Name:_____Date:_____Period:_____

Chapter 14 Review

A Football Fan's Dilemma

Suppose that you are getting ready for an exciting weekend of NFL action and have to decide which games to watch. In the first set of games on Sunday, you have six choices; in the second set of games on Sunday, you have seven choices; on Sunday night, you have two choices; and on Monday night, you have only one choice.

1.) How many different ways can you choose the 4 games to watch?

Picking the Plays

Suppose that a football team has a total of 31 different offensive plays in their playbook. To avoid being predictable at the start of the game, the offensive coordinator will randomly select 10 different plays o use on their first 10 plays of the game (not including punts, field goal attempts, and other unusual plays).

1.) How many different sequences of 10 plays can the coordinator make, assuming no plays are repeated?

Choosing a Starting Lineup in Basketball

Suppose that a basketball team has 12 players. 5 of these players are classified as guards and 7 of the players are classified as forwards/centers.

1.) If the coach wanted to choose her 5 starters at random by drawing names from a hat, how many possible groups of 5 starters could she choose?

2.) To avoid an unbalanced lineup, the coach wants to choose 2 of her guards and 3 of her forwards/centers. To do this, she places the names of her 5 guards in one hat and the names of her 7 forwards/centers in a second hat. Then, she will randomly select 2 guards from the first hat and 3 forwards/centers from the second hat. How many possible lineups can be created?

Billy Martin, Round 4

Suppose that Billy Martin decides to take his chances and put all 15 of his hitters' names into a hat and randomly choose 9 of them to play in the game.

1.) How many ways are there to choose 9 players to play in the game from a team of 15?

2.) If 6 of the 15 players are outfielders, how many different ways are there to choose exactly 3 outfielders among the 9 players selected?

3.) What is the probability that there will be exactly 3 outfielders among the 9 selected?

4.) Interpret the probability that you calculated in the previous part.

Billy Martin, Round 5

Suppose that Billy Martin has decided to choose his 9 starters at random from a hat. Furthermore, 6 of his 15 available players are outfielders.

1.) What is the probability that there will be exactly 3 OR 4 outfielders?

2.) Interpret the probability that you calculated in the previous problem.

3.) What is the probability that Martin does NOT get 3 OR 4 outfielders among the 9 starters selected?

4.) For each of 2 consecutive games, Martin selects his starters at random from a hat. What is the probability that Martin does not get 3 or 4 outfielders in either of the games?

Shooting Free-Throws

Suppose that a basketball player has the ability to make 55% of her free-throws.

1.) What is the probability that she takes 4 free-throws and misses them all?

2.) Interpret the probability that you calculated in the previous problem.

3.) What is the probability that she takes 4 free-throws and makes at least 1?

4.) What is the probability that she takes 4 free-throws and makes exactly 1 of them?

Sidney Crosby, Again

During the 2008-2009 playoffs, Sidney Crosby made 19% of his shots on goal (15 of 79), which was much higher than his regular season rate of 13.9%. Does his better than expected playoff performance provide convincing evidence that he is a clutch player?

1.) Explain why it is appropriate to use a binomial distribution in this case, assuming Crosby's ability to make a goal is 13.9%.

2.) If we assume that Crosby's ability to make a goal really was 13.9%, how likely is he to make 15 or more shots in 79 attempts?

3.) Based on the probability you calculated in the previous problem, is there convincing evidence that Crosby was a clutch player?

LeBron James

In an earlier example, we investigated LeBrons James's performance in the 2008 playoffs, where he took 70three-point sot attempts with an ability of 31.5%.

1.) Calculate the expected number of made shots for LeBron James.

2.) Interpret the expected value from the previous problem.