### Additional Exercises 7.1

1. At an election, 72 out of every 100 eligible voters turned out to vote. What percent of eligible voters turned out? Write each percent as a decimal.

   2. 5%
   3. 3.4%
   4. 0.6%
   5. 179%
   6. 45%

Write each decimal as a percent.

   7. 0.49
   8. 0.003
   9. 0.724
   10. 4.6

Write each percent as a fraction or mixed number in simplest form.

   11. 24%
   12. 1.3%
   13. 120%
   14. 230%

Write each fraction or mixed number as a percent.

   15. \( \frac{13}{25} \)
   16. \( \frac{1}{5} \)
   17. \( 3 \frac{1}{4} \)

Write each fraction as a percent. Round to the nearest hundredth percent.

   18. \( \frac{1}{18} \)
   19. \( \frac{4}{11} \)

20. 6.5% of dogs in a community do not have a license. Write this percent as a fraction.
Additional Exercises 7.2

Translate each to a proportion. Do not solve.

1. 12% of 42 is what number?
2. What number is 30% of 50?
3. 60% of what number is 18?
4. What percent of 120 is 30?

Solve. (Round to the nearest tenth if necessary.)

5. What number is 45% of 360?
6. 30% of 170 is what number?
7. 72 is 80% of what number?
8. 10 is 20% of what number?
9. 50 is what percent of 450?
10. 60 is what percent of 240?
11. 9.2 is 20% of what number?
12. 1.5 is 25% of what number?
13. 20 is 10% of what number?
14. 875 is $8\frac{1}{4}$% of what number?
15. 3.2 is what percent of 128?
16. What percent of 45 is 90?
17. What percent of 20 is 12.5?
18. 0.5% of 100 is what number?
19. 150% of what number is 60?
20. 10% of 86 is what number?
Name:  
Instructor:  

Additional Exercises 7.3

Translate each to an equation. Do not solve.

1. 62\% of 80 is what number?
2. What number is 8\% of 75?
3. 25\% of what number is 40?
4. 7.2 is 15\% of what number?
5. 2.5 is what percent of 25?
6. 15 is what percent of 50?

Solve. (Round to the nearest tenth if necessary.)

7. 40\% of 80 is what number?
8. What number is 95\% of 800?
9. 20 is 25\% of what number?
10. 60\% of what number is 80?
11. 8 is what percent of 24?
12. 25 is what percent of 50?
13. 15\% of 10 is what number?
14. 50 is what percent of 150?
15. 105 is what percent of 2100?
16. 125 is 50\% of what number?
17. 110\% of 20 is what number?
18. 8.6 is what percent of 86?
19. What percent of 1.2 is 1.8?
20. 230\% of what number is 49?
Additional Exercises 7.4

Solve. Round percents to the nearest tenth if necessary.

1. An inspector found 40 defective batteries during an inspection. If this is 2.5% of the total number of batteries inspected, how many batteries were inspected?

2. Judy paid 15% of the purchase price of a $95,000 home as a down payment. How much did she pay down?

3. The Brown family total income is $4200 per month. Last month they spent $210 dining out. What percent of their monthly income was spent on dining out?

4. On average, 0.5% of the cookies baked by a bakery are discarded. If 210 cookies were discarded during one week, how many were baked?

5. Elaine’s salary last year was $40,000. This year she received a 5% raise. What is her salary this year?

6. Last year, Mrs. Lutz had 12 piano students. This year she has 16 students. Find the percent increase.

7. The average number of customers per day at Bill’s Toy Store decreased from 140 to 110. Find the percent decrease.

8. The Rocky Valley Motel charges $120.00 a night during the summer, but $90.00 a night during the fall. What is the percent decrease?

9. The price of a gallon of milk increased from $3.05 to $3.68. Find the percent increase.

10. With the addition of a new wing, a rural hospital with 150 beds now has 225 beds. Find the percent increase.
**Additional Exercises 7.4 (cont.)**

11. A bill passed to decrease taxes by 2%. If Sean paid $280 in taxes last year, what tax will he pay this year if his income remains the same?

12. The wholesale cost of a lamp is $15. If a store has a standard mark-up of 40%, what will be the retail purchase price of the lamp?

