

## Conducting Simulations

Describe how you would conduct one trial of a simulation model for each of the following situations using the graphing calculator.

1. Based on his history, Leon has an 80% chance of making a foul shot in a basketball game. Suppose Leon attempts 18 foul shots in a game. Describe one trial of a simulation model for Leon's foul shot results in a game.
2. Based on her history, Mindy scores on  $\frac{3}{5}$  of her shots on goal in a field hockey game. Suppose she attempts 8 shots on goal in a game. Describe one trial of a simulation model for Mindy's shots on goal results in a game.
3. The *Bumble Bees*' chance of winning a football game is 20%. Suppose they play 15 football games in a season. Describe one trial of a simulation model for their 15 game season.
4. Carlos has two chances to get the correct answer on a multiple-choice question with three choices. Suppose he guesses. He will answer correctly on the first try  $\frac{2}{3}$  of the time. If he has to try again, he has a 50% chance of getting the correct answer. Describe one trial of a simulation model for Carlos getting the correct answer on a multiple-choice question.
5. Based on his history, Anthony has a 77% chance of making a foul shot in a basketball game. Suppose he makes 16 shots in a game. Describe one trial of a simulation model for Anthony's foul shot results in a game.

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### **Answer Key**

1. You will need 10 digits, eight of which will represent making a foul shot, and the remaining two digits will represent missing the shot. Generate 18 digits at a time to represent the outcome of each attempted shot and observe the results.
2. You will need 5 digits, three of which will represent making a shot and the remaining two digits will represent missing the shot. Generate 8 digits at a time to represent the outcome of each attempted shot and observe the results.
3. You will need 10 digits, two of which will represent winning a football game and the remaining eight digits will represent losing a game. Generate 15 digits at a time to represent the outcome of each game in the season and observe the results.
4. You will need 6 digits (1, 2, 3, ..., 6) to represent the responses to a question. Generate two digits at a time. Observe the first digit, if the first digit is a 1, 2, 3, or 4, then Carlos answers correctly on the first try. If the first digit is a 5 or 6, look at the next digit. If the next digit is a 1, 2, or 3, then Carlos answers correctly on the second try. If the second digit is 4, 5, or 6, then Carlos answers incorrectly.
5. You will need 100 digits, seventy-seven of these numbers will represent making a foul shot, and the remaining thirty-three digits will represent missing the shot. Generate 16 digits at a time to represent the outcome of each attempted shot and observe the results.