

Communicating
Mathematics

Study the lesson. Then complete the following.

1. Define the term *probability*.
2. Explain whether or not $P(s)$ can equal $\frac{5}{4}$.
3. State the odds of getting a 4 when rolling a die.
4. **Determine** the odds that an event will *not* occur if the odds that the event *will* occur are 2:5.
5. **You Decide** LaToya says that if she tosses three coins, she can get exactly two heads. Donovan bets he could do something even harder—get exactly two heads if he tosses 4 coins. LaToya argues that it is *easier* to get two heads out of four. Who is right? Explain how you reached your conclusion.



6. **Assess Yourself** Describe an event in your life that has a probability of 1 and an event that has a probability of 0.

Guided
Practice

State the odds of an event occurring, given the probability of the event.

7. $\frac{3}{4}$

8. $\frac{2}{9}$

State the probability of an event occurring, given the odds of the event.

9. 6:5

10. 1:1

11. The probability of Cathy earning a college scholarship is $\frac{4}{5}$. What are the odds that she will *not* earn a scholarship?
12. **Genealogy** The odds that an American is of English ancestry are 1:9. What is the probability that an American is of English ancestry?

Suppose you select 2 letters at random from the word *Pacific*. Find each probability.

13. P(2 vowels) 14. P(2 consonants) 15. P(1 vowel, 1 consonant)
16. **Genetics** Find the probability of a couple having a left-handed child, given the following odds.
 - a. If both parents are left-handed, the odds are 2 to 1.
 - b. If only one parent is left-handed, the odds are 1 to 6.
 - c. If neither parent is left-handed, the odds are 1 to 16.



EXERCISES

Practice State the odds of an event occurring, given the probability of the event.

17. $\frac{1}{2}$

18. $\frac{3}{8}$

19. $\frac{11}{12}$

20. $\frac{4}{7}$

21. $\frac{1}{5}$

22. $\frac{4}{11}$

State the probability of an event occurring, given the odds of the event.

23. 6:1

24. 3:7

25. 5:6

26. 9:8

27. 1:8

28. 7:9

29. A bag of jelly beans contains 40 tangerine and 120 blueberry jelly beans.

- If you draw one jelly bean out of the bag, find the probability that it is tangerine.
- If you add 40 tangerine jelly beans to the original bag and draw out a bean, what is the probability that it is tangerine?
- How many tangerine jelly beans do you need to add to the original bag to double the original probability of drawing a tangerine jelly bean? Explain.



Alma has 4 gray kittens and 7 white kittens. She randomly picks up 2 to give to her nieces. Find the probability of each selection. Then find the odds of that selection.

30. $P(2 \text{ gray kittens})$

31. $P(2 \text{ white kittens})$

32. $P(1 \text{ of each color})$

Sonia is moving and all of her CDs are mixed up in a box. Twelve CDs are rock, eight are jazz, and five are classical. If she reaches in the box and selects three at random, find each probability.

33. $P(\text{all jazz})$

34. $P(\text{all rock})$

35. $P(1 \text{ classical}, 2 \text{ jazz})$

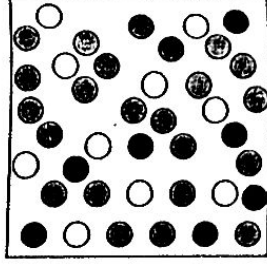
36. $P(2 \text{ classical}, 1 \text{ rock})$

37. $P(1 \text{ classical}, 1 \text{ jazz}, 1 \text{ rock})$

38. $P(2 \text{ jazz}, 1 \text{ reggae})$



39. A square target 15 centimeters on a side, like the one shown at the right, contains 40 non-overlapping circles each 2 centimeters in diameter. Find the probability that a dart thrown at random hits one of the circles.



40. A red, blue, and green die are rolled. The number on each die represents a side length of a triangle. So, 4, 2, 4 would represent an isosceles triangle.
- How many combinations can be rolled?
 - What is the probability that you could build an equilateral triangle?
 - What is the probability that you could build a nonequilateral isosceles triangle?