Name Answers Date

Percents - Finding Percents of a Number

Write and solve a **proportion** to answer the problem.

1) What number is 20% of 40?

8

2) 17 is what percent of 68?

25%

3) 42 is 60% of what number?

70

4) What number is 150% of 92?

138

5) 40% of what number is 15?

37.5

6) 24 is 0.6% of what number?

4000

7) What percent of 75 is 27?

36%

8) 55% of what number is 33?

60

9) Of the 360 runners at a 5-kilometer race, 20% are in the 35–39 age bracket. How many runners at the 5-kilometer race are in the 35–39 age bracket?

72 runners

10) You pay $3.69 for a gallon of gasoline. This is 90% of the price of a gallon of gasoline one year ago. What was the price of a gallon of gasoline one year ago?

#4.10

Write and solve an **equation** to answer the problem.

11) 24 is what percent of 60?

40%

12) What number is 70% of 120?

84

13) 30 is what percent of 120?

25%

14) 112 is 56% of what number?

200

15) What number is 140% of 45?

63

16) 15 is 6% of what number?

250

17) There are 35 competitors in a marathon. Sixty percent of these finished the race in under four hours. How many competitors finished the race in under four hours?

21 competitors

18) Your class is going on a field trip. Twenty-four students have turned in their permission slips so far. This is 80% of the students in the class. How many students are in the class?

30 students

Name Answers Date

Percents – Discount, Markup, Tip & Sales Tax

Vocabulary

Markup - The increase of price of something

Discount - The amount taken off the original price

Tip - The amount added to food bill or service

Tax - The amount added to the price when you buy something

Original Price - Regular Price or Wholesale Price

Retail Price - The original plus the mark up prices

Sale Price - The original price ~~with discount~~ minus the discount

Getting to know your Vocabulary

A) Jeremy goes to Costco and buys a big box of M & M's for $5.50. He later will sell it at $7.00. What was the markup?

$1.50

B) Andrea buys a dress on sale for $75. It was originally suppose to be for $90. How much was the discount?

$15

C) Jose wanted to make some money off selling his $900 motorcycle. So he marked it up by $250. What is the retail price?

$1150

D) Arlene couldn't believe she saved $25 dollars off a coat she just bought that was originally $79. What was the sale price?

$54

Markup, Discount, Tip, and Tax Formulas

Markup = % × Original Price	Tip = % × Original cost
Discount = % × Original Price	Tax = % × Original price (or retail price)

Practice

1) You are a manager of jewelry store. You buy a ring at a wholesale price of $180. Your percent of markup is 20%.

   a) What is the amount of markup?

   $36

   b) What is the retail price?

   $216

2) A $36 book is on sale for 15% discount.

   a) What is the amount of discount?

   $5.40

   b) What is the sale price?

   $30.60

3) Jill and Joe just had dinner that came up to a $60 bill. They are suppose to give 15% tip.

   a) What is the amount of tip?

   $9

   b) How much did they pay for their whole dinner?

   $69

4) $30 jacket had a sales tax of 8%.

   a) What is the amount of tax?

   $2.40

   b) What is the total cost of the jacket?

   $32.40

Find the new prices - SHOW ALL WORK

5) Original Price: $40
Discount: 35%

a) What is the amount of discount?

$14

b) What is the sale price?

$26

6) Wholesale Price: $135
Markup: 10%

a) What is the amount of markup?

$13.50

b) What is the retail price?

$148.50

7) Food Bill: $40
Tip: 15%.

a) What is the amount of tip?

$6

b) What is the total that needs to be paid?

$46

8) Video Game: $32
Tax: 6%

a) What is the amount of tax?

$1.92

b) What is the total cost of the video game?

$33.92

9) A jacket is $50 with 20% discount and
5% Tax

a) What is the amount of discount?

$10

b) What is the sale price?

$40

c) What is the tax of the sale price?

$2

d) What is the total price?

$42

10) An MP3 player is $80 with 15% discount and
8% Tax

a) What is the amount of discount?

$12

b) What is the sale price?

$68

c) What is the tax of the sale price?

$5.44

d) What is the total price?

$73.44

Name Answers Date

Percents – Simple Interest

Example

You borrow money a period of 2.5 years at a rate of 15% each year? $5000

How much interest will you pay in the 2.5 year period?

$1875

How much do you have to totally pay back?

$6875

Complete the following:

1)

Principal	Rate	Time	Interest
$450	8%	36 months	$108

2)

Principal	Rate	Time	Interest
$900	20%	3 months	$45

3)

Principal	Rate	Time	Interest
$700	10%	18 months	$105

4)

Principal	Rate	Time	Interest	Total (Balance)
$1500	10%	6 months	$75	$1575

5)

Principal	Rate	Time	Interest	Total (Balance)
$3500	8%	3 months	$70	$3570

6)

Principal	Rate	Time	Interest
$150	2 %	6 years	$18

7)

Principal	Rate	Time	Interest
$940	7 %	2.5 years	$164.50

8)

Principal	Rate	Time	Interest
$600	4%	3 yrs	$72

9)

Principal	Rate	Time	Interest
$1450	8%	1.5 yrs	$174

or 18 months

10) Ms. Dutta borrowed $800 for a period of 2 years. He is to pay interest at a rate of 9% a year. How much interest will he have to pay?

$144

11) Ms. Yob found out that she has to pay $500 in interest on her loan. She totally forgot how much she borrowed. However, she does know that the interest rate was 5% for 5 years. Please help Ms. Yob find out how much her loan was.

$2000

Name Answers Date

Inequalities - Review

Write the word sentence as an inequality.

1) A number b times 3.5 is no less than 21.

$3.5b \geq 21$

2) The product of 6 and number c is less than 12.

$6c < 12$

Tell whether the given value is a solution of the inequality.

3) $\frac{1}{2} > 3p;\ p = \frac{1}{6}$

$\frac{1}{2} > 3\left(\frac{1}{6}\right)$

$\frac{1}{2} > \frac{1}{2}$ No.

4) $2.16 \geq 3z - 0.5;\ z = 0.6$

$2.16 \geq 3(0.6) - 0.5$

$2.16 \geq 1.3$

Yes.

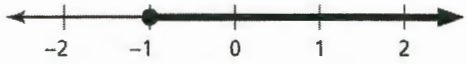
Write an inequality and a word sentence that represent the graph.

5)

$x < 2$

A number less than 2

6)



$x \geq -1$

A number no less than -1

Graph the inequality on a number line.

7) $6.5 > a$ $a < 6.5$

8) $u \leq -6$

9) A highway passes under a road. The clearance height is 7.75 feet. Write and graph an inequality that represents the height of a vehicle that can travel on the highway.

$x \leq 7.75$

Solve the inequality.

