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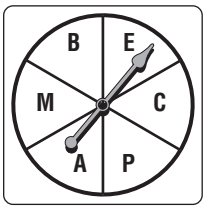
Lesson 1 Homework Practice

Probability of Simple Events

The spinner shown is spun once. Find each probability. Write each answer as a fraction, a decimal, and a percent.



1. P(C)

2. P(G)

3. P(M or P)

4. P(B, E, or A)

5. P(*not* vowel)

6. P(*not* M)

Eight cards are marked 3, 4, 5, 6, 7, 8, 9, and 10 such that each card has exactly one of these numbers. A card is picked without looking. Find each probability. Write each answer as a fraction, a decimal, and a percent.

7. P(9)

8. P(3 or 4)

9. P(greater than 5)

10. P(less than 3)

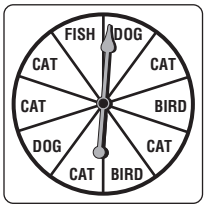
11. P(odd)

12. P(4, 7, or 8)

13. P(*not* 6)

14. P(*not* 5 and *not* 10)

The spinner is spun once. Write a sentence stating how likely it is for each event to happen. Justify your answer.



15. fish

16. cat

17. bird, cat, or fish

18. **PLANTS** Of the water lilies in the pond, 43% are yellow. The others are white. A frog randomly jumps onto a lily. Describe the complement of the frog landing on a yellow lily and find its probability.

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Lesson 2 Homework Practice

Theoretical and Experimental Probability

1. A number cube is rolled 24 times and lands on 2 four times and on 6 three times.

a. Find the experimental probability of landing on a 2.

b. Find the experimental probability of *not* landing on a 6.

c. Compare the experimental probability you found in part a to its theoretical probability.

d. Compare the experimental probability you found in part b to its theoretical probability.

2. ENTERTAINMENT Use the results of the survey in the table shown.

Best Entertainment Value	
Type of Entertainment	**Percent**
Playing Interactive Games	48
Reading Books	22
Renting Movies	10
Going to Movie Theaters	10
Surfing the Internet	9
Watching Television	1

a. What is the probability that someone in the survey considered reading books or surfing the Internet as the best entertainment value? Write the probability as a fraction.

b. Out of 500 people surveyed, how many would you expect considered reading books or surfing the Internet as the best entertainment value?

c. Out of 300 people surveyed, is it reasonable to expect that 30 considered watching television as the best entertainment value? Why or why not?

3. A spinner marked with four sections blue, green, yellow, and red was spun 100 times. The results are shown in the table.

Section	Frequency
Blue	14
Green	10
Yellow	8
Red	68

a. Find the experimental probability of landing on green.

b. Find the experimental probability of landing on red.

c. If the spinner is spun 50 more times, how many of these times would you expect the pointer to land on blue?

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Lesson 3 Homework Practice

Probability of Compound Events

For each situation, find the sample space using a tree diagram.

1. choosing blue, green, or yellow wall paint with white, beige, or gray curtains

2. choosing a lunch consisting of a soup, salad, and sandwich from the menu shown in the table

Soup	Salad	Sandwich
Tortellini	Caesar	Roast Beef
Lentil	Macaroni	Ham
		Turkey

3. **GAME** Kimiko and Miko are playing a game in which each girl rolls a number cube. If the sum of the numbers is a prime number, then Miko wins. Otherwise Kimiko wins. Find the sample space. Then determine whether the game is fair.

Sum = 2	Sum = 3	Sum = 4	Sum = 5	Sum = 6	Sum = 7	Sum = 8	Sum = 9	Sum = 10	Sum = 11	Sum = 12
1 + 1 = 2	2 + 1 = 3 1 + 2 = 3	1 + 3 = 4 2 + 2 = 4 3 + 1 = 4	1 + 4 = 5 2 + 3 = 5 3 + 2 = 5 4 + 1 = 5	1 + 5 = 6 2 + 4 = 6 3 + 3 = 6 4 + 2 = 6 5 + 1 = 6	1 + 6 = 7 2 + 5 = 7 3 + 4 = 7 4 + 3 = 7 5 + 2 = 7 6 + 1 = 7	2 + 6 = 8 3 + 5 = 8 4 + 4 = 8 5 + 3 = 8 6 + 2 = 8	3 + 6 = 9 4 + 5 = 9 5 + 4 = 9 6 + 3 = 9	4 + 6 = 10 5 + 5 = 10 6 + 4 = 10	5 + 6 = 11 6 + 5 = 11	6 + 6 = 12

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Lesson 4 Homework Practice

Simulations

1. **STATE FAIR** At a state fair, there are 10 animal exhibits, 12 gardening exhibits, and 8 farm equipment exhibits. Describe a model that you could use to simulate randomly choosing an exhibit to visit.

2. **WEATHER** Suppose during springtime it rains about 40% of the time when school is dismissed for the day. Describe a model that could be used to simulate whether it will be raining when school is dismissed on a particular day during springtime.

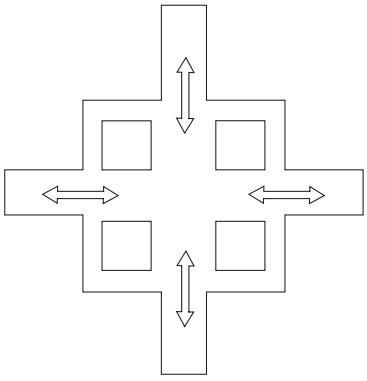
For Exercises 3 and 4, use the following information.

