$\qquad$

## Chapter 9 <br> Fair Game Review

Plot the ordered pair in a coordinate plane. Describe the location of the point.

1. $(2,1)$

2. $(-3,3)$

3. $(-1,-1)$

4. Describe the location of the vertices of the triangle.

$\qquad$
$\qquad$

## Chapter 9 <br> Fair Game Review (continued)

Write in slope-intercept form an equation of the line that passes through the given points.
6. $(-2,-2),(1,7)$
7. $(5,-1),(-5,11)$
8. $(-20,-8),(5,12)$
9. $(6,-11),(-3,1)$
10. $(-1,-3),(2,6)$
11. $(-3,6),(4,-8)$
$\qquad$

### 9.1 Scatter Plots

For use with Activity 9.1

## Essential Question How can you construct and interpret a scatter plot?

1 ACTIVITY: Constructing a Scatter Plot
Work with a partner. The weights $\boldsymbol{x}$ (in ounces) and circumferences $C$ (in inches) of several sports balls are shown.

Racquetball
1.4 oz
7 in.


a. Choose a scale for the horizontal axis and the vertical axis of the coordinate plane shown.
b. Write the weight $x$ and circumference $C$ of each ball as an ordered pair. Then plot the ordered pairs in the coordinate plane.
c. Describe the relationship between weight and circumference. Are any of the points close together?
$\qquad$

### 9.1 Scatter Plots (continued)

d. In general, do you think you can describe this relationship as positive or negative? linear or nonlinear? Explain.
e. A bowling ball has a weight of 225 ounces and a circumference of 27 inches. Describe the location of the ordered pair that represents this data point in the coordinate plane. How does this point compare to the others? Explain your reasoning.

## 2 ACTIVITY: Constructing a Scatter Plot

Work with a partner. The table shows the number of absences and the final grade for each student in a sample.
a. Write the ordered pairs from the table. Then plot them in the coordinate plane.


| Absences | Final Grade |
| :---: | :---: |
| 0 | 95 |
| 3 | 88 |
| 2 | 90 |
| 5 | 83 |
| 7 | 79 |
| 9 | 70 |
| 4 | 85 |
| 1 | 94 |
| 10 | 65 |
| 8 | 75 |

b. Describe the relationship between absences and final grade. How is this relationship similar to the relationship between weight and circumference in Activity 1? How is it different?
$\qquad$

### 9.1 Scatter Plots (continued)

c. MODELING A student has been absent 6 days. Use the data to predict the student's final grade. Explain how you found your answer.

3 ACTIVITY: Identifying Scatter Plots
Work with a partner. Match the data sets with the most appropriate scatter plot. Explain your reasoning.
a. month of birth and birth weight for infants at a day care
b. quiz score and test score of each student in a class
c. age and value of laptop computers

ii.

iii.


## What Is Your Answer?

4. How would you define the term scatter plot?
5. IN YOUR OWN WORDS How can you construct and interpret a scatter plot?
$\qquad$
$\qquad$

## 9.1

## Practice

1. The scatter plot shows the participation in a bowling league over eight years.
a. About how many people were in the league in 2008?
b. Describe the relationship shown by the data.


Describe the relationship between the data. Identify any outliers, gaps, or clusters.
2.

3.

4.

$\qquad$

### 9.2 Lines of Fit

For use with Activity 9.2

## Essential Question How can you use data to predict an event?

## 1 ACTIVITY: Representing Data by a Linear Equation

Work with a partner. You have been working on a science project for 8 months. Each month, you measured the length of a baby alligator.


The table shows your measurements.


Use the following steps to predict the baby alligator's length next September.
a. Graph the data in the table.
b. Draw a line that you think best approximates the points.
c. Write an equation for your line.
d. MODELING Use the equation to predict the baby alligator's length next September.

$\qquad$

### 9.2 Lines of Fit (continued)

2 ACTIVITY: Representing Data by a Linear Equation
Work with a partner. You are a biologist and study bat populations.
You are asked to predict the number of bats that will be living in an abandoned mine in $\mathbf{3}$ years.

To start, you find the number of bats that have been living in the mine during the past 8 years.

