

# Chapter 6

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**Chapter**  
**6 Percents**

Dear Family,

Family vacations provide a relaxing break from the usual routine. Whether you visit family, go camping, or plan a "stay-cation" at home, you usually need to make a budget for your expenses.

Budgeting for a family vacation may take some research. The rates advertised for hotel rooms usually do not include taxes or resort fees. When dining out, the tax and tip can add quite a bit to the total bill. Vehicle rentals often have extra charges for taxes, insurance, fuel, and mileage that are not usually included in advertised rates. All of these "hidden" costs can increase the cost of your vacation significantly.

Ask your student to help create a budget for your next family vacation. Have him or her research common fees, taxes, and tips for each part of your plan. For example:

- Hotels sometimes have multiple tax rates—for state, county, and local sales taxes, and sometimes even an extra "room tax." Find out what the tax rates are and determine how much this will add to the room charges. Are there other fees, such as resort fees or parking charges?
- Employees in restaurants and hotels usually earn most of their money from tips, so find out who usually receives a tip and what amount is appropriate.
- Rental cars can have many taxes and fees—sometimes these cost as much as the rental fee itself. Try to find out each rate or fee so you can plan accordingly.

Work with your student to make a budget that includes the extra charges for each item. You might want to include other categories in your budget—such as categories for shopping, entertainment, fuel, and parking. Having your student help with the budgeting will involve him or her in planning the vacation—and help your student realize you can't always afford everything you want to do.

Don't forget to write!

**Capítulo  
6****Porcentajes**

Estimada Familia:

Las vacaciones familiares ofrecen un descanso relajante de la rutina cotidiana. Ya sea que se visite a la familia, se vaya de campamento o se quede en casa descansando, generalmente se necesita hacer un presupuesto para los gastos.

Hacer el presupuesto para una vacación familiar puede demandar algo de investigación. Por lo general, las tarifas publicadas de habitaciones de hotel no incluyen impuestos ni costos del complejo.

Al salir a cenar, el impuesto y la propina aumentan de manera regular la cuenta total. Los alquileres de vehículos a menudo cobran extra por impuestos, seguro, gasolina y millaje, lo que generalmente no está incluido en las tarifas publicadas. Todos estos costos "ocultos" pueden aumentar el costo de las vacaciones de manera significativa.

Pida a su estudiante que lo ayude a crear un presupuesto para sus próximas vacaciones familiares. Haga que investigue acerca de precios, impuestos y propinas comunes para cada parte de su plan. Por ejemplo:

- Los hoteles a veces cobran impuestos múltiples—impuestos de ventas estatales, nacionales y locales, y a veces incluso cobran un "impuesto por habitación" adicional. Averigüen las tarifas de impuestos y determinen en cuánto aumentará la cuenta de la habitación. ¿Hay otros gastos, como los costos del complejo o del estacionamiento?
- Los empleados de restaurantes y hoteles generalmente ganan la mayoría de su dinero en propinas, así que averigüen quién recibe generalmente una propina y qué cantidad es la apropiada.
- Los autos de alquiler pueden incluir muchos impuestos y gastos—a veces estos cuestan tanto como el alquiler del coche mismo. Intenten encontrar cada tarifa o gasto para que puedan planear como corresponde.

Trabaje con su estudiante para hacer un presupuesto que incluya los gastos extras de cada artículo. Querrán incluir otras categorías en su presupuesto—como por ejemplo: compras, entretenimiento, gasolina y estacionamiento. El permitir que su estudiante ayude con el presupuesto, lo animará a que planee las vacaciones—y ayude a su estudiante a darse cuenta que no siempre se puede conseguir todo lo que se desea.

¡No se olviden de escribir!

**Activity  
6.1****Start Thinking!**

For use before Activity 6.1

Study the decimal and percent equivalents below. What do you notice?

$0.35 = 35\%$

$0.27 = 27\%$

$0.03 = 3\%$

$0.2 = 20\%$

$0.5 = 50\%$

$1.38 = 138\%$

$2.1 = 210\%$

$6 = 600\%$

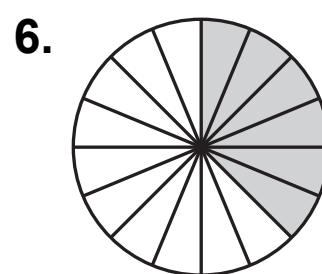
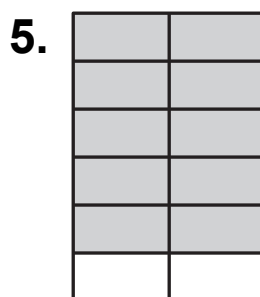
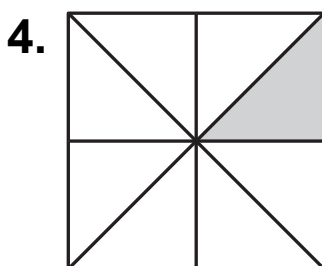
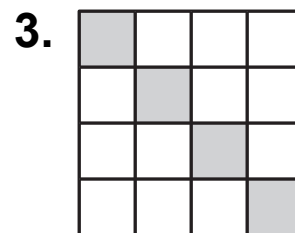
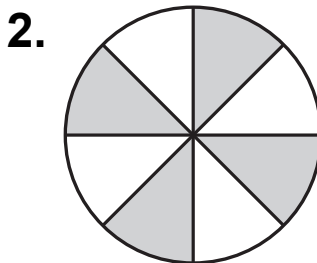
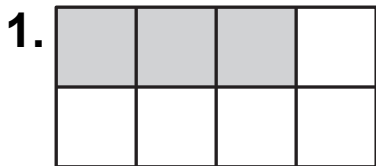
$0.886 = 88.6\%$

Andrew says that  $0.98 = 9.8\%$ . Is he correct? Why or why not?

**Activity  
6.1****Warm Up**

For use before Activity 6.1

Write the fraction represented by the model.