10) $t + 54 \leq 85.6$

$-54 \quad -54$

$t \leq 31.6$

11) $q - 9.8 > 1.2$

$+9.8 \quad +9.8$

$q > 11.0$

12) $12.4 + 6.07 \leq v - 8.13$

$18.47 \leq v - 8.13$

$+8.13 \quad +8.13$

$26.60 \leq v$

or

$v \geq 26.60$

Write the word sentence as an inequality. Then solve the inequality.

13) The total of $\frac{3}{4}$ and a number is no more than 2.

$\frac{3}{4} + x \leq 2$

$-\frac{3}{4} \quad -\frac{3}{4}$

$x \leq 1\frac{1}{4}$

14) A number minus $\frac{7}{12}$ is at least $3\frac{1}{2}$.

$x - \frac{7}{12} \geq 3\frac{1}{2}$

$x \geq 4\frac{1}{12}$

15) You are cooking a turkey. The turkey must reach a temperature of at least 165 degrees to be fully cooked. The temperature is 135 degrees. Write and solve an inequality to represent the number of degrees the temperature must increase for the turkey to be done.

$x + 135 \geq 165$

$x \geq 30$

The temperature must go up by at least 30 degrees.

Solve the inequality. Graph the solution.

16) $\frac{3}{4}m \leq 6$

$\frac{4}{3}$ $\frac{4}{3}$

$m \leq 8$

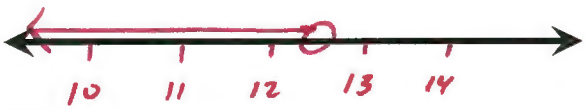
17) $42h \geq 105$

$\frac{42}{42}$ $\frac{42}{42}$

$h \geq 2.5$

18) $\frac{r}{4} < 3.1$ ·4 ·4

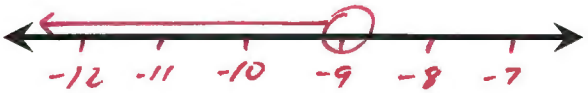
$r < 12.4$



19) $-7.2p > 64.8$

$\frac{-7.2}{-7.2}$ $\frac{64.8}{-7.2}$

$p < -9$



Write the word sentence as an inequality. Then solve the inequality.

20) 10 times a number q is at least 2.01.

$\frac{10q}{10} \geq \frac{2.01}{10}$

$q \geq 0.201$

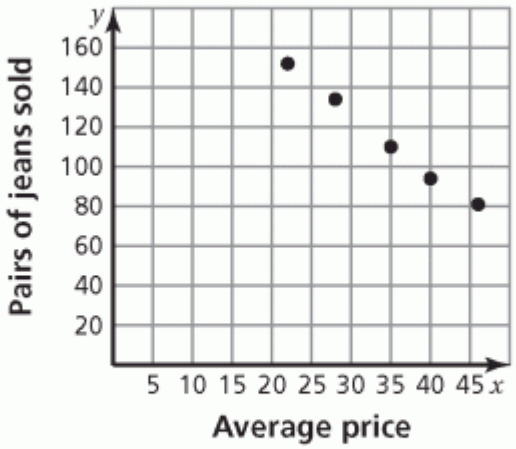
21) The quotient of a number b and 3 is less than $\frac{1}{12}$

$\frac{b}{3} < \frac{1}{12}$

$b < \frac{1}{4}$

pp. 376-377 #7-14, 18-20

7. a. (22, 152), (40, 94), (28, 134), (35, 110), (46, 81);



b. As the average price of jeans increases, the number of pairs of jeans sold decreases.

8. a. 2011

b. about 875 SUVs

c. negative linear relationship

9. a. 3.5 h

b. $85

c. There is a positive linear relationship between hours worked and earnings.

10. negative linear relationship; outlier at (15, 10), gap between x-values of 15 to 25 and y-values of 23 to 33

11. nonlinear relationship; no outliers, gaps, or clusters

12. no relationship; no obvious outliers, gaps, or clusters

13. positive linear relationship

14. **a.** positive linear relationship

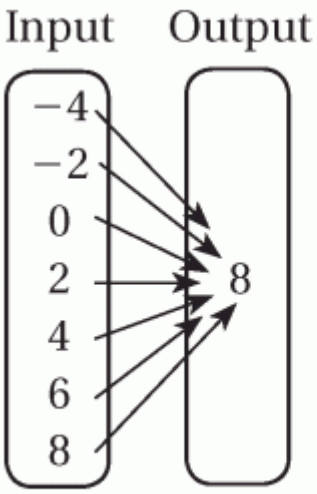
b. The more time spent studying, the better the test score.

18. 2

19. 8

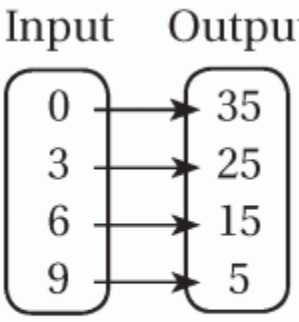
20. -4

14.



As each input increases by 2, the output is 8.

15.



As each input increases by 3, the output decreases by 10.

19. y-axis

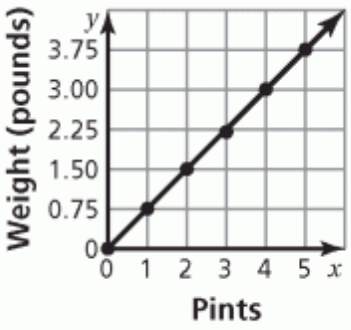
20. x-axis

21. x-axis

22. A

pp. 382-383 #4-7, 10, 16

4. a–b.

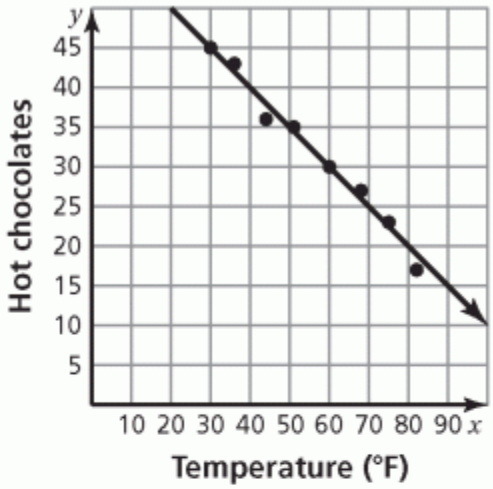


c. *Sample answer:* $y = 0.75x$

d. *Sample answer:* 7.5 lb

e. *Sample answer:* $16.88

5. a.

