

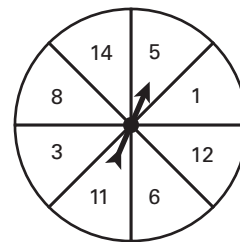
LESSON  
11.1**Practice A***For use with the lesson "Find Probabilities and Odds"*

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

- A bag contains 5 red cards numbered 1–5 and 5 white cards numbered 1–5. You choose a card at random.
- A bag contains 3 red cards numbered 1–3 and 4 white cards numbered 1–4. You choose a card at random.
- You toss three coins.
- You roll a number cube and toss two coins.

**In Exercises 5–12, refer to the spinner shown. The spinner is divided into sections with the same area.**

- What is the probability that the spinner stops on an odd number?
- What is the probability that the spinner stops on an even number?
- What is the probability that the spinner stops on a multiple of 3?
- You spin the spinner 36 times. It stops on 8 four times. What is the experimental probability of stopping on 8?
- You spin the spinner 20 times. It stops on 1 twice. What is the experimental probability of stopping on 1?
- You spin the spinner 24 times. It stops on 3 six times. What is the experimental probability of stopping on 3?
- What are the odds in favor of stopping on 14?
- What are the odds against stopping on a multiple of 3?
- Favorite Subjects** A survey asked a total of 180 students in the senior class about their favorite class subjects. The table shows the results of the survey.



Subject	English	Social studies	Science	Math	Gym	Foreign language	No preference
Number of students	26	33	42	30	9	15	25

- What is the probability that a randomly selected student who participated in this survey chose foreign language as his or her favorite subject?
- What is the probability that a randomly selected student who participated in this survey chose English as his or her favorite subject?
- What is the probability that a randomly selected student who participated in this survey chose science or math as his or her favorite subject?

# Answers for Chapter 11 Probability

## Lesson 11.1 Find Probabilities and Odds

### Teaching Guide

1. Land on a head or land on a tail **2–3.** Answers will vary. The number of times the coin will land on heads is about the same as the number of times it lands on tails. **4.** About  $\frac{1}{2}$  of the tosses should result in landing on heads and about  $\frac{1}{2}$  of the tosses should result in landing on tails.

### Practice Level A

1. 10; red 1; red 2; red 3; red 4; red 5; white 1; white 2; white 3; white 4; white 5 **2.** 7; red 1; red 2; red 3; white 1; white 2; white 3; white 4

**3.** 8; H, H, H; H, H, T; H, T, H; H, T, T; T, H, H; T, H, T; T, T, H; T, T, T **4.** 24; 1, H, H; 1, H, T; 1, T, H; 1, T, T; 2, H, H; 2, H, T; 2, T, H; 2, T, T; 3, H, H; 3, H, T; 3, T, H; 3, T, T; 4, H, H; 4, H, T; 4, T, H; 4, T, T; 5, H, H; 5, H, T; 5, T, H; 5, T, T; 6, H, H; 6, H, T; 6, T, H; 6, T, T

**5.**  $\frac{1}{2}$  **6.**  $\frac{1}{2}$  **7.**  $\frac{3}{8}$  **8.**  $\frac{1}{9}$  **9.**  $\frac{1}{10}$  **10.**  $\frac{1}{4}$  **11.**  $\frac{1}{7}$   
**12.**  $\frac{5}{3}$  **13. a.**  $\frac{1}{12}$  **b.**  $\frac{13}{90}$  **c.**  $\frac{2}{5}$

### Practice Level B

1. 14; blue 1; blue 2; blue 3; blue 4; blue 5; blue 6; red 1; red 2; red 3; red 4; red 5; red 6; red 7; red 8 **2.** 12; 1, H, H; 1, H, T; 1, T, H; 1, T, T; 2, H, H; 2, H, T; 2, T, H; 2, T, T; 3, H, H; 3, H, T; 3, T, H; 3, T, T; 4, H, H; 4, H, T; 4, T, H; 4, T, T **3.** 36; 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