**Lesson**  
**6.1**

**Start Thinking!**

For use before Lesson 6.1

Describe a situation in sports when decimals and percents are used interchangeably.

**Lesson**  
**6.1**

**Warm Up**

For use before Lesson 6.1

**Write the percent as a decimal.**

1. 19%

2. 2%

3. 7.5%

**Write the decimal as a percent.**

4. 0.89

5. 0.54

6. 0.1

## 6.1 Practice A

Write the percent as a decimal.

- |            |           |          |           |
|------------|-----------|----------|-----------|
| 1. 81%     | 2. 78%    | 3. 5%    | 4. 8%     |
| 5. 40%     | 6. 60%    | 7. 23.7% | 8. 16.75% |
| 9. 150%    | 10. 210%  | 11. 186% | 12. 416%  |
| 13. 100.8% | 14. 5.17% | 15. 0.4% | 16. 0.04% |

17. Describe and correct the error in writing 1.475% as a decimal.

$\times$ $1.475\% = 1.475\% = 147.5$
--------------------------------------

Write the decimal as a percent.

- |           |           |            |           |
|-----------|-----------|------------|-----------|
| 18. 0.66  | 19. 0.32  | 20. 0.51   | 21. 0.97  |
| 22. 0.01  | 23. 0.04  | 24. 0.312  | 25. 0.468 |
| 26. 0.5   | 27. 1.2   | 28. 1.08   | 29. 1.16  |
| 30. 0.003 | 31. 0.025 | 32. 0.0245 | 33. 2.025 |

34. Describe and correct the error in writing 1.8 as a percent.

$\times$ $1.8 = 1.8 = 18\%$
-----------------------------

35. Fifty-four percent of the students in your class have moved at least one time. Write this percent as a decimal.
36. Only 0.15 of the total number of vehicles in your school parking lot are buses. What percent of the vehicles are buses?
37. You spent 0.88 of your allowance this week. What percent of your allowance did you spend?
38. On a history test, you get 86 out of a possible 100 points. Write a decimal and a percent that represent a score of 86 out of 100.
39. Of the fluids that you drink on a typical day,  $\frac{1}{10}$  is milk and 50% is water. How many times more water do you drink than milk?

Write the percent as a fraction in simplest form and as a decimal.

- |         |         |         |         |
|---------|---------|---------|---------|
| 40. 21% | 41. 75% | 42. 64% | 43. 85% |
|---------|---------|---------|---------|



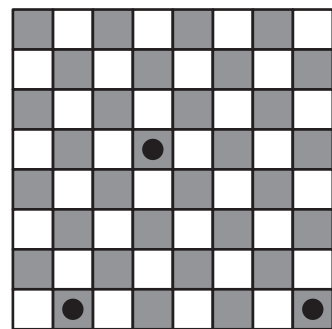
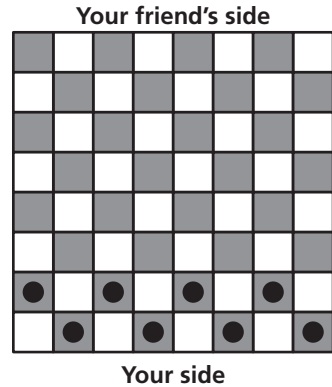
# 6.1

## Enrichment and Extension

### Playing Checkers

You set up a game of checkers as shown. Write a decimal for each percent you find.

1. What percent of the checker board is shaded?
2. What percent of the checker board is *not* shaded?
3. Your friend arrives and places pieces appropriately on the board.
  - a. What percent of the checker board squares have pieces?
  - b. What percent of the checker board squares do *not* have pieces?
  - c. What percent of the shaded checker board squares have pieces?
  - d. What percent of the shaded checker board squares do *not* have pieces?
4. At one point during the game, 4 of your pieces have been removed and 5 of your friend's pieces have been removed.
  - a. What percent of the original number of pieces have been removed?
  - b. What percent of the original number of pieces are remaining?
5. The checker piece near the middle of the board can move diagonally in any direction between shaded squares.
  - a. On how many different squares can the piece be located at the end of on turn?
  - b. On how many different squares can the piece be located at the end of two turns? What percent of the shaded checker board is this? Write this percent as a decimal.







## Puzzle Time

### Why Are Math Assignments Like The Water That Is Found On The Ground In The Early Morning?

Write the letter of each answer in the box containing the exercise number.

**Write the percent as a decimal.**

- |           |            |
|-----------|------------|
| 1. 67%    | 2. 44%     |
| 3. 29.6%  | 4. 46.3%   |
| 5. 22%    | 6. 8%      |
| 7. 58.74% | 8. 80.14%  |
| 9. 277%   | 10. 106%   |
| 11. 0.05% | 12. 0.045% |

**Write the decimal as a percent.**

- |           |            |
|-----------|------------|
| 13. 0.85  | 14. 0.41   |
| 15. 0.98  | 16. 0.657  |
| 17. 0.77  | 18. 0.51   |
| 19. 0.376 | 20. 0.239  |
| 21. 2.57  | 22. 0.0482 |

**Answers for Exercises 1–12**

- |           |            |
|-----------|------------|
| T. 2.77   | E. 0.00045 |
| S. 0.296  | O. 0.22    |
| B. 0.67   | H. 1.06    |
| R. 0.8014 | P. 0.5874  |
| O. 0.463  | D. 0.44    |
| E. 0.0005 | U. 0.08    |

**Answers for Exercises 13–22**

- |          |          |
|----------|----------|
| B. 37.6% | P. 65.7% |
| S. 4.82% | A. 23.9% |
| T. 85%   | E. 98%   |
| U. 257%  | D. 51%   |
| O. 77%   | E. 41%   |

19	17	9	10		20	8	12		3	6	7	16	5	22	15	2		13	4		1	11		18	21	14
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**Activity  
6.2****Start Thinking!**

For use before Activity 6.2

What are two methods that you can use to compare two fractions?

