Probability

Know it Note

Lesson Objectives

Use informal measures of probability

Vocabulary

experiment (p. 628) _____

_____

trial (p. 628) _____

_____

outcome (p. 628) _____

_____

event (p. 628) _____

_____

probability (p. 628) _____

_____

complement (p. 629) _____

_____

Additional Examples

Example 1

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

A. rolling an odd number on a number cube
   There are 6 possible outcomes:

Odd	*Not* Odd
1, 3, 5	2, 4, 6

_____ of the outcomes are odd.

Rolling an odd number is _____.

Holt Mathematics

B. rolling a number less than 2 on a number cube
There are 6 possible outcomes:

Less than 2	*Not* Less than 2
1	2, 3, 4, 5, 6

Only [____] of the outcomes is less than 2.

Rolling a number less than 2 is [_____].

Example 2

A bag contains circular chips that are the same size and weight. There are 8 purple, 4 pink, 8 white, and 2 blue chips in the bag. The probability of drawing a pink chip is $\frac{2}{11}$. What is the probability of not drawing a pink chip?

$P(\text{event}) + P(\text{complement}) = \boxed{}$

$P(\text{pink}) + P(\text{not pink}) = \boxed{}$

$\boxed{} + P(\text{not pink}) = \boxed{}$ Substitute $\boxed{}$ for $P(\text{pink})$.

$-\boxed{} \qquad\qquad -\boxed{}$ Subtract $\boxed{}$ from both sides.

$P(\text{not pink}) = \boxed{}$

The probability of not drawing a pink marble is $\boxed{}$.

Example 3

Mandy's science teacher almost always introduces a new chapter by conducting an experiment. Mandy's class finished a chapter on Friday. Should Mandy expect the teacher to conduct an experiment next week? Explain.

Since the class just finished a chapter, they will be starting a new chapter.

It is [_____] the teacher will conduct an experiment.

Holt Mathematics

LESSON 11-1 Reteach
Probability

You can describe the probability of an event as **impossible,
unlikely, as likely as not, likely,** or **certain.**

For the spinner at the right:

- Spinning a 7 is **impossible** because the spinner has no 7.
- Spinning a 5 is **unlikely** because only 1 of the 6 numbers is a 5.
- Spinning an even number is **as likely as not** because 3 of the numbers are even and 3 of the numbers are odd.
- Spinning a number that is greater than 1 is **likely** because 5 of the 6 numbers are greater than 1.
- Spinning a number that is less than 7 is **certain** because all of the numbers are less than 7.
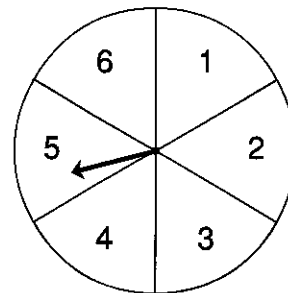
**Use the spinner. Write impossible, unlikely, as likely as not,
likely, or certain to complete each statement.**

1. Four of the 6 numbers are less than 5.

Spinning a number that is less than 5 is _____.

2. Six of the 6 numbers are greater than 0.

Spinning a number that is greater than 0 is _____.

3. One of the 6 numbers is a 3.

Spinning a 3 is _____.

A bag contains 1 red marble, 2 blue marbles, and 3 green marbles.

The probability of picking a red marble is $\frac{1}{6}$.
To find the probability of not picking a red marble,
subtract the probability of picking a red marble from 1. $\qquad P = 1 - \frac{1}{6} = \frac{5}{6}$

Solve.

4. A number cube is labeled 1 through 6. The probability of randomly rolling a 3 is $\frac{1}{6}$. What is the probability of not rolling a 3?

$$P = 1 - \frac{1}{6} = \text{_____}$$

5. A spinner has 5 sections labeled 1 through 5. The probability of randomly spinning an even number is $\frac{2}{5}$. What is the probability of not spinning an even number?

$$P = 1 - \text{_____} = \text{_____}$$

Holt Mathematics

Name _____ Date _____ Class _____

Match each event to its likelihood.

