

Probability of rolling exactly 10 with multiple die

Possibilities	Rolls	Arrange	Counts	Prob	P(10 10)	Exp Rolls
	2	55	1	2!/2!		Given 10
6 ²	36	46	2	2!		
		2	3	0.083	0.289561291	0.579122582
	3	136	6	3!		
6 ³	216	145	6	3!		
		226	3	3!/2!		
		235	6	3!		
		244	3	3!/2!		
		334	3	3!/2!		
		6	27	0.125	0.434341936	1.303025809
	4	1126	12	4!/2!		
6 ⁴	1296	1135	12	4!/2!		
		1144	6	4!/(2!2!)		
		1225	12	4!/2!		
		1234	24	4!		
		1333	4	4!/3!		
		2224	4	4!/1/3!		
		2233	6	4!/(2!2!)		
		8	80	0.062	0.214489845	0.85795938
	5	11116	5	5!/4!		
6 ⁵	7776	11125	20	5!/3!		
		11134	20	5!/3!		
		11224	30	5!/2!2!		
		11233	30	5!/2!2!		
		12223	20	5!/3!		
		22222	1	5!/5!		
		7	126	0.0162	0.056303584	0.281517922
	6	111115	6	6!/5!		
6 ⁶	46,656	111124	30	6!/4!		
		111133	15	6!/4!2!		
		111222	4	6!/3!3!		
		4	55	0.00118	0.000235768	0.001414609
	7	1111114	7	7!/6!		
6 ⁷	279,936	1111123	42	7!/5!		
		1111222	42	7!/5!		
		3	91	3.25E-04	1.13E-03	7.91E-03
	8	11111113	8	8!/7!		
6 ⁸	1,679,616	11111122	28	8!/6!2!		
		2	36	2.14E-05	7.45E-05	5.96E-04
	9	111111112	9	9!/8!		
6 ⁹	1.01E+07	1	9	8.93E-07	3.10E-06	2.79E-05
6 ¹⁰	10	1111111111	1	10!/10!		
	6.05E+07	1	1	1.65E-08	5.75E-08	5.75E-07

0.2878	0.9961	3.0216
--------	--------	--------

Probability of bust on two rolls = $3/36 = 1/12$

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Probability of busting on third roll given you have 6, 7, 8, or 9

	1	2	3	4	5	6
6	7	8	9	10	11	12
7	8	9	10	11	12	13
8	9	10	11	12	13	14
9	10	11	12	13	14	15

Prob of 10 if you keep rolling even with 8 or 9

0.083	1.000	1.000	1.000	1.000	0.083	2
0.833	0.125	1.000	1.000	1.000	0.104	3
0.833	0.563	0.143	1.000	1.000	0.067	4
0.833	0.563	0.500	0.167	1.000	0.039	5
0.833	0.563	0.500	0.417	0.167	0.016	6
					0.310	

Prob of 10 if you stop on 8 or 9

	10	8-9	Bust	Roll	
				1	
2	0.0833	0.2500	0.0833	0.5833	1.0000
3	0.1111	0.3056	0.1667	0.4167	1.0000
4	0.1333	0.3333	0.2000	0.3333	1.0000
5	0.1667	0.3333	0.2500	0.2500	1.0000
				1	
2	0.0833	0.2500	0.0833	0.5833	0.4167
3	0.0648	0.1782	0.0972	0.2431	0.3403
4	0.0324	0.0810	0.0486	0.0810	0.1620
5	0.0135	0.0270	0.0203	0.0203	0.0608
	0.1941	0.5363	0.2494	0.0203	1.0000
			0.9797		0.9797