Use one of the methods you described to tell whether  $\frac{21}{40}$  or  $\frac{7}{12}$  is greater. Which method did you use? Why?

**Activity  
6.2****Warm Up**

For use before Activity 6.2

**Order the decimals from least to greatest.**

1. 1.4, 1.44, 4.1, 4.3, 3.3
2. 0.5, 1.75, 0.7, 1.57, 1.5
3. 0.44, 0.02, 0.2, 0.04, 0.24
4. 6.6, 0.6, 6.63, 6.06, 0.06
5. 0.2, 0.17, 0.02, 0.72, 2.27
6. 8.1, 0.81, 0.18, 1.8, 1.88

**Lesson  
6.2****Start Thinking!**

For use before Lesson 6.2

Design a survey with three yes or no questions to ask the students in your class. Take turns in class asking the survey questions. Record your results in a table like the one below. You can use fractions, percents, or decimals. Which of your questions had the greatest percent of students answering yes?

Question	Yes	No
Do you play a sport?	$\frac{19}{28}$	$\frac{9}{28}$
Do you play a musical instrument?	20%	80%
Do you have any siblings?	0.85	0.15

**Lesson  
6.2****Warm Up**

For use before Lesson 6.2

**Tell which number is greater.**

1.  $\frac{5}{13}$ , 45%

2. 30%, 0.4

3.  $\frac{9}{17}$ , 50%

4. 0.6,  $\frac{4}{7}$

5.  $\frac{2}{5}$ , 0.225

6. 240%, 0.24

# 6.2

## Practice A

Tell which number is greater.

- 1.  $\frac{3}{4}$ , 70%
- 2.  $\frac{1}{2}$ , 0.54
- 3. 0.21, 21%
- 4.  $\frac{2}{3}$ , 66%
- 5. 0.482, 49%
- 6. 16%, 0.108
- 7.  $\frac{12}{25}$ , 48%
- 8.  $\frac{1}{10}$ , 12%
- 9. 1.2, 11%
- 10. 58%,  $\frac{31}{50}$
- 11. 5020%,  $50\frac{1}{4}$
- 12. 12.25%,  $\frac{1}{8}$

13. Describe and correct the error in comparing 0.7% and  $\frac{17}{25}$ .

$\times$   $\frac{17}{25} = \frac{68}{100} = 0.68\%$

$\times 4$  (above arrow)   
 $\times 4$  (below arrow)

0.7% is greater than 0.68%, so 0.7% is the greater number.

Use a number line to order the numbers from least to greatest.

- 14. 0.64,  $\frac{13}{20}$ , 63%
  - 15. 45%, 0.46,  $\frac{11}{25}$
  - 16. 0.12,  $\frac{1}{8}$ , 0.135, 13%
  - 17.  $\frac{15}{16}$ , 90%, 0.925,  $\frac{7}{8}$ , 0.93
  - 18.  $3\frac{2}{3}$ , 362%, 3.66,  $3\frac{3}{5}$ , 36
  - 19. 0.3, 27.3%,  $\frac{11}{40}$ , 28%, 0.27
20. You use 8 fluid ounces of fruit juice in a recipe to make 64 fluid ounces of fruit punch. A fruit punch you can buy at the store has 10% real fruit juice. Which has a higher percent of fruit juice?
21. While shooting baskets at a basketball hoop, you make 36 out of 80 shots. Your friend makes 43.75% of the shots. Who made a higher percent?
22. To earn a bonus in a video game, you must find at least 60% of the hidden gems. You find 25 out of 40 gems. Do you get the bonus? Explain.
23. The table shows the portion of students at a middle school that are in each grade. Order the grades from the least to the greatest number of students.

<b>Grade</b>	6	7	8
<b>Portion of students</b>	$33\frac{1}{3}\%$	0.3125	$\frac{17}{48}$

# 6.2

## Practice B

Tell which number is greater.

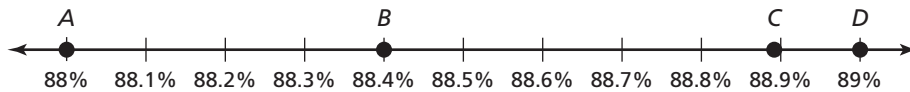
1.  $\frac{1}{4}$ , 22%      2.  $\frac{5}{9}$ , 55%      3. 3.2, 32%      4. 99.9%, 1

Use a number line to order the numbers from least to greatest.

5.  $\frac{1}{3}$ , 0.3, 33%,  $\frac{8}{25}$ , 33.6%      6. 210%, 2.2,  $2.\bar{2}$ ,  $\frac{43}{20}$

Tell which letter shows the graph of the number.

7. 0.884      8.  $\frac{8}{9}$       9.  $\frac{22}{25}$       10. 0.89



11. Describe a process that you can use to find a decimal whose value is between 31% and 32%.
12. Is 6 centimeters greater than 5% of a meter? Explain.
13. Does 6% of a pound weigh more than an ounce? Explain.
14. Order the periods of time from least to greatest.