13. The size of a family's cattle herd was 450 before selling 240 heifers. What was the size of the herd after the sale and what was the percent decrease?

14. A salad dressing has 150 mg of sodium per serving. This is 15% of the daily recommended amount of sodium. What is the daily recommended amount of sodium?

15. There are 190 calories of fat per 2 tablespoon serving of crunchy peanut butter. 130 of these are from fat. What percentage of the total calories are from fat?

16. Find the percent increase if 400 is increased to 500.

17. Find the amount of increase and new amount if 45 is increased by 20%.

18. Find the percent decrease if 150 is decreased to 120.

19. Find the new amount if $84.50 is decreased by 12%.

20. A local computer company produces 120 computers per month. If production is increased by 5%, what is now produced monthly?
Additional Exercises 7.5

Solve.

1. If the sales tax rate is 4%, find the sales tax on a $280 fax machine.

2. What is the sales tax on a $450 television if the sales tax rate is 4%?

3. A refrigerator sells for $625. With a sales tax rate of 6.5%, find the total price.

4. A sport-utility vehicle sells for $20,500. If the sales tax rate is 5%, find the total price.

5. Daniel bought shoes for $80 and a shirt for $215. Find the total price he paid if the sales tax rate was 5.5%.

6. The sales tax is $32.50 on a desk priced at $650. Find the sales tax rate.

7. The sales tax is $0.72 on a $12 purchase. Find the sales tax rate.

8. Find the amount of sales tax on a $50.49 item with a 6.25% sales tax rate.

9. Hazel is paid a commission rate of 4% on all sales. If her sales were $100,000 last month, what was her commission for the last month?

10. Evelyn receives a 3.5% commission on all sales. If she sold $1200 worth of merchandise last week, what was her commission?

11. A salesman earned a commission of $250 for selling $56,000 worth of hardware. What is his commission rate?

12. How much commission will Keith receive from the sale of an $89,000 home if he receives 2% of the sale price?

13. An insurance agent earned $10,000 for selling $2,500,000 worth of insurance. What is her commission rate?

Find the amount of discount and the sale price.

<table>
<thead>
<tr>
<th>Original price</th>
<th>Discount Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>$70</td>
<td>10%</td>
</tr>
<tr>
<td>$5000</td>
<td>25%</td>
</tr>
<tr>
<td>$300</td>
<td>10%</td>
</tr>
<tr>
<td>$1000</td>
<td>30%</td>
</tr>
<tr>
<td>$200</td>
<td>50%</td>
</tr>
<tr>
<td>$65</td>
<td>15%</td>
</tr>
<tr>
<td>$85</td>
<td>20%</td>
</tr>
</tbody>
</table>

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### Additional Exercises 7.6

Find the simple interest.

<table>
<thead>
<tr>
<th>Principal</th>
<th>Rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>$300</td>
<td>8%</td>
<td>2 years</td>
</tr>
<tr>
<td>$1500</td>
<td>6%</td>
<td>3 years</td>
</tr>
<tr>
<td>$3000</td>
<td>12%</td>
<td>2 years</td>
</tr>
<tr>
<td>$1500</td>
<td>7%</td>
<td>7 years</td>
</tr>
<tr>
<td>$1200</td>
<td>6.5%</td>
<td>6 months</td>
</tr>
<tr>
<td>$800</td>
<td>12%</td>
<td>8 months</td>
</tr>
</tbody>
</table>

Solve.

7. Steve borrows $2000 and agrees to pay it back in 2 years. If the simple interest rate is 10%, find the total amount he pays back.

8. Matt takes out a 9-month short-term loan of $1500 to buy a new computer. If the interest rate is 12%, find the total amount due at the end of the 9 months.

9. A certificate of Deposit pays simple interest at a 7.5% interest rate. Find the value of a $2000 18-month CD.

10. Find the total amount due if $500 is borrowed at 8% simple interest for 6 months.

Find the total amount in each compound interest account.

11. $8000 is compounded annually at a rate of 15% for 3 years.
**Additional Exercises 7.6 (cont.)**

12. $10,000 is compounded monthly at a rate of 5% for 1 year.

13. $500 is compounded quarterly at 10% for 2 years.