1. rolling a number greater than 6 on a number
   cube labeled 1 through 6   _____   **A** likely

2. flipping a coin and getting heads   _____   **B** unlikely

3. drawing a red or blue marble from a bag of
   red marbles and blue marbles   _____   **C** as likely as not

4. spinning a number less than 3 on a spinner
   with 8 equal sections marked 1 through 8   _____   **D** impossible

5. rolling a number less than 6 on a number
   cube labeled 1 through 6   _____   **E** certain

Solve.

6. A bag contains 4 red marbles, 3 green
   marbles, and 2 yellow marbles. The
   probability of randomly picking a yellow
   marble is $\frac{2}{9}$. What is the probability of
   not picking a yellow marble?   _____

7. A number cube is labeled 1 through 6.
   The probability of randomly rolling a
   4 is $\frac{1}{6}$. What is the probability of not
   rolling a 4?   _____

**Tell whether the event is impossible, unlikely, as likely as not,
likely, or certain.**

8. Janelle almost never eats meat. On
   Monday, the school cafeteria offers
   three main choices. The choices
   are hamburger, tuna, or a turkey
   sandwich. Estimate the probability
   that Janelle will choose a hamburger.   _____

9. Tyrone rides his bicycle to school if he
   gets up by 7:15 A.M. Tyrone gets up
   by 7:15 A.M. about half the time.
   Estimate the probability that Tyrone
   will ride his bicycle to school.   _____

3   **Holt Mathematics**

LESSON	**Practice B**
11-1	*Probability*

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

1. rolling an even number on a number cube labeled 1 through 6

   _____

2. picking a card with a vowel on it from a box of cards in which each letter of the alphabet is written on a card

   _____

3. spinning a number greater than 2 on a spinner with 10 equal sections marked 1 through 10

   _____

4. drawing a red marble from a bag of black, blue, and green marbles

   _____

5. flipping a coin and getting heads or tails

   _____

6. rolling a number that is less than three 5 times in a row on number on a number cube labeled 1 through 6

   _____

Solve.

7. A bag contains 3 green marbles, 7 blue marbles, and 2 black marbles. The probability of randomly picking a green marble is $\frac{1}{4}$. What is the probability of not picking a green marble?

   _____

8. A spinner has 8 equal sections labeled 1 through 8. The probability of spinning a number that is greater than or equal to 6 is $\frac{3}{8}$. What is the probability of spinning a number that is not greater than or equal to 6?

   _____

9. The probability of randomly drawing a red card from a bag that contains red, blue, and green cards is $\frac{3}{10}$. What is the probability of not drawing a red card?

   _____

10. Myra almost always spends at least 45 minutes on the treadmill. If Myra got on the treadmill at 5:20 P.M., estimate the probability that she will still be on the treadmill at 6:00.

    _____

11. Morris rarely arrives home before 4:00 P.M. It is now 3:20 P.M. Estimate the probability that Morris will arrive home in the next 30 minutes.

    _____

Holt Mathematics

LESSON **Practice C**

11-1 *Probability*

Determine whether each event is impossible, unlikely, as likely as not, likely, or certain.

1. rolling a number less than 4 on a number cube labeled 1 through 6 _____

2. picking a card with a multiple of 3 from a box with 10 number cards numbered 1 through 10 _____

3. drawing a red marble from a bag of 3 blue marbles, 8 red marbles, and 2 green marbles _____

4. rolling a number cube that has sides labeled 2, 4, 6, 8, 10, and 12, and getting an even number _____

5. picking two cards that have a sum of greater than 10 from a set of number cards in which there are three 4's, five 3's, and two 5's _____

6. drawing a yellow marble from a bag of 5 blue marbles, 2 green marbles, and 7 yellow marbles _____

Solve.

7. A spinner has 16 sections labeled 1 through 16. The probability of spinning a number that is less than or equal to 10 is $\frac{5}{8}$. What is the probability of spinning a number that is not less than or equal to 10? _____

8. The probability of randomly picking a striped marble from a bag that contains red, blue, and striped marbles marbles is $\frac{5}{12}$. What is the probability of not picking a striped marble? _____

9. When Sam studies for 1 hour or more, he almost always gets at least a B on his math test. Sam studies from 8:45 to 10:00. Estimate the probability that Sam will get a B on his quiz. _____

10. A bag contains 12 black cards and 11 red cards. Julia randomly draws 2 black cards and does not replace them. Will Julia be more likely to draw a black card than a red card on her next draw? Explain.

_____

_____