1% of an hour       $\frac{2}{3}$  of a minute      0.0004 of a day

15. The table shows the portions of the U.S. population that lived in Florida in certain years.

Year	1860	1910	1960	2010
Portion of U.S. Population in Florida	0.45%	0.0082	$\frac{1}{36}$	$\frac{1}{16}$

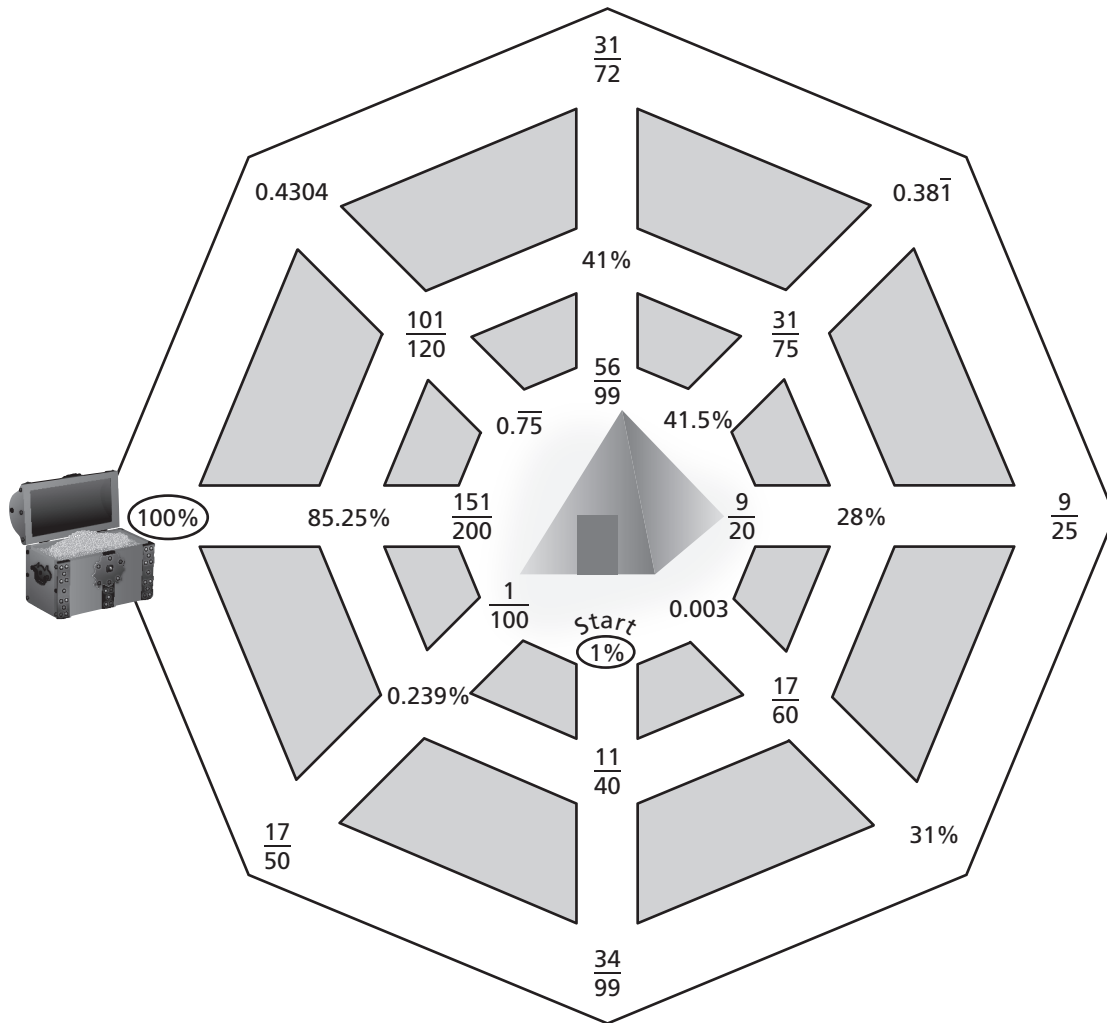
- a. Order the portions from least to greatest.
- b. Since 1860, how has the population of Florida increased compared to the population of the United States? Why do you think this happened?
- c. Do you think this will always happen? Explain your reasoning.
16. Arsenic is toxic to humans. The greatest amount of arsenic that is allowed in drinking water is 10 parts per billion. A test shows that a source of drinking water contains 0.000002% arsenic. Is this an allowable amount? Explain.

# 6.2

## Enrichment and Extension

### Treasure Map

You want to find the treasure shown on the map. To get to the treasure, start at 1% and move to 100%. The only way you can move on the map is if a number is greater than the number you are currently on. List the numbers in order that make up your path to the treasure.





## Puzzle Time

### Why Did The Peach Need To Hire An Attorney?

Write the letter of each answer in the box containing the exercise number.

Tell which number is greater.

- |                          |                          |
|--------------------------|--------------------------|
| 1. $\frac{17}{20}$ , 95% | 2. 30%, 0.03             |
| 3. $\frac{27}{50}$ , 27% | 4. $\frac{14}{25}$ , 60% |
| 5. 0.097, 97%            | 6. 65%, 0.56             |
| 7. 80%, $\frac{7}{8}$    | 8. 0.13, 13.5%           |
| 9. 11%, $\frac{3}{25}$   | 10. 150%, 0.15           |
| 11. $\frac{1}{4}$ , 20%  | 12. 66%, $\frac{2}{3}$   |

Tell which number is the greatest.

- |   |  |
|---|--|
| 13. 28%, $\frac{3}{5}$ , 0.31                   | 14. 79%, 0.52, $\frac{17}{20}$         |
| 15. $\frac{17}{25}$ , 0.81, $\frac{5}{8}$ , 64% | 16. 0.14%, $\frac{7}{20}$ , 0.014, 1.4 |

#### Answers for Exercises 1–12

- |                   |                    |                    |
|-------------------|--------------------|--------------------|
| W. $\frac{3}{25}$ | D. $\frac{14}{25}$ | G. 80%             |
| E. 66%            | R. $\frac{1}{4}$   | L. $\frac{27}{50}$ |
| Y. 97%            | I. 20%             | E. 11%             |
| A. 95%            | T. 150%            | C. 0.15            |
| J. $\frac{2}{3}$  | N. $\frac{7}{8}$   | O. 27%             |
| I. 60%            | S. 30%             | K. 0.56            |
| U. 13.5%          | M. 0.03            | A. 65%             |
| P. 0.097          | B. $\frac{17}{20}$ | F. 0.13            |

#### Answers for Exercises 13–16

- |                    |                  |         |
|--------------------|------------------|---------|
| E. $\frac{5}{8}$   | D. 0.014         | T. 0.81 |
| W. 0.52            | A. $\frac{3}{5}$ | S. 0.31 |
| M. $\frac{17}{20}$ | Y. 79%           | I. 1.4  |
| M. 28%             | R. 0.14%         | B. 64%  |

4	15		9	13	2		10	11	8	3	5		16	7		6		12	1	14
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**Activity**  
**6.3****Start Thinking!**

For use before Activity 6.3

Discuss with a partner how percents are used in a real-life situation.