The table shows the results of your research.

|  | 7 years ago |  |  |  |  |  |  | this year |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\downarrow$ |  |  |  |  |  |  | $\downarrow$ |
| Year, $\boldsymbol{x}$ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Bats (thousands), $y$ | 327 | 306 | 299 | 270 | 254 | 232 | 215 | 197 |

Use the following steps to predict the number of bats that will be living in the mine after 3 years.
a. Graph the data in the table.
b. Draw a line that you think best approximates the points.
c. Write an equation for your line.

d. MODELING Use the equation to predict

Year
$\qquad$

### 9.2 Lines of Fit (continued)

## What Is Your Answer?

3. IN YOUR OWN WORDS How can you use data to predict an event?
4. MODELING Use the Internet or some other reference to find data that appear to have a linear pattern. List the data in a table and graph the data. Use an equation that is based on the data to predict a future event.
$\qquad$
$\qquad$

## 9.2 <br> Practice

1. The table shows the money you owe to pay off a credit card bill over five months.
a. Make a scatter plot of the data and draw a line of fit.


| Months, <br> $\boldsymbol{x}$ | Money owed <br> (dollars), $\boldsymbol{y}$ |
| :---: | :---: |
| 1 | 1200 |
| 2 | 1000 |
| 3 | 850 |
| 4 | 600 |
| 5 | 410 |

b. Write an equation of the line of fit.
c. Interpret the slope and $y$-intercept of the line of fit.
d. Predict the amount of money you will owe in six months.

## Use a graphing calculator to find an equation of the line of best fit. Identify and interpret the correlation coefficient.

2. 

| $\boldsymbol{x}$ | -8 | -6 | -4 | -2 | 0 | 2 | 4 | 6 | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\boldsymbol{y}$ | 10 | 7 | 1 | 0 | -3 | -5 | -4 | -14 | -11 |

3. 

| $\boldsymbol{x}$ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $y$ | 8 | 6 | 4 | 2 | 0 | 2 | 4 | 6 |

$\qquad$

### 9.3 Two-Way Tables

For use with Activity 9.3

## Essential Question How can you read and make a two-way table?

Two categories of data can be displayed in a two-way table.

## 1 ACTIVITY: Reading a Two-Way Table

Work with a partner. You are the manager of a sports shop. The two-way table shows the numbers of soccer T-shirts that your shop has left in stock at the end of the season.

|  |  | T-Shirt Size |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S | M | L | XL | XXL |  |
| $\frac{\vdots}{0}$ | Blue/White | 5 | 4 | 1 | 0 | 2 |  |
|  | Blue/Gold | 3 | 6 | 5 | 2 | 0 |  |
|  | Red/White | 4 | 2 | 4 | 1 | 3 |  |
|  | Black/White | 3 | 4 | 1 | 2 | 1 |  |
|  | Black/Gold | 5 | 2 | 3 | 0 | 2 |  |
|  | Total |  |  |  |  |  | 65 |

a. Complete the totals for the rows and columns.
b. Are there any black-and-gold XL T-shirts in stock? Justify your answer.
c. The numbers of T-shirts you ordered at the beginning of the season are shown below. Complete the two-way table.

|  |  | T-Shirt Size |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | S | M | L | XL | XXL |  |
| $\frac{\grave{0}}{0}$ | Blue/White | 5 | 6 | 7 | 6 | 5 |  |
|  | Blue/Gold | 5 | 6 | 7 | 6 | 5 |  |
|  | Red/White | 5 | 6 | 7 | 6 | 5 |  |
|  | Black/White | 5 | 6 | 7 | 6 | 5 |  |
|  | Black/Gold | 5 | 6 | 7 | 6 | 5 |  |
|  | Total |  |  |  |  |  |  |

$\qquad$

### 9.3 Two-Way Tables (continued)

d. REASONING How would you alter the numbers of T-shirts you order for next season? Explain your reasoning.

2 ACTIVITY: Analyzing Data
Work with a partner. The three-dimensional two-way table shows information about the numbers of hours students at a high school work at part-time jobs during the school year.

a. Make a two-way table showing the data. Use estimation to find the entries in your table.
$\qquad$
9.3 Two-Way Tables (continued)
b. Write two observations you can make that summarize the data in your table.
c. REASONING A newspaper article claims that more boys than girls drop out of high school to work full-time. Do the data support this claim? Explain your reasoning.

