



LESSON
8-3

Practice

Theoretical Probability

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent. Round to the nearest tenth of a percent.

1. randomly choosing a white counter from a bag of 12 red counters, 12 white counters, 12 green counters, and 12 blue counters

2. tossing two fair coins and having one land on tails and one land on heads

3. rolling a number greater than 1 on a fair number cube

4. randomly drawing an orange disk from a bag of 14 black disks, 4 blue disks and 12 orange disks

5. randomly drawing 1 of the 6 R's from a bag of 100 letter tiles

6. spinning a number less than 7 on a fair spinner with 8 equal sections labeled 1-8

A set of cards has 20 cards with stars, 10 cards with squares, and 15 cards with circles. Find the probability of each event when a card is chosen at random.

7. square _____

8. circle _____

9. star or circle _____

10. not circle or square _____

There are 14 girls and 18 boys in Ms. Wiley's class. Ms. Wiley randomly selects one student to solve a problem. Find the probability of each event.

11. selecting a boy _____

12. selecting a girl _____

Practice
LESSON **8-3** **Theoretical Probability**

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent. Round to the nearest tenth of a percent.

- randomly choosing a white counter from a bag of 12 red counters, 12 white counters, 12 green counters, and 12 blue counters
 $\frac{1}{4}$; 0.25; 25%
- tossing two fair coins and having one land on tails and one land on heads
 $\frac{1}{2}$; 0.5; 50%
- rolling a number greater than 1 on a fair number cube
 $\frac{5}{6}$; 0.833; 83.3%
- randomly drawing an orange disk from a bag of 14 black disks, 4 blue disks and 12 orange disks
 $\frac{2}{5}$; 0.4; 40%
- randomly drawing 1 of the 6 R's from a bag of 100 letter tiles
 $\frac{3}{50}$; 0.06; 6%
- spinning a number less than 7 on a fair spinner with 8 equal sections labeled 1-8
 $\frac{3}{4}$; 0.75; 75%

A set of cards has 20 cards with stars, 10 cards with squares, and 15 cards with circles. Find the probability of each event when a card is chosen at random.

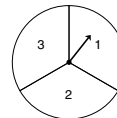
- square $\frac{2}{9}$
- circle $\frac{1}{3}$
- star or circle $\frac{7}{9}$
- not circle or square $\frac{4}{9}$

There are 14 girls and 18 boys in Ms. Wiley's class. Ms. Wiley randomly selects one student to solve a problem. Find the probability of each event.

- selecting a boy $\frac{9}{16}$
- selecting a girl $\frac{7}{16}$

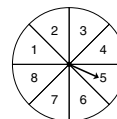
Practice
LESSON **8-4** **Sample Spaces**

- Marcus spins the spinner at the right and flips a dime at the same time. What is the theoretical probability of each outcome?
 $\frac{1}{6}$



- For lunch, students have a choice of a hot dog, a hamburger, or pizza and a choice of an apple, a pear, or grapes. If Britney picks a sack lunch at random from a tray that contains one lunch of each type, what is the probability that she will choose a lunch with pizza and grapes?
 $\frac{1}{9}$

- Susan and Ryan are playing a game that involves spinning the spinner at the right and flipping a penny. What is the probability that the penny will land on heads and the spinner will stop on 2?
 $\frac{1}{16}$



- An Italian restaurant offers small, medium, and large calzones. The choices of fillings are cheese, sausage, spinach, or vegetable. How many different calzones can you order?
12 different calzones

- There are 5 ways to go from Town X to Town Y. There are 3 ways to go from Town Y to Town Z. How many different ways are there to go from Town X to Town Z, passing through Town Y?
15 ways

- Rasheed has tan pants, black pants, gray pants, and blue pants. He has a brown sweater and a white sweater. How many different ways can he wear a sweater and pants together?
8 ways

Practice
LESSON **8-5** **Disjoint Events**

Determine whether each set of events is disjoint. Explain.

- choosing a pencil or a pen from a backpack that contains pencils, pens, highlighters, and felt-tip markers
The events are disjoint. You cannot choose a pencil and a pen at the same time.
- choosing an even number or a multiple of 4 from among the numbers 1–20.
The events are not disjoint. It is possible to choose a number that is even and a multiple of 4 at the same time (for example, 4, 8, 12, 16, or 20).

Find the probability of each set of disjoint events.

- rolling an odd number or a 6 on a number cube
 $\frac{2}{3}$
- choosing a vowel or a P from the letters in the word *apple*
 $\frac{4}{5}$
- choosing a peanut or a cashew from a bowl that contains only 10 peanuts, 5 cashews, and 10 pistachios
 $\frac{3}{5}$
- choosing an even number or a 7 from among the numbers 1–10
 $\frac{3}{5}$

Amanda rolls two number cubes. She wins a prize if the product of the numbers rolled is 12 or 30.

- Complete the grid to show the sample space.
- Find the probability that Amanda will win a prize.
 $\frac{1}{6}$

		First Number Cube					
		1	2	3	4	5	6
Second Number Cube	1	1	2	3	4	5	6
	2	2	4	6	8	10	12
	3	3	6	9	12	15	18
	4	4	8	12	16	20	24
	5	5	10	15	20	25	30
	6	6	12	18	24	30	36

Practice
LESSON **8-6** **Independent and Dependent Events**

Decide if each set of events is independent or dependent. Explain your answer.

- A student spins a spinner and chooses a Scrabble® tile
Independent; Spinning a spinner does not affect the outcome of choosing a Scrabble® tile.
- A boy chooses a sock from a drawer of socks, then chooses a second sock without replacing the first.
Dependent; There are fewer socks in the drawer for the second sock picked.
- A student picks a raffle ticket from a box, replaces the ticket, then picks a second raffle ticket.
Independent; There are the same number of raffle tickets in the box for the second ticket picked.

Find the probability of each set of independent events.

- drawing a red checker from a bag of 9 black checkers and 6 red checkers, replacing it, and drawing another red checker
 $\frac{4}{25}$
- drawing a black checker from a bag of 9 black checkers and 6 red checkers, replacing it, and drawing a red checker
 $\frac{6}{25}$
- rolling a 1, 2, or 3 on the first roll of a 1–6 number cube and rolling a 4, 5, or 6 on the second roll of the same cube
 $\frac{1}{4}$

Solve.

- Randy has 4 pennies, 2 nickels, and 3 dimes in his pocket. If he randomly selects a coin, replaces it, then makes another random selection, what is the probability that both are dimes?
 $\frac{1}{9}$