**Activity**  
**6.3****Warm Up**

For use before Activity 6.3

**Estimate the sum or difference.**

1.  $162 + 98$

2.  $148 - (-69)$

3.  $-239 + 102$

**Estimate the product or quotient.**

4.  $32(-43)$

5.  $\frac{-187}{12}$

6.  $(-49)(-12)$



**Start Thinking!**

For use before Lesson 6.3

At a soccer game, your team scored 6 goals during regular play and 4 goals on penalty kicks. Use a model to show the percent of goals that were not scored by penalty kicks.

**Warm Up**

For use before Lesson 6.3

**Use a model to estimate the answer to the question. Use a ratio table to check your answer.**

1. What number is 20% of 60?
2. 35 is what percent of 70?
3. 51 is 102% of what number?
4. What number is 80% of 130?
5. 72 is what percent of 100?
6. 44 is 55% of what number?

**6.3 Practice A**

Use a model to estimate the answer to the question. Use a ratio table to check your answer.

1. What number is 20% of 40?
2. 12 is what percent of 50?
3. 42 is 60% of what number?
4. What number is 150% of 92?

Write and solve a proportion to answer the question.

5. 40% of what number is 15?
6. 24 is 0.6% of what number?
7. What percent of 75 is 27?
8. 17 is what percent of 68?
9. Of the 60 seeds that you plant, 80% germinate. How many seeds germinate?
10. You are charged 6% sales tax. You purchase a new bicycle and pay \$27 in sales tax. What is the purchase price of the bicycle?

Write and solve a proportion to answer the question.

11. 0.2 is what percent of 16?
12. 19.6 is 24.5% of what number?
13.  $\frac{3}{5}$  is 30% of what number?
14. What number is 45% of  $\frac{5}{9}$ ?
15. You are making 28 name badges for a committee. You complete 75% of these on Monday. How many do you have left to complete on Tuesday?
16. You and your friend are selling tickets for the orchestra concert. On Thursday, you sold 15 tickets and your friend sold 10 tickets.
  - a. What percent of the tickets sold on Thursday did you sell?
  - b. On Friday, you sold 9 tickets and your friend sold 16 tickets. What percent of the tickets sold on Friday did you sell?
  - c. What percent of the total tickets sold on Thursday and Friday did you sell?

**6.3 Practice B**

Write and solve a proportion to answer the question.

1. 55% of what number is 33?
2. What percent of 120 is 42?
3. 36 is 0.8% of what number?
4. 48 is what percent of 64?
5. 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?
6. 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?

7. Describe and correct the error in using the percent proportion to answer the question below.

“6 is 6.25% of what number?”

$\times$	$\frac{a}{w} = \frac{p}{100}$
	$\frac{6}{w} = \frac{0.0625}{100}$
	$w = 9600$

Write and solve a proportion to answer the question.

8.  $\frac{7}{8}$  is 70% of what number?
9. 7.2 is 250% of what number?
10. What number is 72% of  $\frac{3}{8}$ ?
11. 1.4 is what percent of 1.12?
12. You earn a score of 86.8 on a standardized exam. Your score is 140% higher than your friend's score on the standardized exam. What is your friend's score?
13. 80% of a number is  $x$ . What is 40% of the number?
14. Answer each question.
  - a. What is 35% of  $90x$ ?
  - b. What percent of  $16x$  is  $9x$ ?

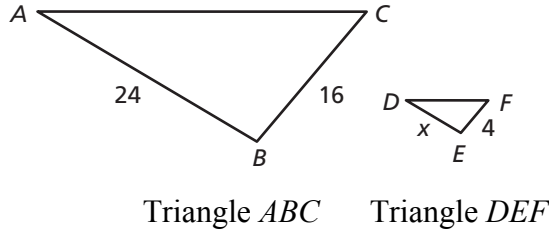
# 6.3

## Enrichment and Extension

### Proportions and Similar Triangles

Triangles that have the same shape but not necessarily the same size are called **similar triangles**. Two triangles are similar when corresponding side lengths are proportional and corresponding angles are congruent.

**Example:** The triangles are similar. Find  $x$ .



$$\frac{AB}{BC} = \frac{DE}{EF}$$

Set up a proportion.

$$\frac{24}{16} = \frac{x}{4}$$

Substitute.

$$24 \cdot 4 = 16 \cdot x$$

Cross multiply.

$$96 = 16x$$

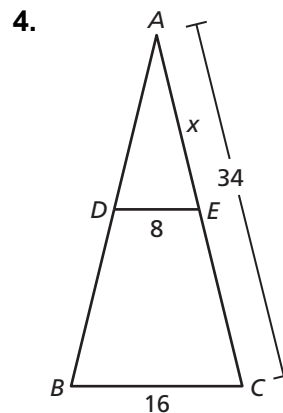
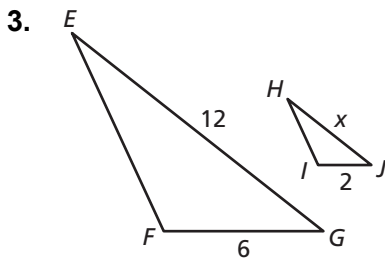
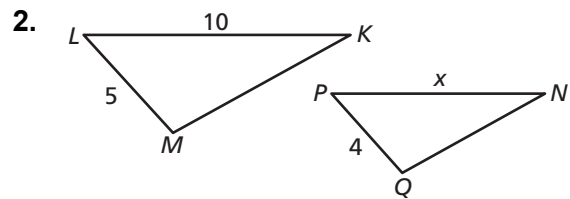
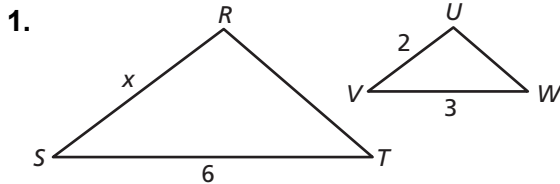
Simplify.

$$6 = x$$

Divide each side by 16.