14. $3000 is compounded semiannually at a rate of 10% for 1 year.

15. $4000 is compounded quarterly at 8% for 2 years.

Solve.

16. $4200 is borrowed for 3 years. Find the total amount due at 6%, simple compounding.

17. $25,000 is borrowed for 20 years. Find the total amount due at 8%, simple compounding.

18. $2000 is borrowed for 9 months. Find the total amount due at 12%, simple compounding.

Find the compound interest earned.

<table>
<thead>
<tr>
<th>Principal</th>
<th>Rate</th>
<th>Frequency</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. $12,000</td>
<td>10%</td>
<td>Monthly</td>
<td>1 year</td>
</tr>
<tr>
<td>20. $1200</td>
<td>7%</td>
<td>Quarterly</td>
<td>7 years</td>
</tr>
</tbody>
</table>
Additional Exercises 8.1

Use the following bar graphs for problems 1 – 5. Deaths from heart disease rounded to the nearest thousand.

### Heart Disease Deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>770</td>
</tr>
<tr>
<td>1990</td>
<td>725</td>
</tr>
<tr>
<td>1995</td>
<td>740</td>
</tr>
</tbody>
</table>

Source: National Center for Health Statistics

1. Find the difference in heart related deaths from 1985 to 1995.

2. Does this difference show a decrease or an increase in the number of deaths?

3. Find the ratio of deaths in 1985 to 1990.


5. What can be said about heart disease related deaths for this 10 year period?

Use the following bar graph for problems 6 – 8.

### HIV Infections

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>24</td>
</tr>
<tr>
<td>1995</td>
<td>43</td>
</tr>
</tbody>
</table>

Source: National Center for Health Statistics

6. Find the difference between the number of HIV deaths in 1990 and 1995.

7. Does this amount represent an increase or a decrease in deaths?

8. Find the ratio of deaths in 1990 to the number in 1995.
Additional Exercises 8.1 (cont.)

Use the following line graph for problems 9 – 12.

**Smokers ages 18 and over**

<table>
<thead>
<tr>
<th>State</th>
<th>% of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>25</td>
</tr>
<tr>
<td>Arizona</td>
<td>20</td>
</tr>
<tr>
<td>California</td>
<td>15</td>
</tr>
<tr>
<td>Hawaii</td>
<td>10</td>
</tr>
<tr>
<td>Montana</td>
<td>5</td>
</tr>
<tr>
<td>New Mexico</td>
<td>10</td>
</tr>
<tr>
<td>New York</td>
<td>15</td>
</tr>
<tr>
<td>Texas</td>
<td>20</td>
</tr>
</tbody>
</table>

9. Estimate the percentage of 18 year old and older smokers for Alaska. 
9. ___________________________

10. Approximate the percentage of smokers for Hawaii. 
10. ___________________________

11. Approximate the percentage of smokers for Texas. 
11. ___________________________

12. What can be said from the line graph about Montana, New Mexico, and New York? 
12. ___________________________

Use the following line graph for problems 13 – 17.

**Touchdowns (through 3/2000)**

- Davis (Redskins)
- Smith (Cowboys)
- Moss (Vikings)
- Dudley (Redskins)
- Gary (Broncos)
- Ismail (Cowboys)
- Labreux (Cowboys)
- McCaffrey (Broncos)
- Stewart (Jaguars)

13. Find the number of touchdowns for Davis (Redskins). 
13. ___________________________

14. Find the number of touchdowns for Moss (Vikings). 
14. ___________________________
Additional Exercises 8.1 (cont.)

15. Find the total number of touchdowns for the Bronco players.
16. Find the total number of touchdowns for the Cowboy players.
17. Which players had the same number of touchdowns?

Use the following pictograph for problems 18 – 20.

<table>
<thead>
<tr>
<th>Deaths Due to Flu</th>
<th>🦁 = 10 deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>🦁</td>
</tr>
<tr>
<td>1990</td>
<td>🦁</td>
</tr>
<tr>
<td>1995</td>
<td>🦁</td>
</tr>
<tr>
<td>2000</td>
<td>🦁</td>
</tr>
</tbody>
</table>

Source: National Center for Health Statistics

19. What can be said about flu deaths over the years?
20. Estimate the number of deaths from flu for 2000.
Additional Exercises 8.2

Use the following circle graph for problems 1 – 3.

