# Assignment

Write

Describe the advantages of using an array to determine the sample space for an experiment.

Remember

To organize the outcomes in a number array, list the outcomes for one trial along one side and the outcomes for the other trial along the other side of an array. Combine the results in the intersections of each row and column.

Practice

1. Brett received a dart board for his birthday. The rule book says that two darts are to be thrown and that an individual's score is the sum of the two numbers.

   a. Complete an array to determine all the possibilities for obtaining the sums.

   b. List the sample space for the sum of the numbers.

   c. Are all outcomes equally likely? Explain your reasoning.

   d. How many possibilities are in the array?

   e. Use the array to help create a probability model listing the theoretical probabilities for each sum.

   f. Calculate each probability of an even sum, a sum greater than 8, and an odd sum.

   g. If two darts are thrown 80 times, how many times do you predict each of the following sums would occur? 8? 10? 14?

2. Kyle writes the numbers 1, 2, and 3 on papers and puts them in a bag. He chooses one paper, writes the number down, returns it to the bag, and chooses another number. He calculates the difference between the two numbers.

   a. Complete an array to determine all the possibilities for obtaining the differences.

   b. List the sample space for the difference of the numbers.

   c. Are all outcomes equally likely? Explain your reasoning.

   d. How many possibilities are in the array?

   e. Use the array to help create a probability model listing the theoretical probabilities for each difference.

   f. If Kyle repeats this experiment 100 times, how many times do you predict he would get a difference of 2?
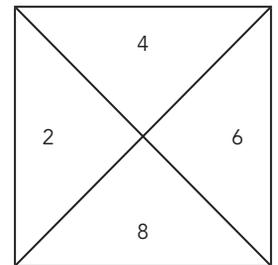
Stretch

There is a famous probability problem known as the Monty Hall problem—named after the original host of the game show *Let's Make a Deal*. In this problem, there are three doors. Behind one of the doors is a prize. Behind the other two doors are donkeys. You choose one door. The game show host opens one of the doors that you did not choose to reveal a donkey. Then, the host asks you if you would like to stay on the door you chose or switch to the other unopened door. Should you stay or switch? Or does it matter?

Review

1. Since 1903, the National League has played the American League in the World Series. The World Series is usually won by the team winning the best out of 7 games. The table shows the number of games that were played to win each series during the first 100 World Series.

Number of Games	Number of Series Won in Given Number of Games
4 games	17 series
5 games	24 series
6 games	21 series
7 games	33 series
8 games	5 series

   a. What is the probability that the next World Series will take 7 games to determine a winner?
   b. What is the probability that the next World Series will take 4 games?
   c. Is this theoretical or experimental probability? Use a complete sentence to explain.

2. Javon's music collection is 40% hip-hop and 60% rock. If his music player randomly selects songs to play, what is the probability of it selecting 3 hip-hop songs in a row? Describe a simulation that could be used to estimate this probability.

3. Rewrite each expression with the fewest number of terms.
   a. $\frac{3}{5}a + 7\frac{2}{3} - 11 - \frac{9}{10}a$
   b. $9 - 0.4(1.1s - 9)$