So,  $x = 6$ .

The triangles are similar. Find  $x$ .





## Puzzle Time

### Did You Hear About The...

A	B	C	D	E	F
G	H	I	J	K	L
M					

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

525 UP
15 HOLDUP
10% WIND
96 PANTS
22 SOCKS
25% WHEN
33 PAIR
200 HELD
37.5% IN
625 ROPE

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

- A. What number is 25% of 60?
- B. 30 is what percent of 80?
- C. 20 is 40% of what number?
- D. What number is 110% of 70?
- E. 32 is what percent of 128?
- F. What percent of 48 is 36?
- G. 12 is what percent of 60?
- H. 8% of what number is 16?
- I. 42 is 8% of what number?
- J. 30% of 140 is what number?
- K. 150% of 22 is what number?
- L. What number is 0.6% of 30?
- M. The seventh-grade class needs to earn money for a trip to the amusement park. Of the 160 seventh-grade students, 60% participate in the fundraiser. How many students participate in the fundraiser?

20% CLOTHESPINS
50 THE
36% SUNSHINE
0.18 OF
120 CLOTHESLINE
75% TWO
100% RAINBOW
42 A
77 YARD
325 WRINKLES

**Activity**  
**6.4****Start Thinking!**

For use before Activity 6.4

Explain to a partner how to use the percent proportion to determine the number of points you need to get a score of 80% on a 45-point test.

**Activity**  
**6.4****Warm Up**

For use before Activity 6.4

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

1. What percent of 15 is 6?
2. 22 is what percent of 40?
3. What number is 60% of 55?
4. 30% of 63 is what number?
5. 0.5% of what number is 0.425?
6.  $\frac{3}{4}$  is 75% of what number?

Two students are working together to answer the question “what number is 5% of 30?”.

One student says to use the percent proportion

$$\frac{30}{x} = \frac{5}{100}$$
 and the other student says to use

the percent equation  $a = 0.05(30)$ .

Who is correct? Explain your reasoning.

Find the number.

**Answer the question. Explain the method you chose.**

1. What number is 30% of 60?
2. 25 is what percent of 75?
3. 42 is 105% of what number?
4. What number is 80% of 120?
5. 45 is what percent of 100?
6. 91 is 65% of what number?

## 6.4 Practice A

Answer the question. Explain the method you chose.

1. 24 is what percent of 60?                      2. 8 is 40% of what number?

Write and solve an equation to answer the question.

3. What number is 70% of 120?                      4. 30 is what percent of 120?
5. 112 is 56% of what number?                      6. 128 is what percent of 80?
7. What number is 140% of 45?                      8. 15 is 6% of what number?
9. 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?
10. 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?
11. You take a test with 32 questions on it. You answer 24 questions correctly. What percent of the questions do you answer correctly?
12. You have  $r$  rare coins, consisting of  $p$  pennies and  $n$  nickels.
- a.  $p$  is 20% of 190. How many pennies do you have?
- b. 190 is 200% of  $r$ . How many rare coins do you have?
- c.  $n$  is 60% of  $r$ . How many nickels do you have?
13. The table shows the sales receipt for your purchase.
- a. The items with a “T” next to the price are subject to sales tax. What percent sales tax did you pay?
- b. Calculate the price of the top.
- c. The price you paid for the top was 60% of the original price. What was the original price of the top?

Item	Price
top	$p$
earrings	\$ 3.00 T
socks	\$ 2.00
granola bar	\$ 0.50 T
<b>Subtotal</b>	\$13.00
<b>Tax</b>	\$ 0.21
<b>Total</b>	\$13.21

Tell whether the following statement is *true* or *false*.

Explain your reasoning.

14. 120% of a whole number is always greater than the number.
15. You can find 0.5% of a number by multiplying the number by  $\frac{5}{100}$ .



## 6.4 Practice B

Answer the question. Explain the method you chose.

1. 27 is what percent of 90?                      2. 7 is 5% of what number?

Write and solve an equation to answer the question.

3. 27 is 0.5% of what number?                      4. What number is 125% of 240?
5. 1.4% of what number is 28?                      6. 27 is what percent of 72?
7. During a given month, there was a total of 23.6 inches of rain. This was 250% of the average rainfall for that month. What is the average rainfall for that month?
8. To maintain an acceptable level of chlorine in your pool, you add 1.4 gallons of chlorine. This is 0.007% of the amount of water in your pool. How many gallons of water are in your pool?
9. You must attend a minimum of 85% of the practices in order to play in the playoffs. You have made 37 of the 42 practices. Will you be able to play in the playoffs?

10. You are in charge of the seventh grade graduation dinner. The table shows the results of a survey of students' meal preferences.

Choice	Percent
Chicken Nuggets	25%
Spaghetti	?
Pizza	45%
Fish Sticks	?

- a. 144 students chose pizza. How many students responded to the survey?
- b. How many students chose chicken nuggets?
- c. The number of students choosing fish sticks was 50% of the number of students choosing spaghetti. How many students chose fish sticks?
- d. How many students chose spaghetti?
11. What is 15% of 40% of \$180?
12. There are 15 copies of a popular CD left to be sold in a store. This is between 1% and 1.5% of the original number of copies of the CD in the store. The original number of CDs was between what two numbers?
13. Tell whether the statement is *true* or *false*. Explain your reasoning.
- If  $A$  is 45% of  $B$ , then the ratio  $A : B$  is 9 : 20.

