

From TPS Resource Binder

Casino Lab -- AP Statistics

Casinos rely on the laws of probability and expected values of random variables to guarantee them profits on a daily basis. Some individuals will walk away very wealthy, while others will leave with nothing but memories. This lab is designed to allow you to analyze some of the games of chance that are typically played in casinos. (Subliminal message: keep your money in your pocket!)

1. CRAPS

Roll a pair of six sided dice. If the sum is 7 or 11, you win. If the sum is 2, 3, or 12, you lose. If the sum is any other number, you roll again. In fact, you continue throwing the dice until you either roll that number again (WIN!) or roll a 7 (LOSE!).

- a. SIMULATION I: Play 20 games of craps with your partner. Each of you should throw the dice for 10 games. Record your results in the tables below.

Game	1 st roll	Result	Subsequent result
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Game	1 st roll	Result	Subsequent result
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

In what proportion of the games did you win on your first roll?

In what proportion of the games did you win?

- b. SIMULATION II: Using your TI-83, you can simulate rolling two dice and obtaining their sum by typing: $\text{RandInt}(1,6) + \text{RandInt}(1,6)$ and pressing ENTER. Simulate 20 games -- 10 each -- using your calculator. Record your results in the tables below.

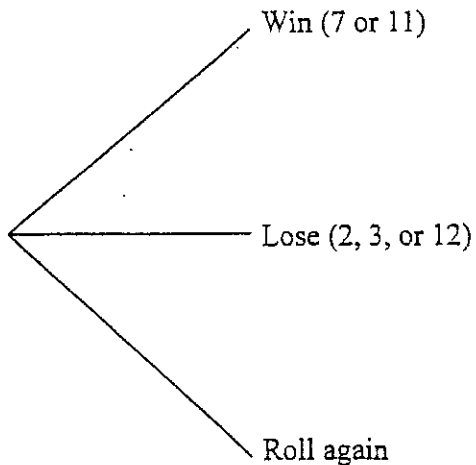
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7			
8			
9			
10			

c. Probability Questions

1. What is the probability that you obtain a sum of 7 or a sum of 11 on the first roll?
2. What is the probability that you obtain a sum of 2, 3, or 12 on the first roll?
3. What is the probability that you roll again after the first roll?
4. Suppose you roll a sum of 8 on the first roll. Find the probability that you subsequently win the game, given that you rolled an 8 to start with.

d. Tree diagram: Complete the tree diagram shown below for the game of craps.



HOMWORK

Find the probability that you win at craps.