

All exercises assume a fair die, coin, etc. unless otherwise specified.

1. a) You are playing Yahtzee (rolling 5 dice) and you already have 1, 2, 3, 5. You roll one die one more time. What is the probability you can get a Large Straight (5 in a row)? What if you have two rolls of the die to get it?

b) As in part a) but you have 2, 3, 4, 5. Answer the same questions.

c) Suppose you have 5, 5, 5, 6. What is the probability of getting Chance (total of 25 or more points) on one more roll? On two more rolls?

d) Suppose you have 5, 5, 6. What is the probability of Chance on one roll of two dice?

e) Suppose you are only concerned about rolling 5's. What is the probability of getting exactly three 5's on one roll of five dice? Of getting at least three 5's?

2. What is the average number of 5's rolled on five rolls of a die? What is the variance? What is the standard deviation?

3. A batter is batting .300 (i.e., gets a hit at any 'at-bat' with probability .300). In 4 'at-bat's, what is his probability of 'going 4-for-4' (getting 4 hits)? What is the probability he 'goes 0-for-4'?

4. Consider our '300 hitter' again. Suppose in one week he has 20 'at-bat's. What is the average number of hits he gets? What is the variance? The standard deviation?

5. (More difficult) Consider our '300 hitter' again. What is the probability he has 8 'at-bat's before he gets his second hit?