

3 A Game of Dice

Imagine this as a game: your friend rolls two dice and finds the sum of the numbers. You need to predict what sum your friend will get. If you predict correctly, you win the game! What number should you choose so that you win as often as possible?

1. Construct the addition table for numbers from 1 to 6. What is the smallest sum you can get? What is the largest sum?

+	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

2. Amber thinks that all the sums are equally likely. Is she correct? Why or why not?
3. What sum are we most likely to get as the sum of the two numbers on the dice? What sums are we least likely to get as the sum of the two numbers on the dice?

4 Teacher's Pick

Now imagine that you are in class, and the teacher asks a question. Since you are such a good student, you raise your hand to answer it! Also, if you get picked and say the right answer, the teacher will like you more.

1. Your class has 30 people in it. Fortunately, not everyone is a good student like you are, so only 15 people (including you) raise their hands. What is the probability you will get picked?
2. However, some people have raised their hands before and answered the teacher's question correctly; they have become favorites. Therefore, the teacher is twice as likely to call on them. What are the chances that you will be called on if 5 people (which don't include you) are favored by the teacher?
3. Surprise! You have a project to present today! However, you aren't quite done. Luckily, there is only enough time to go through five presentations. 10 people have raised their hands to go, and five of them are favorites. The teacher will pick someone who raised their hand 3 out of 10 times, and is twice as likely to pick the favorites. What is the probability you will get picked if you raise your hand the whole time (and you are not a favorite)? What is the probability that you will get chosen if you do not raise your hand the whole time? How do you maximize your chances of not getting picked (so you have another night to work on your project)?