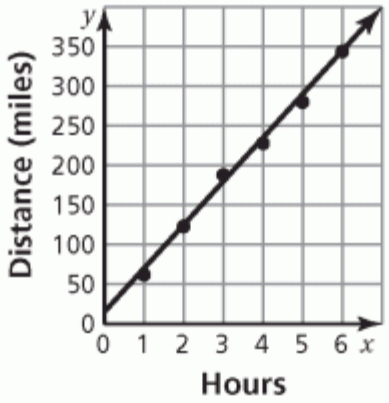


b. *Sample answer:*
$y = -0.5x + 60$

c. *Sample answer:* The slope is -0.5 and the y-intercept is 60. So, you could predict that 60 hot chocolates are sold when the temperature is 0°F, and the sales decrease by about 1 hot chocolate for every 2°F increase in temperature.

d. 50 hot chocolates

6. a.



b. *Sample answer:* $y = 55x + 15$

c. 55 miles

d. 15 miles

e. *Sample answer:* 400 mi

7. no; There is no line that lies close to most of the points.

10. See *Taking Math Deeper*.

16. D

pp. 390-391 #3-10, 14-17

3. total of females surveyed: 73;
total of males surveyed: 59

4. total of "no" participants: 52;
total of "yes" participants: 80

5. 51

6. 30

7. 71 students are juniors;
75 students are seniors;
93 students are attending the school play; 53 students are not attending the school play.

8. 78 people have limited cell phone texting plans;
190 people have unlimited cell phone texting plans; 253 people have limited cell phone minutes; 15 people have unlimited cell phone minutes.

9. a. 19; 42

   b. number of students surveyed:
   72 6th-graders,
   74 7th-graders,
   65 8th-graders;
   112 students chose grades, 40 students chose popularity, 59 students chose sports.

   c. about 8.5%

10. a.

		Age			
		20–29	30–39	40–49	Total
Saved at Least $1000	Yes	14	27	25	66
	No	36	33	15	84
	Total	50	60	40	150

b.

		Age		
		20–29	30–39	40–49
Saved at Least $1000	Yes	28%	45%	62.5%
	No	72%	55%	37.5%

c. Yes, the table shows that as age increases, people are more likely to have at least $1000 in savings.

14. $y = 3x + 1$

15. $y = 5x - 2$

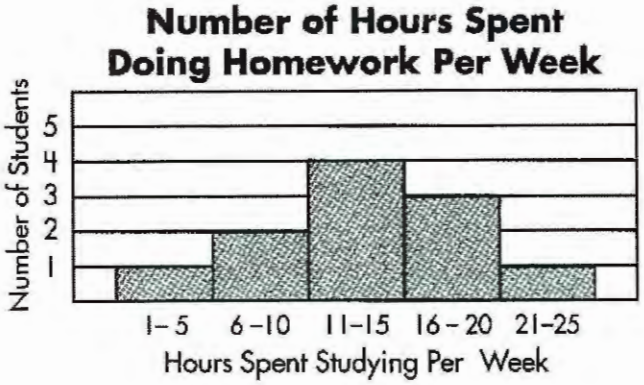
16. $y = \frac{1}{2}x + 3$

17. B

Name_____ Date_____

Data Display Review

A **histogram** is a type of bar chart in which the categories are consecutive and the intervals are equal.



In this histogram, each bar represents an **interval** of 5 hours. The intervals are equal. The bars are **consecutive**, or in sequence one after the other.

Use the histogram above to answer each question.

1. How many students were surveyed? 11 student

2. Which two intervals (bars) were selected by an equal number of students? 1-5 and 21-25

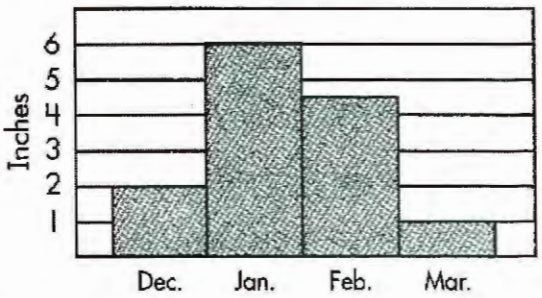
   How many students chose each of those intervals? 1 student

3. Which interval was selected by the most students? 11-15

4. How many more students do 16–20 hours of homework than 1–5 hours? 2 more students

---

Use the histogram at the right to answer the following questions.



5. Which month had the most snowfall? Jan.

6. How many inches of snow fell in January through March? 11½ in

7. How many more inches of snow fell in February than in March? 3½ in

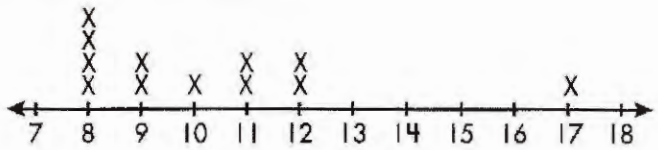
8. How many inches of snow fell in December? 2 in.

A **line plot** is a graph that shows the frequency of data on a number line. Line plots make it easy to identify the mode, range, and any outliers in a data set. **Outliers** are data points that are much larger or smaller than other values.

To make a line plot, draw a number line from the least to the greatest value in the number set. Then, make an x above each number every time it appears in the set.

Make a line plot for the following data:

8, 9, 11, 8, 10, 11, 8, 9, 12, 8, 17, 12



The mode is 8. The range is 17 − 8 = 9.
17 is an outlier.

Answer the questions about the line plots below.

1. How many people responded to the sibling survey? 15 people

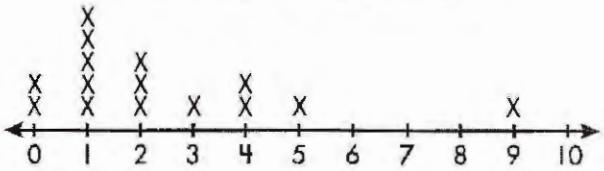
2. What is the mode of the sibling survey? What is the range?

   mode: 1 range: 9

3. How many people have 3 or more siblings? 5 people

4. What number is an outlier on the sibling survey? 9

Number of Siblings



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5. How many people responded to the test survey? 19 people

6. What is the mode of the test survey? What is the range?

   mode: 1½ range: 3

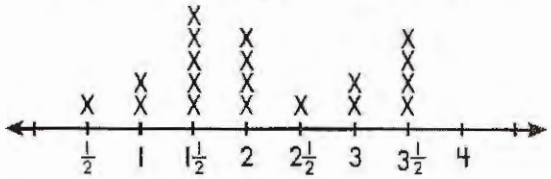
7. How many people studied 2 or fewer hours? 12 people

8. How many people studied 4 or more hours? 0 people

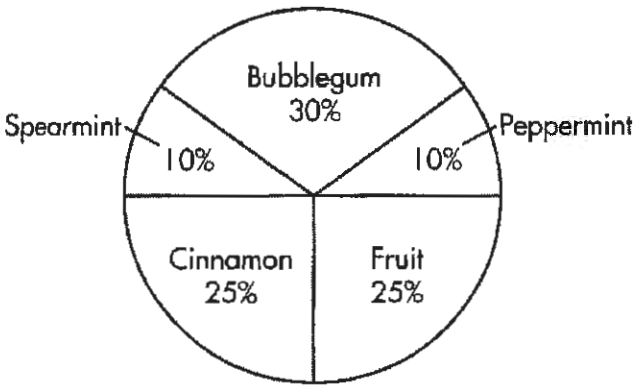
9. Did more people study 2 or more hours or less than 2 hours?

