

## LESSON

## 12-2

## Experimental Probability of Simple Events

## Reteach

**Experimental probability** is an estimate of the probability that a particular event will happen.

It is called *experimental* because it is based on data collected from experiments or observations.

$$\text{Experimental probability} \approx \frac{\text{number of times a particular event happens}}{\text{total number of trials}}$$

JT is practicing his batting. The pitcher makes 12 pitches. JT hits 8 of the pitches. What is the experimental probability that JT will hit the next pitch?

- A favorable outcome is hitting the pitch.
- The number of favorable outcomes is the number JT hit: 8.
- The number of trials is the total number of pitches: 12.
- The experimental probability that JT will hit the next pitch is  $\frac{8}{12} = \frac{2}{3}$ .

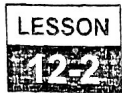
1. Ramon plays outfield. In the last game, 15 balls were hit in his direction. He caught 12 of them. What is the experimental probability that he will catch the next ball hit in his direction?

- a. What is the number of favorable events? \_\_\_\_\_
- b. What is the total number of trials? \_\_\_\_\_
- c. What is the experimental probability that Ramon will catch the next ball hit in his direction?  
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2. In one inning Tori pitched 9 strikes and 5 balls. What is the experimental probability that the next pitch she throws will be a strike?

- a. What is the number of favorable events? \_\_\_\_\_
- b. What is the total number of trials? \_\_\_\_\_
- c. What is the experimental probability that the next pitch Tori throws will be a strike?  
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3. Tori threw 5 pitches for one batter. Kevin, the catcher, caught 4 of those pitches. What is the experimental probability that Kevin will not catch the next pitch? Show your work.  
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# Experimental Probability of Simple Events

## Practice and Problem Solving: A/B

Solve.

1. Jolene is playing basketball. She scored 11 baskets in 15 free throws. What is the experimental probability that she will score a basket on her next free throw?
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2. Sarah has gone to work for 60 days. On 39 of those days, she arrived at work before 8:30 A.M. On the rest of the days she arrived after 8:30 A.M. What is the experimental probability she will arrive after 8:30 A.M. on the next day she goes to work?
- \_\_\_\_\_

3. For the past four weeks, Micah has been recording the daily high temperature. During that time, the high temperature has been greater than  $45^{\circ}\text{F}$  on 20 out of 28 days. What is the experimental probability that the high temperature will be below  $45^{\circ}\text{F}$  on the twenty-ninth day?
- \_\_\_\_\_

4. After the movie premiere 99 out of 130 people surveyed said they liked the movie.

a. What is the experimental probability that the next person surveyed will say he or she liked the movie?

\_\_\_\_\_

b. What is the experimental probability that the next person surveyed will say he or she did not like the movie?

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**Find each experimental probability. Write your answer as a fraction, as a decimal, and as a percent.**

5. For the past 40 days, Naomi has been recording the number of customers at her restaurant between 10:00 A.M. and 11:00 A.M. During that hour, there have been fewer than 20 customers on 25 out of the 40 days.

a. What is the experimental probability there will be fewer than 20 customers on the forty-first day?

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b. What is the experimental probability there will be 20 or more customers on the forty-first day?

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**12-3**

# Experimental Probability of Compound Events

## Reteach

A compound event includes two or more simple events.

The possible outcomes of flipping a coin are heads and tails.

A spinner is divided into 4 equal sections, each one a different color.  
The possible outcomes of spinning are red, yellow, blue, and green.

If you toss the coin and spin the spinner, there are 8 possible outcomes.

|                          |       |     |        |      |       |                              |
|--------------------------|-------|-----|--------|------|-------|------------------------------|
| 2 possible coin outcomes |       | Red | Yellow | Blue | Green | 4 possible spinner outcomes  |
|                          | Heads | 9   | 11     | 11   | 14    |                              |
|                          | Tails | 10  | 12     | 7    | 6     | 8 possible compound outcomes |

To find the experimental probability that the next trial will have an outcome of Tails and Blue:

- Find the number of times Tails and Blue was the outcome: 7.
- Find the total number of trials:  $9 + 11 + 11 + 14 + 10 + 12 + 7 + 6 = 80$ .
- Write a ratio of the number of tails and blue outcomes to the number of trials:  $\frac{7}{80}$ .

A store hands out yogurt samples: peach, vanilla, and strawberry. Each flavor comes in regular or low-fat. By 2 P.M. the store has given out these samples:

|         |       |         |            |
|---------|-------|---------|------------|
|         | Peach | Vanilla | Strawberry |
| Regular | 16    | 19      | 30         |
| Low-fat | 48    | 32      | 55         |

Use the table to answer the questions.

- What is the total number of samples given out? \_\_\_\_\_
- What is the experimental probability that the next sample will be regular vanilla?  
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- What is the experimental probability that the next sample will be strawberry?  
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- What is the experimental probability that the next sample will **not** be peach?  
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**123**

# Experimental Probability of Compound Events

## Practice and Problem Solving: A/B

Solve.

1. A coin was tossed and a spinner with three equal sections numbered 1 to 3 was spun. The results are shown in the table.

|   | Heads | Tails |
|---|-------|-------|
| 1 | 53    | 65    |
| 2 | 49    | 71    |
| 3 | 54    | 62    |

What is the experimental probability that the next toss and spin will result in 3 and Tails?

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2. A receptionist recorded the number of people who took an elevator up from his floor and the number who took an elevator down. He also noted the number of men and women. The table shows the results.

|       | Elevator Up | Elevator Down |
|-------|-------------|---------------|
| Men   | 36          | 43            |
| Women | 39          | 42            |

What is the experimental probability that the next person will be a woman taking the elevator up?

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3. Sandwich shop customers can choose the bread and meat they want. The table shows the sandwiches that were sold on a given day.

|        | White Bread | Wheat Bread |
|--------|-------------|-------------|
| Ham    | 22          | 24          |
| Turkey | 21          | 22          |
| Tuna   | 25          | 23          |

What is the experimental probability that the next sandwich sold will be tuna on wheat bread?

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4. A store sells a coat in three sizes: small, medium, and large. The coat comes in red, navy, and tan. Sales numbers are shown in the table.

|      | Small | Medium | Large |
|------|-------|--------|-------|
| Red  | 18    | 21     | 19    |
| Navy | 24    | 22     | 20    |
| Tan  | 19    | 25     | 22    |

What is the experimental probability that the next coat sold is **not** a large navy?

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