

Skee Ball Probability

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Summary Table

Microsoft Visual Studio Debug Console

Computational simulation of Skee Ball game
Enter number of trials: 100

Score	Count	Probability
30	9	0.090
40	17	0.170
50	26	0.260
60	18	0.180
70	17	0.170
80	7	0.070
90	3	0.030
100	2	0.020
110	1	0.010

Microsoft Visual Studio Debug Console

Computational simulation of Skee Ball game
Enter number of trials: 500

Score	Count	Probability
30	64	0.128
40	81	0.162
50	103	0.206
60	97	0.194
70	59	0.118
80	54	0.108
90	31	0.062
100	5	0.010
110	4	0.008
120	1	0.002
130	1	0.002

Microsoft Visual Studio Debug Console

Computational simulation of Skee Ball game
Enter number of trials: 1000

Score	Count	Probability
30	136	0.136
40	177	0.177
50	187	0.187
60	188	0.188
70	135	0.135
80	83	0.083
90	58	0.058
100	24	0.024
110	7	0.007
120	2	0.002
130	2	0.002
140	1	0.001

Microsoft Visual Studio Debug Console

Computational simulation of Skee Ball game
Enter number of trials: 10000

Score	Count	Probability
30	1227	0.1227
40	1898	0.1898
50	2023	0.2023
60	1835	0.1835
70	1373	0.1373
80	833	0.0833
90	451	0.0451
100	233	0.0233
110	83	0.0083
120	32	0.0032
130	7	0.0007
140	4	0.0004
150	1	0.0001

Comparison of experimental results and theoretical results

Sum of $P(100, 110, 120, 130, 140, 150)$ from simulate 100, 500, 1000, and 10000 trials are 0.03, 0.022, 0.036, 0.036 respectively.

The experimental results are reflecting the theoretical results, we calculated the probability of a total score of at least 100 points is 0.03415. From experimental results, we can see the sum of the probability of scoring 100, 110, 120, 130, 140, and 150 is relatively closer to the theoretical results, and the probability of scoring exactly 100 points never exceed 0.3 from experimental results. From the experimental simulation, we can see score of 50 has the highest probability. To calculate the experimental expected value, we use 50 divided by 3 (rolls per trial), we get 16.67, which is relatively close to our calculated expected value 18.8. The theoretical expected total score for all three balls combined is 56.4. Compare to the experimental simulation, score 50 and 60 has the highest probability.