   More people studied 2 or more hours.

Hours Studying For Test



A **circle graph** shows the relationship of parts to a whole. The circle is divided into sectors which add up to 100%. The sectors are determined by the central angles, and the sum of all those angles is 360°.



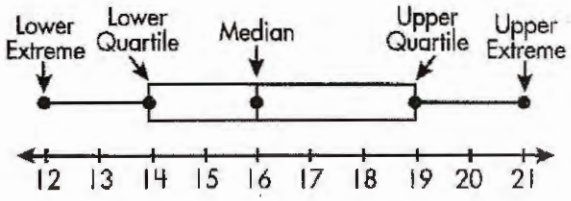
Favorite Gum Flavor

This circle graph shows the favorite gum flavor of 400 people. The sectors show the percent who prefer each flavor.

Use the circle graph above to answer each question.

1. Which flavor is preferred by the most people? Bubblegum
2. How many people prefer spearmint? 40 people
3. How many people prefer cinnamon? 100 people
4. Which flavor is preferred by the same number of people who prefer cinnamon? Fruit
5. Which two flavors combined account for exactly half of the people? Cinnamon + Fruit
6. How many people prefer bubblegum? 120 people
7. What is the measure of the angle for the peppermint sector of the graph? 36°
8. What is the measure of the angle for the fruit sector of the graph? 90°
9. What is the measure of the angle for the bubblegum sector of the graph? 108°

A **box-and-whisker** plot displays data along a number line. Quartiles are used to divide the data into four equal parts. Each quartile is 25% of the number of items. The upper and lower quartiles, representing 50% of the data, form the box. The upper extreme (highest value) and lower extreme (lowest value) form the whiskers.



This box-and-whisker plot represents the following data:

12, 13, 14, 14, 15, 16, 17, 18, 19, 19, 21

Upper Extreme: 21

Lower Extreme: 12

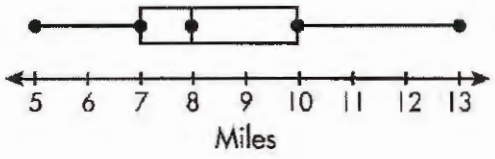
Middle Quartile (median): 16

Upper Quartile (median of upper half): 19

Lower Quartile (median of lower half): 14

Use the box-and-whisker plots below to answer the following questions.

Miles Walked in Walk-a-Thon



1. What is the median number of miles walked? 8 miles

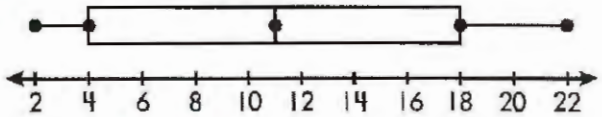
2. What are the lowest and highest numbers of miles walked?

   lowest: 5 miles highest: 13 miles

3. If 126 people participated in the walkathon, how many people walked 7–10 miles? 63 people

4. What percentage of the people walked more than 10 miles? 25%

Books Read Over the Summer



5. What is the median number of books read? 11 books

6. What is the upper quartile? 18

7. What percentage of the people who responded to the survey read 4 or fewer books? 25%

8. What is the most number of books anyone read? 22 Books

9. If 82 people responded to this survey, how many read from 4 to 18 books? 41 people

A **stem-and-leaf** plot is used to arrange data in order from least to greatest. It is displayed in two columns. The right column shows the **leaves**—the ones digit of each number. The other digits form the **stems** and are shown in the left column. The **key** explains how to read the plot.

Use the following data to create a stem-and-leaf plot.

71, 73, 87, 106, 95, 73, 86,
99, 104, 82, 93, 74, 101, 90

Stem	Leaves
7	1 3 3 4
8	2 6 7
9	0 3 5 9
10	1 4 6

Key: 7 | 1 = 71

Create a stem-and-leaf plot for each set of data.

a

1. 18, 17, 12, 24, 17, 33, 21, 22, 14, 31, 30, 20, 16, 35

stem	Leaf
1	2 4 6 7 7 8
2	0 1 2 4
3	0 1 3 5

Key 1 | 2 = 12

b

122, 120, 135, 130, 148, 131, 142, 122, 133, 143, 135, 132

stem	Leaf
12	0 2 2
13	0 1 2 3 5 5
14	2 3 8

Key 12 | 0 = 120

pp. 397-399 #4-9, 11-14, 17, 20-23

4. *Sample answer:* stem-and-leaf plot; shows how data is distributed

5. *Sample answer:* line graph; shows changes over time

6. *Sample answer:* dot plot; shows the number of times each outcome occurs

7. *Sample answer:* line graph; shows changes over time

8. **a.** yes; The pictograph shows the number of hours worked each month using pictures.

   b. yes; The bar graph shows the number of hours worked each month.

9. **a.** yes; The circle graph shows the data as parts of the whole.

   b. no; The bar graph shows the number of students, not the portion of students.

11. The pictures of the bikes are the largest on Monday and the smallest on Wednesday, which makes it seem like the distance is the same each day.

12. The break in the scale for the vertical axis makes it appear as though there is a greater difference in sales between months.

13. The intervals are not the same size.

14. The widths of the bars are different, so it looks like some months have more rainfall.

17. *Sample answer:* dot plot

20. **a.** 4 **b.** 4.5

21. **a.** −9 **b.** −8.6

22. **a.** 12 **b.** 11.8

23. A

pp. 401-403 #1-11

1. **a.** 2012

   b. 225 geese

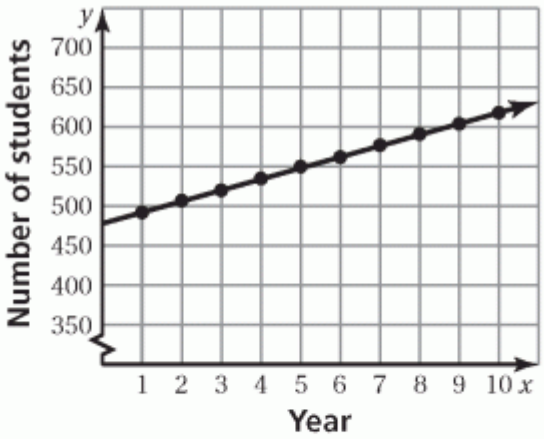
   c. positive linear relationship

2. negative linear relationship; outlier: (21, 40)

3. no relationship; cluster around (12, 16)

4. positive linear relationship; gap from $x = 12$ to $x = 18$

5. **a.**



   b. *Sample answer:* $y = 14x + 478$

   c. *Sample answer:* The slope is 14 and the y-intercept is 478. So, the number of students in the year prior to the 10-year period was about 478 and the number of students is increasing by about 14 students per year.

   d. 632 students

6. $y = 14.0x + 478.7$; The correlation coefficient is about 1, which implies that there is a strong positive linear relationship between the year and the number of students.