A sports company randomly sends out various cards of 8 different sports.

3. Describe a model that could be used to simulate which sport would be sent out. Explain.

4. How could this simulation be used to determine the sport of the next 20 cards the company sends out.

5. **EXPERIMENT** Suppose a lab rat enters the box with four openings as shown. If each decision about the direction is made at random, create a simulation to determine the probability that the lab rat will leave the box before going through 5 intersections.



For Exercises 6–9, describe a situation that can be modeled using the given simulation.

6. spinning a spinner with 6 equal sections and tossing a coin

7. tossing four coins

8. rolling a number cube and tossing a coin

9. 1 marble chosen from a bag containing 11 red marbles and 4 blue marbles

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Lesson 5 Homework Practice

Fundamental Counting Principle

Use the Fundamental Counting Principle to find the total number of outcomes in each situation.

1. choosing from 8 car models, 5 exterior paint colors, and 2 interior colors

2. selecting a year in the last decade and a month of the year

3. picking from 3 theme parks and 1-day, 2-day, 3-day, and 5-day passes

4. choosing a meat and cheese sandwich from the list shown in the table

5. tossing a coin and rolling 3 number cubes

6. selecting coffee in regular or decaf, with or without cream, and with or without sweeteners

Cheese	Meat
Provolone	Salami
Swiss	Turkey
American	Tuna
Cheddar	Ham

7. **COINS** Find the number of possible outcomes if 2 quarters, 4 dimes, and 1 nickel are tossed.

8. **SOCIAL SECURITY** Find the number of possible 9-digit social security numbers if the digits may be repeated.

9. **AIRPORTS** Jolon will be staying with his grandparents for a week. There are four flights that leave the airport near Jolon's home that connect to an airport that has two different flights to his grandparents' hometown. Find the number of possible flights. Then find the probability of taking the earliest flight from each airport if the flight is selected at random.

10. **ANALYZE TABLES** The table shows the kinds of homes offered by a residential builder. If the builder offers a discount on one home at random, find the probability it will be a 4-bedroom home with an open porch. Explain your reasoning.

Number of Bedrooms	Style of Kitchen	Type of Porch
5-bedroom	Mediterranean	Open
4-bedroom	Contemporary	Screen
3-bedroom	Southwestern	

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Lesson 6 Homework Practice

Permutations

Solve each problem.

1. **NUMBERS** How many different 2-digit numbers can be formed from the digits 4, 6, and 8? Assume no number can be used more than once.

2. **LETTERS** How many permutations are possible of the letters in the word *numbers*?

3. **PASSENGERS** There are 5 passengers in a car. In how many ways can the passengers sit in the 5 passenger seats of the car?

4. **PAINTINGS** Mr. Bernstein owns 14 paintings, but has only enough wall space in his home to display three of them at any one time. How many ways can Mr. Bernstein display three paintings in his home?

5. **DOG SHOW** Mateo is one of the six dog owners in the terrier category. If the owners are selected in a random order to show their dogs, how many ways can the owners show their dogs?

6. **TIME** Michel, Jonathan, and two of their friends each ride their bikes to school. If they have an equally-likely chance of arriving first, what is the probability that Jonathan will arrive first and Michel will arrive second?

7. **BIRTHDAY** Glen received 6 birthday cards. If he is equally likely to read the cards in any order, what is the probability he reads the card from his parents and the card from his sister before the other cards?

CODES For Exercises 8–10, use the following information. A bank gives each new customer a 4-digit code number which allows the new customer to create their own password. The code number is assigned randomly from the digits 1, 3, 5, and 7, and no digit is repeated.

8. What is the probability that the code number for a new customer will begin with a 7?

9. What is the probability that the code number will *not* contain a 5?

10. What is the probability that the code number will start with 371?

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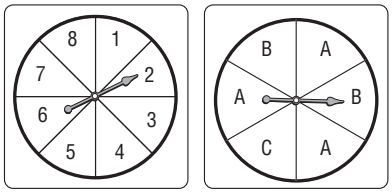
Lesson 7 Homework Practice

Independent and Dependent Events

The two spinners at the right are spun. Find each probability.



1. *P*(4 and C)

2. *P*(1 and A)

3. *P*(even and C)

4. *P*(odd and A)

5. *P*(greater than 3 and B)

6. *P*(less than 5 and B)

GAMES There are 10 yellow, 6 green, 9 orange, and 5 red cards in a stack of cards turned facedown. Once a card is selected, it is *not* replaced. Find each probability.

7. *P*(two yellow cards)

8. *P*(two green cards)

9. *P*(a yellow card and then a green card)

10. *P*(a red card and then an orange card)

11. *P*(two cards that are *not* orange)

12. *P*(two cards that are neither red nor green)

13. OFFICE SUPPLIES A store sells a box of highlighters that contains 4 yellow, 3 blue, 2 pink, and 1 green highlighter. What is the probability of randomly picking first 1 blue and then 1 pink highlighter from the box?

14. BASKETBALL Angelina makes 70% of her free throws. What is the probability that she will make her next two free throws?

15. CAR RENTALS Use the following information and the information in the table.

At a car rental office, 63% of the customers are men and 37% are women.

Car Requests	
Compact	25%
Full-size	37%
Convertible	10%
SUV	16%
Luxury	12%

a. What is the probability that the next customer will be a woman who requests a convertible?

b. What is the probability that the next customer will be a man who requests either a compact car or luxury car?