Chapter 13

13.1 In Exercises 1 and 2, use the following information. A bag contains 3 red, 3 blue, and 3 yellow marbles. You toss a coin and then draw a marble out of the bag at random.

1. Find the number of possible outcomes in the sample space. Then list the possible outcomes.

2. What is the probability that the coin shows tails and the marble is blue?

13.1 3. You toss a coin 3 times. What are the odds against the coin's showing heads twice and tails once?

13.2 4. In how many ways can you arrange the letters in the word SPRING?

5. In how many ways can you arrange 3 of the letters in the word TULIP?

13.2 Evaluate the expression.

6. $7!$ 7. $_8P_3$ 8. $_{10}P_3$ 9. $_5P_5$

13.3 10. You can choose 3 books from a list of 5 books to read for English class. How many combinations of 3 books are possible?

13.3 Evaluate the expression.

11. $_6C_2$ 12. $_7C_3$ 13. $_{10}C_4$ 14. $_{20}C_{15}$

13.4 In Exercises 15 and 16, you roll a number cube. Tell whether the events A and B are *mutually exclusive* or *overlapping*. Then find $P(A$ or $B)$.

15. **Event A:** Roll a 5.
    Event B: Roll a prime number.

16. **Event A:** Roll a 4.
    Event B: Roll a multiple of 3.

13.4 17. A bag contains 3 red, 4 blue, and 5 yellow marbles. You randomly draw two marbles, one at a time. Find the probability that both are blue if **(a)** you replace the first marble and **(b)** you do not replace the first marble.

13.5 In Exercises 18–20, use the following information.

Some parents want to gather information about updating the sound system in the high school auditorium. They obtain a list of high school students and call the parents or guardians of every 20th student on the list. The question they ask is "Don't you think the sound system in the high school auditorium needs updating?"

18. Identify the population and classify the sampling method.

19. Is the sampling method used likely to result in a biased sample? *Explain*.

20. Tell whether the question is potentially biased. *Explain* your answer.

In Exercises 21–23, use the following numbers of stories in the world's ten tallest buildings: 101, 88, 88, 108, 88, 88, 80, 69, 102, 78.

13.6 21. Find the mean, median, mode(s), range, and mean absolute deviation of the data. Round to the nearest hundredth, if necessary.

13.7 22. Make a histogram and a stem-and-leaf plot of the data.

13.8 23. Make a box-and-whisker plot of the data. Identify any outliers.