7.

		Food Court		
		Likes	Dislikes	Total
Age Group	Teenagers	96	4	100
	Adults	21	79	100
	Senior Citizens	18	82	100
	Total	135	165	300

8.

		Food Court	
		Likes	Dislikes
Age Group	Teenagers	96%	4%
	Adults	21%	79%
	Senior Citizens	18%	82%

9. Yes, the table shows that teenages tend to like the food court, but adults and senior citizens tend to dislike the food court.

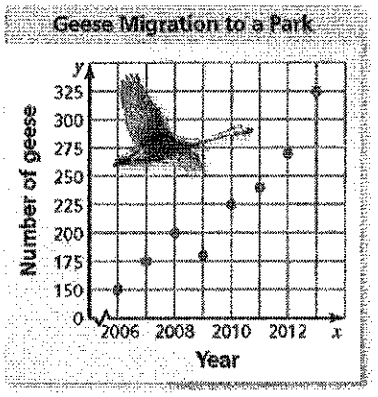
10. *Sample answer:* line graph; shows changes over time

11. *Sample answer:* scatter plot; shows the relationship between two data sets

Name KEY Date

Chapter 9 Review

1) The scatter plot shows the number of geese that migrated to a park each season.



a) In what year did 270 geese migrate?

2012

b) How many geese migrated in 2010?

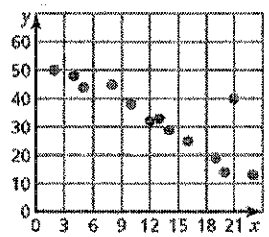
225 geese

c) Describe the relationship shown by the data.

positive linear relationship

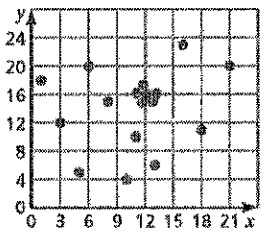
Describe the relationship between the data. Identify any outliers, gaps, or clusters.

2)



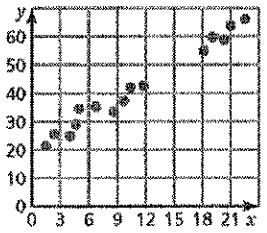
- Negative
- Outlier: (21, 40)
- no gaps
- no clusters

3)



- No relationship
- No outlier
- No gaps
- Cluster at (12, 16)

4)



- Positive
- No outliers
- Gap between x-values of 12-18
- No real clusters

5) You have been working on a science project for 8 months. Each month, you measured the length of a baby alligator. The following table shows your measurements.

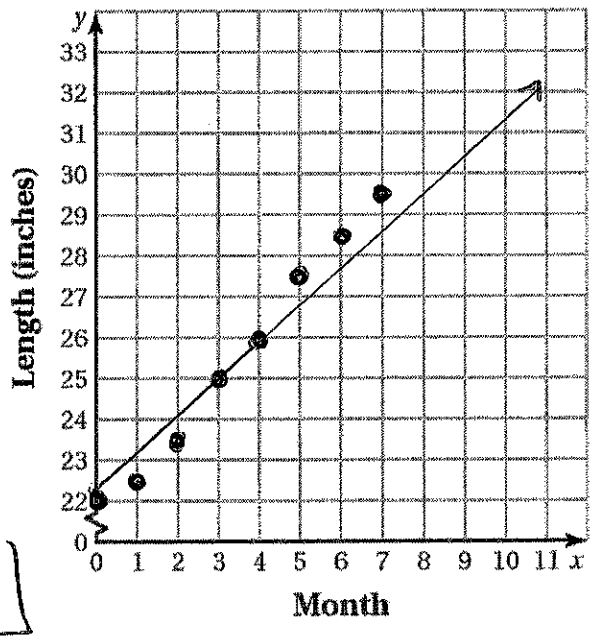
September ↓ April ↓

Month, x	0	1	2	3	4	5	6	7
Length (in.), y	22.0	22.5	23.5	25.0	26.0	27.5	28.5	29.5

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.

$y = x + 22$

d) Use the equation to predict the baby alligator's length next September.

$y = 1(12) + 22$

$= 12 + 22$

$y \approx$ 34 inches

6) An animal shelter opens in December. The table shows the number of cats adopted from the shelter each month from January to September.

Month	1	2	3	4	5	6	7	8	9
Cats	3	6	7	11	13	14	15	18	19

a) Make a scatter plot of the data and draw a line of fit. ✓

b) Write an equation of the line of fit.

$y = \frac{4}{3}x + 4$

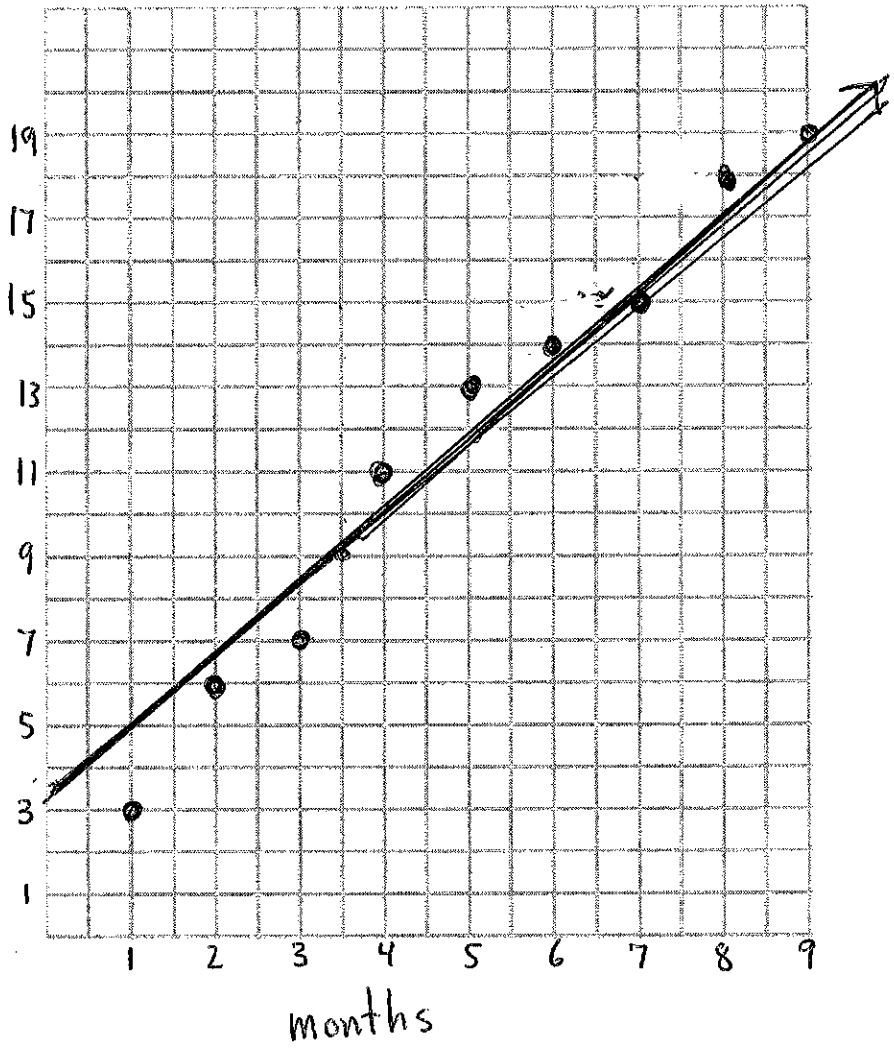
c) Interpret the slope and the y-intercept of the line of fit.