Find the percent to the nearest hundredth.

14. 16 is what percent of 38?                      15. 50 is what percent of 38?

## 6.4 Enrichment and Extension

### The Percent is Right: Closest Without Going Over

**Preparation:**

- Cut index cards to make 20 playing cards. Write each number from 1 to 20 on the cards.

**To play:**

- On your turn, choose a card and record that value. Your current score is the percent of the value chosen out of the total possible, which is 20.
- With each consecutive turn, add your new card value to your previous total. Also add 20 to the total possible. Then, calculate your new score.
- You may choose to draw as many as 4 times, replacing the cards each time. You may end your turn at any time. But, you may not go back and draw again after other players have gone.
- The player who comes closest to 50% without going over, wins. If players tie, the one who drew the fewest number of cards is the winner.

A sample score card is shown.

Turn	Card Value	Total Card Value	Total Possible	Score
1	7	7	20	35%
2	15	22	40	55%
3	6	28	60	46.6%

**Complete the following exercises after playing a few rounds.**

1. You draw a 5 on your first turn and a 17 on your second turn. Should you draw again? Explain your reasoning.
2. On your first 3 draws, you draw a 5, a 6, and a 10. Your opponent has already finished with a score of 42%. What is the lowest card you can draw and still win? What is the highest card you can draw and still win? What percent of the cards could you draw and still win the game?
3. What is the most you can get on your first three draws and still have a chance to win? Explain.
4. You are the first player to take a turn and you draw a 7. Should you draw again? Explain your reasoning. What if your first draw is an 8 or a 9?
5. If you have time, you can play multiple rounds with a different target percent score each round. Explain how a higher or lower target percent score would change the game.



## Puzzle Time

### Did You Hear About...

A	B	C	D	E	F
G	H	I	J	K	L
M	N				

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

42 HIS
150 THAT
52 TO
48 DOWN
15 THE
300 TEAM
75 MATCH
55 SET
145 ENDED
175 PLAYED
65 EAR
35 CHEER
93 FAN
82 TOO

**Solve an equation to answer the question.**

- A. What percent of 60 is 9?
- B. 12 is what percent of 30?
- C. 62% of 150 is what number?
- D. 8% of what number is 2?
- E. What percent of 130 is 91?
- F. 13% of 400 is what number?
- G. 72 is what percent of 80?
- H. 64% of what number is 48?
- I. 175% of 8 is what number?
- J. What percent of 200 is 290?
- K. 156 is what percent of 60?
- L. 0.5% of what number is 3?
- M. Of the 60 students in the seventh grade, 70% own a pet. How many of the seventh grade students own a pet?
- N. A pair of sunglasses is on sale for \$26. The original price of the sunglasses was \$40. What percent of the original price is the sale price?

17 ARE
25 WHO
225 THIS
260 UP
125 GAME
90 A
45 COACH
40 SPORTS
97 STARTED
70 LISTENED
20 RUNNING
600 BURNING
400 PLAYING
14 AND

**Activity**  
**6.5**

**Start Thinking!**

For use before Activity 6.5

Explain how a meteorologist uses percents.

**Activity**  
**6.5**

**Warm Up**

For use before Activity 6.5

**Write the decimal as a percent.**

**1.** 0.45

**2.** 1.34

**3.** 0.549

**4.** 1.08

**5.** 0.985

**6.** 0.3225

Work with a partner to write and solve a real-life problem for the following situation:  
\$250 decreased by 35%.

**Find the new amount.**

1. 15 inches increased by 20%
2. 145 gallons decreased by 60%
3. 70 meters increased by 80%
4. 150 grams decreased by 74%
5. 120 pounds decreased 5%
6. 40 liters increased by 25%

**6.5 Practice A**

**Find the new amount.**

- 12 dogs decreased by 25%
- 140 fluid ounces increased by 45%
- 100 textbooks increased by 99%
- 75 students decreased by 80%

**Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent, if necessary.**

- 5 cups to 8 cups
- 150 pounds to 135 pounds
- 14 dollars to 10 dollars
- 28 seconds to 23 seconds
- $\frac{1}{3}$  to  $\frac{2}{3}$
- $\frac{1}{3}$  to  $\frac{1}{6}$
- Yesterday your bus ride to school took 10 minutes. Today your bus ride took 12 minutes. What is the percent of change?
- Yesterday 270 concert tickets were sold. Today 216 tickets were sold.
  - Find the percent of change in the number of tickets sold from yesterday to today.
  - Use the percent of change from part (a) to predict the number of tickets sold tomorrow. Round to the nearest ticket, if necessary.
  - Find the predicted percent of change in the number of tickets sold from yesterday to tomorrow. Round to the nearest tenth of a percent, if necessary.
- This month a band has 6 musicians. This is a 50% increase from the number of musicians in the band last month. How many musicians were in the band last month?
- The sides of a square garden are 8 feet long.
  - You enlarge the garden to create a 25% increase in the length of each side. Find the new length of the sides.
  - Find the percent of change in the perimeter of the garden. Round to the nearest tenth of a percent, if necessary.
  - Find the percent of change in the area of the garden. Round to the nearest tenth of a percent, if necessary.

## 6.5 Practice B

Find the new amount.

1. 55 employees increased by 20%
2. 25° decreased by 60%
3. 15 customers increased by 200%
4. 4200 fans increased by 0.5%

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round to the nearest tenth of a percent, if necessary.