**4.**  $\frac{4}{9}$  **5.**  $\frac{5}{9}$  **6.**  $\frac{1}{12}$  **7.**  $\frac{1}{6}$  **8.**  $\frac{1}{2}$  **9.**  $\frac{7}{2}$   
**10. a.**  $\frac{1}{4}$  **b.**  $\frac{13}{60}$  **c.**  $\frac{2}{7}$  **11. a.**  $\frac{9}{100}$  **b.**  $\frac{37}{50}$


### Practice Level C

1. 32; 1, H, H; 1, H, T; 1, T, H; 1, T, T; 2, H, H; 2, H, T; 2, T, H; 2, T, T; 3, H, H; 3, H, T; 3, T, H; 3, T, T; 4, H, H; 4, H, T; 4, T, H; 4, T, T; 5, H, H; 5, H, T; 5, T, H; 5, T, T; 6, H, H; 6, H, T; 6, T, H; 6, T, T; 7, H, H; 7, H, T; 7, T, H; 7, T, T; 8, H, H; 8, H, T; 8, T, H; 8, T, T **2.** 16; H, H, H, H; H, H, H, T; H, H, T, H; H, H, T, T; H, T, H, H; H, T, H, T; H, T, T, H; H, T, T, T; T, H, H, H; T, H, H, T; T, H, T, H; T, H, T, T; T, T, H, H; T, T, H, T; T, T, T, H; T, T, T, T

**3.**  $\frac{2}{3}$  **4.**  $\frac{1}{8}$  **5.**  $\frac{7}{2}$  **6.**  $\frac{1}{2}$  **7. a.** 60 marbles; Answers will vary. **b.** 0.1; Answers will vary.

**8. a.** about 0.71 **b.** about 0.03 **c.** about 0.09  
**d.** about 11 : 1 **9. a.**  $\frac{42}{85}$  **b.**  $\frac{24}{61}$  **c.**  $\frac{14}{3}$

### Study Guide

1. 10; 

**2.**  $\frac{3}{25}$  **3.**  $\frac{43}{50}$  **4.**  $\frac{13}{25}$

### Interdisciplinary Application

**1.**  $\frac{26,984}{36,544} \approx 0.738$  **2.**  $\frac{2612}{5692} \approx 0.459$   
**3.**  $\frac{25,967}{75,663} \approx 0.340$  **4.**  $\frac{71,141}{75,663} \approx 0.940$   
**5.** 15,110 to 60,553 **6.** 3241 to 362  
**7.** 519 to 646

### Challenge Practice

1. {T Tom, T Ann, T Ben, T Sam, T, Greyson, H Tom, H Ann, H Billy, H Mark, H Roseann}  
**2.**  $\frac{1}{5}$  **3.** 4 : 1 **4.** 3 : 10 **5.** 7 : 10 **6.**  $n : n$  **7.**  $\frac{1}{2}$   
**8.**  $\frac{1}{2}$  **9.**  $m : 0$  **10.** 1 **11.** 0 **12.**  $(n + m) : n$   
**13.**  $\frac{(n + m)}{(2n + m)}$  **14.**  $\frac{n}{(2n + m)}$

## Lesson 11.2 Find Probabilities Using Permutations

### Teaching Guide

**1.** 2 ways: AB and BA;  $\frac{1}{2}$  **2.** 6 ways: ABC, ACB, BAC, BCA, CAB, and CBA;  $\frac{2}{6} = \frac{1}{3}$   
**3.** 24 ways: ABCD, ABDC, ACBD, ACDB, ADBC, ADCB, BACD, BADC, BCAD, BCDA, BDAC, BDCA, CABD, CADB, CBAD, CBDA, CDAB, CDBA, DABC, DACB, DBAC, DBCA, DCAB, and DCBA;  $\frac{6}{24} = \frac{1}{4}$

Alternative Lesson Starter: 10 choices for first place, 9 choices for second place, and 8 choices for third place; 720 ways in which the students can come in first, second, and third place.

### Practice Level A

**1.** 357; 375; 537; 573; 735; 753 **2. a.** 2 **b.** 2