Slope → 4 cats adopted every 3 months

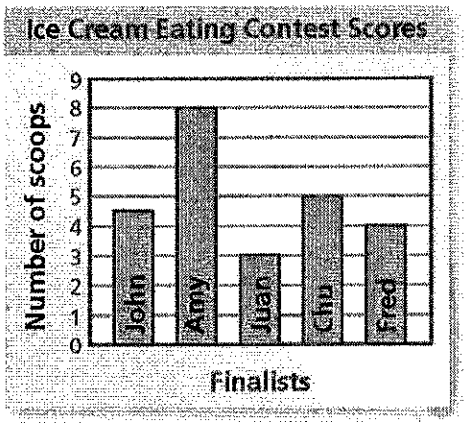
y-int → 4 cats were adopted before the 1st month

d) Predict how many cats will be adopted in October.

about 20 or 21 cats



7) A class held an ice cream eating contest. The finalist scores are shown in the bar graph.



a) How many scoops did John eat?

4.5 scoops

b) What is the average number of scoops eaten by the finalists?

$\frac{4.5+8+3+5+4}{5} = \frac{24.5}{5} = 4.9$

about 5 scoops

c) How many scoops did Amy eat compared to Juan?

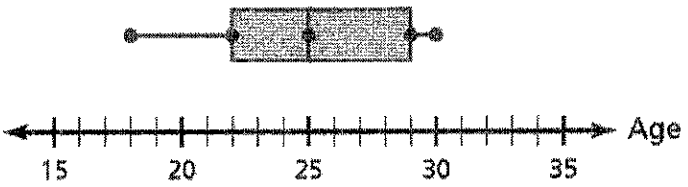
Amy ate 8, Juan ate 3 so Amy ate 5 more scoops

d) What is the median amount of scoops eaten?

3, 4, [4.5], 5, 8 ↑ median

[4.5 scoops]

8) The following is a box-and-whiskers chart of ages of teachers at Young Middle School



a) What is the median age of the teachers?

25 years old

b) How old are the youngest and oldest teachers?

youngest = 18 oldest = 30

c) What percent of the teachers are between 22 and 29 years old?

50% (25% per quartile)

d) What is the range of teachers' ages?

30 - 18 = [12 years]

9) Find the mean, median, mode, and range. If an answer is not a whole number, round to the nearest tenth.

~~4~~, ~~0~~, ~~8~~, ~~2~~, ~~1~~, ~~7~~, ~~2~~, ~~4~~, 26, ~~2~~, ~~10~~

a) Mean = 66 ÷ 6 = [11]

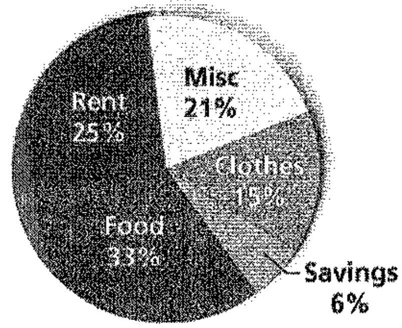
0, 1, 2, 2, 2, (4), 4, 7, 8, 10, 26

b) Median = [4]

c) Mode = [2]

d) Range = 26 - 0 = [26]

10) A family is making a monthly budget. Its total take-home pay for a month is $2400.



a) What category had the most expenditures?

Food

b) How much money was budgeted for Rent?

25% of 2400

$0.25 \cdot 2400 = \boxed{\$600}$

c) How much money was budgeted for Misc?

21% of 2400

$0.21 \cdot 2400 = \boxed{\$504}$

d) In the circle graph, how many degrees is the sector of "Clothes"?

$\frac{15}{100} = \frac{x}{360} \rightarrow \frac{3}{20} = \frac{x}{360}$ (20 → 1, 360 → 18)

$\boxed{x = 54°}$

11) You randomly survey people at a mall about whether they like the new food court. The results are shown.

Teenagers
96 likes, 4 dislikes

Adults
21 likes, 79 dislikes

Senior Citizens
18 likes, 82 dislikes

		Like?		
		Like	Dislike	total
Age group	teens	96	4	100
	Adults	21	79	100
	Seniors	18	82	100
	total	135	165	300

a) Make a two-way table that includes the marginal frequencies.

b) Find and interpret the marginal frequencies for the survey.

- 100 teens, Adults, and senior citizens each were surveyed
- 135 people surveyed liked the food court
- 165 people surveyed did not like food court
- 300 people were surveyed total

pp. 636-637 #3-18, 27-30

3. 8

4. 4 ways; 4 ways

5. 1, 2, 3, 4, 5, 6, 7, 8, 9

6. 6

7. 1, 3, 5, 7, 9

8. 6, 7, 8, 9

9. 1, 3

10. 1, 2

11. 3, 6, 9

12. **a.** 2 ways **b.** blue, blue

13. **a.** 1 way **b.** green

14. **a.** 2 ways

b. purple, purple

15. **a.** 1 way **b.** yellow

16. **a.** 6 ways

b. yellow, green, blue, blue, purple, purple

17. **a.** 7 ways

b. red, red, red, purple, purple, green, yellow

18. There are 7 marbles that are *not* purple, even though there are only 4 colors. Choosing *not* purple could be red, red, red, blue, blue, green, or yellow.

