Answers for Lesson 1-6  Exercises

1. \( \frac{161}{340} \) or about 47%; \( \frac{179}{340} \) or about 53%

2. the number 1: \( \frac{21}{134} \), or about 15.7%; the number 2: \( \frac{11}{67} \) or about 16.4%; the number 3: \( \frac{45}{268} \) or out 16.8%; the number 4: \( \frac{11}{67} \) or about 16.4%; the number 5: \( \frac{47}{268} \) or about 17.5%; the number 6: \( \frac{23}{134} \) or about 17.2%

3. Answers may vary. Sample: Generate random numbers between 0 and 1 using a graphing calculator. In each random number, examine the first five digits. Let even digits represent correct answers and odd digits incorrect answers. If there are two or more even digits, make a tally mark for that number. Do this 100 times. Find the total number of tally marks. This, as a percent, gives the experimental probability. The simulated probability should be about 80%.

4. Answers may vary. Sample: Toss 5 coins. Keep a tally of the times 3 or more heads are tossed. (A head represents a correct answer.) Do this 100 times. The total number of tally marks, as a percent, gives the experimental probability. The simulated probability should be about 50%.

5. Answers may vary. Sample: Generate 100 random numbers with a calculator. Record the first five digits of each number. Let 0 and 1 represent correct answers and the other digits incorrect answers. Tally the recorded numbers with exactly one digit that represents a correct answer. Tally the recorded numbers with exactly two digits that represent correct answers. Tally the recorded numbers with exactly three digits that represent correct answers. The tally totals, as a percent, give the experimental probabilities. They should be about 40%, 20%, and 5%, respectively.
Answers for Lesson 1-6  Exercises (cont.)

6. \(\frac{3}{10}\), or 30%  
7. \(\frac{1}{2}\), or 50%  
8. \(\frac{4}{5}\), or 80%  
9. \(\frac{4}{5}\), or 80%  
10. \(\frac{48}{125}\), or 38.4%  
11. \(\frac{19}{125}\), or 15.2%  
12. \(\frac{103}{125}\), or 82.4%  
13. \(\frac{14}{25}\), or 56%  
14. \(\frac{77}{125}\), or 61.6%  
15. \{Gg, Gg, gg, gg\}; \(\frac{1}{2}\), or 50%  
16. \{Gg, Gg, Gg, Gg\}; 1, or 100%  
17. \(\frac{1}{16}\), or 6.25%  
18. \(\frac{3}{8}\), or 37.5%  
19. \(\frac{1}{4}\), or 25%  
20. \(\frac{3}{4}\), or 75%  
21. a. 1  
b. 0  
22. C  
23. Answers may vary. Sample: Let odd digits represent heads and even digits represent tails. Use the first 50 digits of the table. The experimental probability of heads is \(\frac{1}{2}\).  
24. \(\frac{116}{147}\), or 78.9%  
25. \(\frac{52}{147}\), or 35.4%  
26. \(\frac{43}{147}\), or 29.3%  
27. \(\frac{31}{147}\), or 21.1%  
28. \(\frac{1}{6}\)  
29. \(\frac{1}{2}\)  
30. \(\frac{2}{3}\)  
31. 0  
32. \(\frac{1}{6}\)  
33. 1  
34. \(\frac{1}{3}\)  
35. \(\frac{4}{9}\)  
36. \(\frac{4}{9}\)  
37. \(\frac{4}{9}\)  
38. a. (1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6), (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6), (6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)  
b. 36 outcomes  
c. \(\frac{1}{36}\)  
d. \(\frac{1}{6}\)
Answers for Lesson 1-6  Exercises (cont.)

39. \( \approx 6.4\% \)

40. a. \( \frac{1}{4}, \frac{3}{4} \)
   
b. Answers may vary. Sample: Variables such as injuries make probability a poor predictor.

41. if there are any restrictions on the last digit of a ZIP code

42. \( \frac{1}{15} \) or 6.7\%

43. a. \( \frac{a}{a + b} \)
   
b. \( a \) to \( b \) or \( \frac{a}{b - a} \)
   
c. A game where the probability of winning is \( \frac{1}{2} \); when the odds of winning are \( \frac{1}{2} \), the probability of winning is only \( \frac{1}{3} \).

44. Check students’ work.

45. a. about \( \frac{1}{3} \)
   
b. about \( \frac{2}{3} \)