1. Find the ratio of time spent watching T.V. to time spent on magazines and newspapers.
2. Find the ratio of time spent watching T.V. (more than 10 hours) to time less than 10 hours per week.
3. Find the ratio of hours spent listening to the radio to time spent watching T.V.

Use the following information for problems 4 – 7.
A local high school has 900 students.
Seniors 25%
Juniors 20%
Sophomores 20%
Freshmen 35%

4. Use the information to draw a circle graph.
5. From your graph – find the ratio of freshmen to seniors.
6. Find the ratio of seniors to total students.
7. Find the ratio of juniors to freshmen.

Source: Rand Youth Poll
Knowing how teens spend their time helps advertisers make decisions about strategies in marketing.

Teens (13 – 19) spending 10 or more hours per week.

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**Additional Exercises 8.2 (cont.)**

Use the following information for problems 8 – 11.

A survey of 50 cookie eaters revealed that
- 34 people preferred Chocolate Chip
- 10 people preferred Oatmeal Raisin
- 2 people preferred Fig cookies
- 2 people preferred Coconut cookies
- 2 people preferred Date Nut cookies

8. Use the information to make a circle graph.

9. Find the ratio of those who preferred Chocolate Chip to Oatmeal cookies.

10. Find the ratio of those who preferred Coconut cookies to Chocolate Chip cookies.

11. Find the ratio of those who preferred Date Nut cookies to the total number of people in the survey.

12. Those who preferred Chocolate Chip Cookies represented almost half of the people surveyed. Is this statement true or false?
Additional Exercises 8.2 (cont.)

The circle graph represents 100 students enrolled in a junior college algebra class.

13. Estimate the number of students receiving A's.

14. Estimate the number of students receiving a C.

15. Estimate the number of students who withdrew from the course.

16. Find the ratio of students receiving A's to students receiving F's.

17. Find the ratio of students receiving A's, B's, and C's to the total number of students.

Of 100 people surveyed about their musical interests, (round to the nearest whole number):

18. Determine the number of people who like Country Music.

19. Estimate the number of people who like Rock.

20. Estimate the number of people who like Jazz.
Additional Exercises 9.1

Identify each figure as a line, a ray, a line segment, or an angle.

1. \( \overrightarrow{AB} \)

2. \( \overrightarrow{CD} \)

3. \( \overrightarrow{XY} \)

Find the measure of each angle in the figure.

4. \( \angle XWY \)

5. \( \angle XWZ \)

6. \( \angle VWY \)

Classify each angle as acute, right, obtuse, or straight.

7. \( \overrightarrow{WZ} \)

8. \( \overrightarrow{WX} \)

9. \( \overrightarrow{VX} \)

10. \( \overrightarrow{VY} \)
Additional Exercises 9.1 (cont'd)

11. Find the complement of a $85^\circ$ angle.

12. Find the supplement of a $125^\circ$ angle.

Find the measure of $\angle x$ in each figure.

13. 

14. 

15. Identify the pairs of complementary angles.

16. Identify the pairs of complementary angles.

17. Find the measures of angle $x$, $y$, and $z$ in each picture

18. 

19. Find the measure of $\angle x$

20. 

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Additional Exercises 9.2

Find the perimeter of each figure.

1. 9 ft. 4 ft.

2. 9 ft. 12 ft. 18 ft.

3. 4.8 m

4. 2 yd. 3.5 yd.

5. Baseboard is to be installed in a rectangular room that is 30 feet by 40 feet. Determine how much baseboard is needed.

6. Find the amount of fencing that is needed to enclose a rectangular field 240 feet by 360 feet.

Find the perimeter of each figure.

7. 4 cm

8. 4 m 5 m

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Additional Exercises 9.2 (cont'd)

9.  

12 mm

10 mm

14 mm

8 in.

10 in.

5 in.

2 in.

3 in.

Find the circumference of each circle. Give the exact circumference and then an approximation. Use $\pi \approx 3.14$.

15.  

12 ft.

16.  

