

Craps

First Roll probabilities

Win	Lose	Point

Example: Point is 4 (prob = 3/36 = 1/12)

	Win	Lose	Roll Again
Win	1	0	0
Lose	0	1	0
Roll Again	3/36	6/36	27/36

$$F = (I - Q)^{-1} = (1 - 27/36)^{-1} = (9/36)^{-1} = 36/9 = 4$$

It will take an average of 3.6 rolls before winning or losing if your point is a 4.

$$FR = 36/9 * [3/36 \ 6/36] = [1/3 \ 2/3]$$

There is a 1/3 chance of winning and an 2/3 chance of losing if your point is a 4.

Points

Complete the following table that gives the probabilities and expected number of rolls for each of the points.

Point	Any individual roll			Overall results		
	Win	Lose	Again	# of rolls	Win	Lose
4	3/36	6/36	27/36	4	1/3	2/3
5						
6						
8						
9						
10						

Overall Results

Probability of Winning / Losing

Win	Lose

_____ Average length of a game (don't forget the initial roll).