'	31 22 00			RCL7	34 07	
	STO9	33 09		200	RCL8	34 08	
	STO5	33 05			qx≠y	32 61	
	HRL	35 53			HRTN	35 22	
	FGSB0	31 22 00			RCL9	34 09	
	STO8	33 08			qx≠y	32 61	
150	1	01			HRTN	35 22	SFO for TRIPLE
	0	00			HSFO	35 51 00	
	X	71			G	06	
	STO+5	33 61 05			qx≠y	32 61	
	HRL	35 53			HRTN	35 22	
	STO7	33 07		210	HF?3	35 71 03	
	EXX	43			FP←S	31 42	(1st THROW)
	Z	02		7	FLBL7	31 25 07	CHANGE BANKER
	X	71			RCLC	34 13	
	STO+5	33 61 05			GTOE	22 15	
	RCL5	34 05		6	FLBL6	31 25 06	CHECK for CRAPS 1
160	WPAUSE	35 72			Z	02	
	WPAUSE	35 72			qx≤y	32 71	
	1	01			HRTN	35 22	
	2	02	CRAPS		0	00	
	3	03		220	HF?1	35 71 01	
	qx=y	32 51			1	01	
	HSF2	35 51 02	SF2 for Loss		FX≠0	31 61	
	HF?1	35 71 01			HSF2	35 51 02	
	FGSB2	31 22 02	CHECK for TRIPLE		HRTN	35 22	

LABELS					FLAGS	SET STATUS		
A PLAYER A	B PLAYER B	C PLAYER C	D PLAYER D	E BANKER ID	0 TRIPLE	FLAGS	TRIG	DISP
a	b	c	d	e INITIAL	1 DOUBLE	0 ☐ ☒	DEG ☒	FIX ☒
0 THROW DICE	1 USED	2 CHECK TRIPLE?	3 1st THROW	4 2nd THROW	2 USED	1 ☐ ☒	GRAD ☐	SCI ☐
5 TRIPLE?	6 USED	7 CHANGE BANKER	8 WIN	9 LOSE	3 USED	2 ☐ ☒	RAD ☐	ENG ☐
						3 ☐ ☒		n <u>2</u>