10 m

17. Find the circumference of a circle with radius of 7 cm.

18. Find the circumference of a circle with radius of 3 mi.

19. A circular track has a radius of 264 feet. About how many laps around the track does it take to make a mile? Round to a whole number.

20. A landscape design calls for a circular water fountain. The circumference of the fountain is 31.4 ft. Find the length of pipe to the center for the water connections.

Date:  
Section:
Additional Exercises 9.3

Find the area of the geometric figure. If the figure is a circle, give an exact area and then use \( \pi \approx 3.14 \) to approximate the area.

1. 
   \[
   \text{rectangle with base 2.2 m and height 5 m}
   \]
   
2. 
   \[
   \text{triangle with base 9 yd and height 4.5 yd}
   \]
   
3. 
   \[
   \text{triangle with base 7 ft and height 9 ft}
   \]
   
4. 
   \[
   \text{circle with radius 16 miles}
   \]
   
5. 
   \[
   \text{circle with radius 12 ft}
   \]
   
6. 
   \[
   \text{trapezoid with bases 1.5 ft and 2 ft, and height 3.5 m}
   \]
   
7. 
   \[
   \text{rectangle with base 5 m and height 3.5 m}
   \]
Additional Exercises 9.3 (cont'd)

8.  
   \[ \begin{array}{c} 
   \text{9 ft} \\
   \text{6 ft.} \\
   \text{12 ft.} 
   \end{array} \]

9.  
   \[ \begin{array}{c} 
   \text{12 in.} \\
   \text{7 in.} \\
   \text{3 in.} \\
   \text{10 in.} \\
   \text{5 in.} \\
   \text{4 in.} \\
   \text{10 in.} 
   \end{array} \]

10.  
   \[ \begin{array}{c} 
   \text{4 m} \\
   \text{6 m} 
   \end{array} \]


12. A round tablecloth has a 48-inch diameter. Approximate its area. Use the approximation \( \pi \approx 3.14 \).

Find the volume of each solid. Use \( \frac{22}{7} \) for \( \pi \). Approximate to the nearest hundredth when necessary.

13.  
   \[ \begin{array}{c} 
   \text{6 mm} \\
   \text{12 mm} \\
   \text{50 mm} 
   \end{array} \]
Additional Exercises 9.3 (cont'd)

14. [Diagram of a cube with sides 2.5 ft.]
2.5 ft.  2.5 ft.  2.5 ft.

15. [Diagram of a triangle with sides 30 m and 15 m]
30 m
15 m

16. [Diagram of a cylinder with height 12 cm]
12 cm

17. [Diagram of a triangle with sides 6 m and 4 m]
6 m
4 m

18. [Diagram of a circle with radius 6 cm]

19. Approximate to the nearest hundredth, the volume of a cylinder 5 centimeters tall if the base has a diameter of 8 centimeters. Use \( \frac{22}{7} \) for \( \pi \).

20. Find the capacity (volume in cubic centimeters) of a rectangular ice chest with inside measurements of 46 centimeters by 40 centimeters by 20 centimeters.
Additional Exercises 9.4

Convert each measurement as indicated.

1. $\frac{2}{3}$ miles to feet

2. 7920 feet to miles

3. 15 feet to yards

4. 132 in. = _________ yd. _________ ft.

5. 39 feet = _________ yd.

6. 8 feet 4 in. = _________ in.

Perform each indicated operation. Simplify the result if possible.

7. 3 yd. 2 ft. + 3 yd. 2 ft.

8. 7 ft. 2 in. – 3 ft. 9 in.

9. 7 yd. 1 ft. + 2

10. 4 × 4 ft. 8 in.

11. An airplane is cruising at an altitude of 39,600 feet. How many miles is this?

Convert each measurement as indicated.

12. 100 m to kilometers

13. 34.2 mm to decimeters

14. 0.083 m to millimeters

15. A 68 cm flag pole is mounted on a 17.5 cm pedestal. Find the height of the top of the flagpole from the ground.

Perform each indicated operation.

16. 70 cm + 4.4 m

17. 7 km – 5830 m

18. 4 · 17.2 m

19. 18.9 km + 3

20. Clara needs 50 centimeters of ribbon to make a bow. How many bows can she make out of 8 meters of ribbon?