

Answer on Question #62128 – Math – Statistics and Probability

Question

At a party, you and your friend are both eying the last slice of pizza. To settle the matter, you agree on the following dice game: each of you is going to roll a die; if the highest number rolled by either one of you is a 1, 2, 3 or 4, then Player 1 wins. If the highest number is a 5 or a 6, then Player 2 wins. Assuming that you really want that last slice of pizza would you rather be Player 1 or Player 2 to maximize your chance of winning? Explain your choice.

Solution

Let's count the total number of cases and in how many ways Player 1 and Player 2 could win the game while rolling two dice.

Since each die has 6 values, we could get $6 \times 6 = 36$ ways in total.

	1	2	3	4	5	6
1	I (1, 1)	I (1, 2)	I (1, 3)	I (1, 4)	II (1, 5)	II (1, 6)
2	I (2, 1)	I (2, 2)	I (2, 3)	I (2, 4)	II (2, 5)	II (2, 6)
3	I (3, 1)	I (3, 2)	I (3, 3)	I (3, 4)	II (3, 5)	II (3, 6)
4	I (4, 1)	I (4, 2)	I (4, 3)	I (4, 4)	II (4, 5)	II (4, 6)
5	II (5, 1)	II (5, 2)	II (5, 3)	II (5, 4)	II (5, 5)	II (5, 6)
6	II (6, 1)	II (6, 2)	II (6, 3)	II (6, 4)	II (6, 5)	II (1, 1)

The Player 1 wins if two highest numbers rolled is a 1, 2, 3, or 4. Thus, we have 16 ways in total.

The Player 2 wins in all other cases, their number is $36 - 16 = 20$.

Answer:

You would rather be Player 2, because person gets more ways of winning than Player 1 (20 against 16), and thus has a better chance of winning.