27. $x = 2$

28. $n = 21$

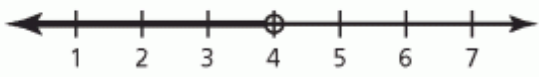
29. $w = 12$

30. $b = 68$

pp. 642-643 #4-9, 11-17, 21, 23-27

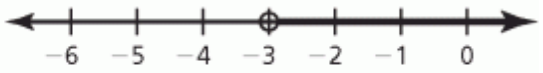
4. Spinner B; There are more chances to land on "Down" with Spinner B.
5. either; Both spinners have the same number of chances to land on "Forward."
6. likely
7. impossible
8. certain
9. unlikely
11. $\frac{1}{10}$
12. $\frac{1}{5}$
13. $\frac{9}{10}$
14. $\frac{4}{5}$
15. 0
16. The student found the probability of choosing a blue shirt.;

    $P(\textit{not}\ \text{blue}) = \frac{6}{10} = \frac{3}{5}$
17. 20
21. There are 2 combinations for each.
23. $x < 4$;



24. $b \geq -5$;

25. $w > -3$;



26. $g \leq -3$;

27. C

3. 8

pp. 649-651 #6-20, 24, 29

6. $\frac{7}{50}$, or 14%

7. $\frac{12}{25}$, or 48%

8. $\frac{7}{25}$, or 28%

9. $\frac{21}{25}$, or 84%

10. $\frac{17}{50}$, or 34%

11. 0, or 0%

12. $\frac{3}{20}$, or 15%

13. 45 tiles

14. 5 cards

15. $\frac{1}{3}$, or about 33.3%

16. $\frac{1}{6}$, or about 16.7%

17. $\frac{1}{2}$, or 50%

18. $\frac{1}{2}$, or 50%

19. 1, or 100%

20. 0, or 0%

24. **a.** $\frac{4}{9}$, or about 44.4%

b. 5 males

29. **a.** $\frac{1}{12}$; 50 times

b. $\frac{11}{50}$; 132 times

c. A larger number of trials should result in a more accurate probability, which gives a more accurate prediction.

pp. 657-659 #6-13, 15-25, 31-33

6. *Sample space:*
Miniature golf 1 P.M.–3 P.M.,
Miniature golf 6 P.M.–8 P.M.,
Laser tag 1 P.M.–3 P.M.,
Laser tag 6 P.M.–8 P.M.,
Roller skating 1 P.M.–3 P.M.,
Roller skating 6 P.M.–8 P.M.;
6 possible outcomes

7. *Sample space:* Realistic Lion, Realistic Bear, Realistic Hawk, Realistic Dragon, Cartoon Lion, Cartoon Bear, Cartoon Hawk, Cartoon Dragon; 8 possible outcomes

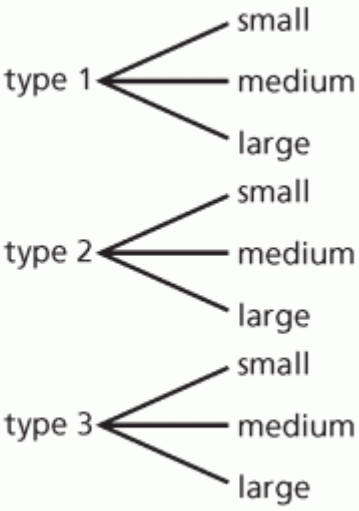
8. 21

9. 20

10. 24

11. 60

12. Tree Diagram:



Fundamental Counting Principle: $3 \cdot 3 = 9$

13. The possible outcomes of each question should be multiplied, not added.
The correct answer is $2 \times 2 \times 2 \times 2 \times 2 = 32$.

15. $\frac{1}{10}$, or 10%

16. $\frac{1}{5}$, or 20%

17. $\frac{1}{5}$, or 20%

18. 0, or 0%

19. $\frac{2}{5}$, or 40%

20. $\frac{3}{10}$, or 30%

21. $\frac{1}{18}$, or $5\frac{5}{9}\%$

22. $\frac{1}{9}$, or $11\frac{1}{9}\%$

23. $\frac{1}{9}$, or $11\frac{1}{9}\%$

24. $\frac{2}{9}$, or $22\frac{2}{9}\%$

25. **a.** $\frac{1}{9}$, or about 11.1%

b. It increases the probability that your guesses are correct to $\frac{1}{4}$, or 25%, because you are only choosing between 2 choices for each question.

31. *Sample answer:* adjacent: $\angle XWY$ and $\angle ZWY$, $\angle XWY$ and $\angle XWV$; vertical: $\angle VWX$ and $\angle YWZ$, $\angle YWX$ and $\angle VWZ$

32. *Sample answer:* adjacent: $\angle LJM$ and $\angle LJK$, $\angle LJM$ and $\angle NJM$; vertical: $\angle KJL$ and $\angle PJN$, $\angle PJQ$ and $\angle MJL$

33. B

pp. 665-667 #3-13, 18-23

3. independent; The outcome of the first roll does not affect the outcome of the second roll.

4. dependent; Your friend's lane number cannot be the same as your lane number. So, your friend's lane number depends on your lane number.

5. $\frac{1}{8}$

6. $\frac{1}{4}$

7. $\frac{3}{8}$

8. $\frac{3}{8}$

9. $\frac{1}{42}$

10. $\frac{1}{14}$

11. $\frac{2}{21}$

12. $\frac{2}{7}$

13. The two events are dependent, so the probability

of the second event is $\frac{1}{3}$.

$P(\text{red and green}) = \frac{1}{4} \cdot \frac{1}{3} = \frac{1}{12}$

18. $\frac{1}{162}$, or about 0.62%

19. $\frac{5}{162}$, or about 3.1%

20. $\frac{10}{81}$, or about 12.3%

21. $\frac{4}{81}$, or about 4.9%

22. $\frac{20}{81}$, or about 24.7%

23. $\frac{3}{4}$

pp. 671 #1-15

1. 2
2. 0
3. 4
4. $\frac{3}{10}$, or 30%
5. $\frac{1}{4}$, or 25%
6. $\frac{3}{4}$, or 75%
7. 0, or 0%
8. $\frac{2}{15}$, or about 13.3%
9. $\frac{11}{30}$, or about 36.7%
10. $\frac{43}{120}$, or about 35.8%
11. 1, or 100%
12. 12
13. 8
14. $\frac{2}{5}$, or 40%
15. $\frac{1}{10}$, or 10%

pp. 676-677 #5-15, 24

5. biased; The sample is not selected at random and is not representative of the population because students in a band class play a musical instrument.
6. unbiased; The sample is representative of the population, selected at random, and large enough to provide accurate data.
7. biased; The sample is not representative of the population because people who go to a park are more likely to think that the park needs to be remodeled.
8. yes; The sample is representative of the population, selected at random, and large enough to provide accurate data. So, the sample is unbiased and the conclusion is valid.
9. no; The sample is not representative of the population because people going to the baseball stadium are more likely to support building a new baseball stadium. So, the sample is biased and the conclusion is not valid.
10. Sample B because it is a larger sample.
11. Sample A; it is representative of the population.
12. 696 students
13. sample; It is much easier to collect sample data in this situation.