## What Is Your Answer?

3. IN YOUR OWN WORDS How can you read and make a two-way table?
4. Find a real-life data set that can be represented by a two-way table. Then make a two-way table for the data set.
$\qquad$
$\qquad$

## 9.3 <br> Practice

For use after Lesson 9.3

1. You randomly survey students in a school about whether they got the flu after receiving a flu shot. The results of the survey are shown in the two-way table.
a. How many of the students in the survey received a flu shot and still got the flu?
b. Find and interpret the marginal frequencies for the survey.

|  |  | Flu Shot |  |  |
| :--- | :--- | :---: | :---: | :---: |
|  |  | Yes | No | Total |
| 른 | Yes | 8 | 13 |  |
|  | No | 27 | 32 |  |
|  | Total |  |  |  |
|  |  |  |  |  |

2. You randomly survey students in a school about whether they eat breakfast at home or at school.

Grade 6 Students: 28 eat breakfast at home, 12 eat breakfast at school
Grade 7 Students: 15 eat breakfast at home, 15 eat breakfast at school
Grade 8 Students: 9 eat breakfast at home, 21 eat breakfast at school
a. Make a two-way table that includes the marginal frequencies.
b. For each grade level, what percent of the students in the survey eat breakfast at home? eat breakfast at school? Organize the results in a two-way table. Explain what one of the entries represents.
$\qquad$

## 9.4 <br> Choosing a Data Display <br> For use with Activity 9.4

Essential Question How can you display data in a way that helps you make decisions?

1 ACTIVITY: Displaying Data
Work with a partner. Analyze and display each data set in a way that best describes the data. Explain your choice of display.
a. ROADKILL A group of schools in New England participated in a 2-month study and reported 3962 dead animals.

Birds: 307
Mammals: 2746
Amphibians: 145
Reptiles: 75
Unknown: 689
b. BLACK BEAR ROADKILL The data below show the numbers of black bears killed on a state's roads from 1993 to 2012.

| 1993: | 30 | $2003:$ | 74 |
| :--- | :--- | :--- | :--- |
| 1994: | 37 | $2004:$ | 88 |
| 1995: | 46 | $2005:$ | 82 |
| 1996: | 33 | $2006:$ | 109 |
| 1997: | 43 | $2007:$ | 99 |
| 1998: | 35 | $2008:$ | 129 |
| 1999: | 43 | $2009:$ | 111 |
| 2000: | 47 | $2010:$ | 127 |
| 2001: | 49 | $2011:$ | 141 |
| 2002: | 61 | $2012:$ | 135 |

$\qquad$
9.4 Choosing a Data Display (continued)
c. RACCOON ROADKILL A 1-week study along a 4-mile section of road found the following weights (in pounds) of raccoons that had been killed by vehicles.

| 13.4 | 14.8 | 17.0 | 12.9 | 21.3 | 21.5 | 16.8 | 14.8 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 15.2 | 18.7 | 18.6 | 17.2 | 18.5 | 9.4 | 19.4 | 15.7 |
| 14.5 | 9.5 | 25.4 | 21.5 | 17.3 | 19.1 | 11.0 | 12.4 |
| 20.4 | 13.6 | 17.5 | 18.5 | 21.5 | 14.0 | 13.9 | 19.0 |

d. What do you think can be done to minimize the number of animals killed by vehicles?

2 ACTIVITY: Statistics Project
ENDANGERED SPECIES PROJECT Use the Internet or some other reference to write a report about an animal species that is (or has been) endangered. Include graphical displays of the data you have gathered.

Sample: Florida Key Deer In 1939, Florida banned the hunting of Key deer. The numbers of Key deer fell to about 100 in the 1940s.


About half of Key deer deaths are due to vehicles.
$\qquad$
9.4 Choosing a Data Display (continued)

In 1947, public sentiment was stirred by 11-year-old Glenn Allen from Miami. Allen organized Boy Scouts and others in a letter-writing campaign that led to the establishment of the National Key Deer Refuge in 1957. The approximately 8600 -acre refuge includes 2280 acres of designated wilderness.

The Key Deer Refuge has increased the population of


One of two Key deer wildlife underpasses on Big Pine Key. Key deer. A recent study estimated the total Key deer population to be approximately 800 .

## What Is Your Answer?

3. IN YOUR OWN WORDS How can you display data in a way that helps you make decisions? Use the Internet or some other reference to find examples of the following types of data displays.

- Bar graph
- Stem-and-leaf plot
- Circle graph
- Scatter plot
- Box-and-whisker plot
$\qquad$
$\qquad$


## 9.4 <br> Practice

Choose an appropriate data display for the situation. Explain your reasoning.

1. the number of people that donated blood over the last 5 years
2. percent of class participating in school clubs

## Explain why the data display is misleading.

3. 


4.

5. A team statistician wants to use a data display to show the points scored per game during the season. Choose an appropriate data display for the situation. Explain your reasoning.