14. A population because there are few enough students in your homeroom to not make the surveying difficult.

15. sample; It is much easier to collect sample data in this situation.

24. A

11) 27, 33, 34, 35, | 37 | 39, 40, 41, 54

Q1 = $\frac{33+34}{2}$ = 33.5 ; median = 37 ; Q3 = $\frac{40+41}{2}$ = 40.5 ; IQR = 40.5 − 33.5 = 7

13) 106, 127, 129, 132, | 135 | 138, 140, 158

Q1 = $\frac{127+129}{2}$ = 128 ; median = $\frac{132+135}{2}$ = 133.5 ; Q3 = $\frac{138+140}{2}$ = 139 ; IQR = 139 − 128 = 11

15) $10\frac{1}{4}, 13\frac{1}{2}, 16\frac{1}{4}, 16\frac{3}{4}, 18\frac{1}{2}, 19, | 21 |, 21\frac{1}{2}, 26\frac{1}{2}, 28\frac{1}{2}, 29, 32$

Q1 = $\frac{16\frac{3}{4}+16\frac{1}{4}}{2}$ = $16\frac{1}{2}$; median = 20 ; Q3 = $\frac{26\frac{1}{2}+28\frac{1}{2}}{2}$ = $27\frac{1}{2}$

Range = $32 - 10\frac{1}{4} = 21\frac{3}{4}$ → The distances traveled by the paper airplane vary no more than $21\frac{3}{4}$ feet.

IQR = $27\frac{1}{2} - 16\frac{1}{2} = 11$ → The middle half of the distances traveled by the paper airplane vary by no more than 11 feet.

19) 21, 53, 74, 82, 84, | 93 | 103, 108, 116, 122, 193

Q1 = 74 ; median = 93 ; Q3 = 116

Range = 193 − 21 = 172

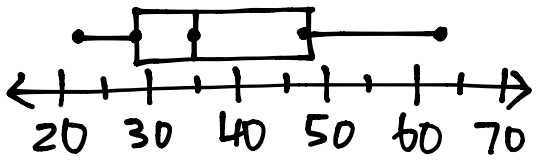
IQR = 116 − 74 = 42

23) mean = $\frac{8+14+22+7+2+11+25+7+5+9}{10} = \frac{110}{10} = 11$

25) $S = 2(9.2) + 2(4.2) + 2(9.4) = 36 + 16 + 72 = 124\ m^2$ (D)

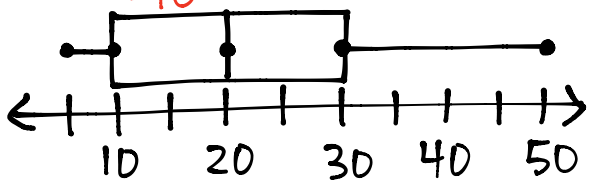
5) 22, 26, 28, 30, 32, 35 | 35, 42, 45, 49, 50, 62

$Q1 = \frac{28+30}{2} = 29$ median = 35 $Q3 = \frac{45+49}{2} = 47$



7) 5, 5, 10, 10, 15, 15 | 20 | 20, 25, 30, 30, 35, 50

$Q1 = \frac{10+10}{2} = 10$ median $Q3 = \frac{30+30}{2} = 30$



9) The error is that the data should be ordered from least to greatest before finding the 5-number summary (least, Q1, median, Q3, greatest) for the box-and-whisker plot.

11) a. $\frac{1}{2}$ because the median is 500, so $\frac{1}{2}$ the data is at least 500

b. More spread out above because the right whisker is longer than the left.

c. IQR = 600 − 450 = 150

The middle half of the data varies no more than 150 gal.

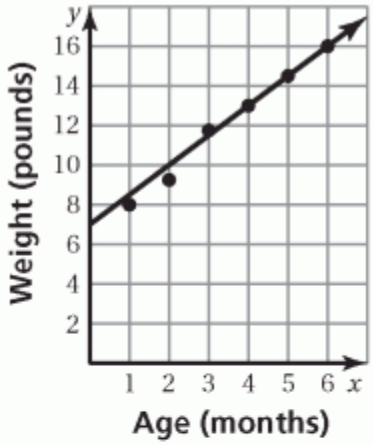
pp. 404 (#1-7)

1. **a.** 1960

   b. about 250 million

   c. There is a positive linear relationship between year and population.

2. **a.**



   b. *Sample answer:* $y = 1.5x + 7$

   c. The slope is 1.5 and the y-intercept is 7. So, the baby is gaining 1.5 pounds per month and was born with a weight of 7 pounds.

   d. 17.5 pounds

3. 48 students like nonfiction;
   22 students dislike nonfiction;
   46 students like fiction;
   24 students dislike fiction.

4. *Sample answer:* histogram; shows frequencies of data values in intervals of the same size

5. *Sample answer:* line graph; shows how data change over time

6. $y = 19.9x + 1352.4$; The correlation coefficient is about 0.986. This means that the relationship between years and the numbers of students taking the SAT is a strong positive correlation and the equation closely models the data.

7.

		Use reuseable bags?		
		Yes	No	Total
Gender	Male	15	45	60
	Female	60	50	110
	Total	75	95	170

pp. 687-691 #1-15, odd, 16-24

1. **a.** 2

   b. 1 green, 1 purple

2. **a.** 3

   b. 3 orange, 3 blue, 3 purple

3. **a.** 5

   b. 1 green, 1 purple, 3 orange, 3 blue, 3 purple

4. **a.** 3

   b. 2 blue, 2 orange, 2 green

5. **a.** 8

   b. 1 green, 1 purple, 2 blue, 2 orange, 2 green, 3 orange, 3 blue, 3 purple

6. **a.** 5

   b. 1 green, 1 purple, 2 blue, 2 orange, 2 green

7. $\frac{1}{2}$, or 50%

8. $\frac{8}{35}$, or about 22.9%

9. $\frac{43}{70}$, or about 61.4%

10. $\frac{57}{70}$, or about 81.4%

11. $\frac{2}{5}$, or 40%

12. $\frac{1}{4}$, or 25%

13. $\frac{3}{8}$, or 37.5%

14. $\frac{5}{8}$, or 62.5%

15. $\frac{1}{8}$, or 12.5%

16. 12

17. 90

18. $\frac{1}{8}$, or 12.5%

19. $\frac{2}{7}$, or about 28.6%

20. $\frac{1}{14}$, or about 7.1%

21. $\frac{4}{21}$, or about 19.0%

22. $\frac{1}{21}$, or about 4.8%

23. biased; The sample is not selected at random and is not representative of the population because students in the biology club like biology.

24. **a.** Class A:
median = 88, IQR = 6;
Class B:
median = 91, IQR = 9;
In general, Class B has greater scores than Class A. Class A has less variation than Class B.

b. The difference in the medians is about 0.3 to 0.5 times the IQR.