5. 3.2 kilograms to 2.4 kilograms
6. 41 euros to 85 euros
7.  $\frac{2}{7}$  to  $\frac{4}{7}$
8.  $\frac{5}{6}$  to  $\frac{1}{3}$
9. Last month you swam the 50-meter freestyle in 28.38 seconds. Today you swam it in 27.33 seconds. What is your percent of change? Round to the nearest tenth of a percent, if necessary.
10. Last week 1200 burgers were served at the Burger Barn.
  - a. This week 1176 burgers were served. What is the percent of change?
  - b. Use the percent of change from part (a) to predict the number of burgers served next week. Round to the nearest whole number, if necessary.
11. The price of a share of a stock was \$37.50 yesterday.
  - a. Today there was a price decrease of 4%. What is today's price?
  - b. Based on today's price in part (a), what percent of change is needed to bring the price back up to \$37.50? Round to the nearest tenth of a percent, if necessary.

12. The table shows the membership of two scout troops.

Year	Troop A	Troop B
2010	14	21
2011	16	24

- a. What is the percent of change in membership from 2010 to 2011 for Troop A? Round to the nearest tenth of a percent, if necessary.
- b. What is the percent of change in membership from 2010 to 2011 for Troop B? Round to the nearest tenth of a percent, if necessary.
- c. Which troop has the better record in terms of the number of new members?
- d. Which troop has the better record in terms of the percent of change in membership?

## 6.5 Enrichment and Extension

### Selling Super Slick Shoes

You work at Super Slick Shoes and are planning a new advertising campaign. You have been given information about the shoe sales of your company and your competitor. You want to be sure that you are making your company sound as good as possible.

1. Your athletic shoe department sold 135 thousand pairs of Super Sweet Sneakers this year, which is a 125% increase over last year's sales.
  - a. How many pairs of Super Sweet Sneakers did you sell last year?
  - b. By how many thousand pairs did the sales increase?
2. The athletic shoe department of your competitors sold 258 thousand pairs of Super Smooth Sneakers this year, which is a 50% increase over last year's sales.
  - a. How many pairs of Super Smooth Sneakers did they sell last year?
  - b. By how many thousand pairs did their sales increase?
3. For sneakers, would you use the *amount* of increase in sales or the *percent* of increase in sales to make your company sound better than your competitor? Explain your reasoning.
4. Your designer shoe department sold 175 thousand pairs of Super Sleek Sandals this year and anticipates a 70% increase in sales next year.
  - a. How many pairs of Super Sleek Sandals do you expect to sell next year?
  - b. By how many thousand pairs do you expect the sales to increase?
5. Your competitors sold 150 thousand pairs of Super Snazzy Sandals this year and anticipate an 80% increase in sales next year.
  - a. How many pairs of Super Snazzy Sandals do they expect to sell next year?
  - b. By how many thousand pairs do they expect their sales to increase?
6. For sandals, would you use the anticipated *amount* of increase in sales or the anticipated *percent* of increase in sales to make your company sound better than your competitor? Explain your reasoning.





## Puzzle Time

### Why Did the Picture Go To Jail?

Write the letter of each answer in the box containing the exercise number.

**Find the new amount.**

1. 42 customers increased by 50%
2. 70 pennies decreased by 20%
3. 30 inches increased by 30%
4. 125 pounds decreased by 4%
5. 15 acres decreased by 80%
6. 12 stamps increased by 125%
7. 68 days increased by 75%
8. 440 miles decreased by 95%

**Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change.**

9. 20 ounces to 25 ounces
10. 10 hours to 6 hours
11. 15 feet to 33 feet
12. 80 books to 64 books
13. 64 minutes to 144 minutes
14. 16 skateboards to 2 skateboards
15. 55 videos to 77 videos
16. 13.6 kilometers to 23.8 kilometers

**Answers for Exercises 1–8**

T. 3                      O. 119  
 S. 120                    D. 27  
 F. 22                      E. 56  
 M. 39                      Y. 63

**Answers for Exercises 9–16**

O. 40% increase  
 B. 87.5% decrease  
 I. 20% decrease  
 R. 25% increase  
 E. 75% increase  
 M. 120% increase  
 D. 40% decrease  
 A. 125% increase

4	15	11	2	14	7	10	1		8	9	13	3	16	6		12	5
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**Activity**  
**6.6**

**Start Thinking!**

For use before Activity 6.6

Why does a store mark up an item?

Why does a store then sometimes discount that item?

**Activity**  
**6.6**

**Warm Up**

For use before Activity 6.6

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

1. What is 40% of 238?
2. 28 is what percent of 70?
3. What is 34% of 240?
4. 5% of what number is 6?
5. What is 110% of 150?
6. 42 is 250% of what number?

**Lesson**  
**6.6**

**Start Thinking!**

For use before Lesson 6.6

You go to a store to buy a new pair of jeans. You find 2 pairs of jeans each on sale for a different price. Explain which is a better bargain.

Regular Price: \$35; Discount: 30%

Regular Price: \$40; Discount: 35%

**Lesson**  
**6.6**

**Warm Up**

For use before Lesson 6.6

**Find the cost to store, percent of markup, or selling price.**

1. Cost to store: \$20  
Markup: 15%  
Selling price:   ?

2. Cost to store: \$65  
Markup: 30%  
Selling price:   ?

3. Cost to store: \$100  
Markup: 12%  
Selling price:   ?

4. Cost to store: \$150  
Markup: 5%  
Selling price:   ?

## 6.6 Practice A

Copy and complete the table.

	Original Price	Percent of Discount	Sale Price
1.	\$75	30%	
2.	\$18	65%	
3.		30%	\$42
4.		55%	\$90
5.	\$35		\$28
6.	\$55		\$46.75

Find the cost to store or selling price.

7. Cost to store: \$65

Markup: 25%

Selling price: ?

8. Cost to store: ?

Markup: 80%

Selling price: \$122.40

9. The cost to a store for a box of cereal is \$2.50. The store is selling the box of cereal for \$3.50. What is the percent of markup?

10. A store pays \$120 for a bicycle.

a. The store has a 60% markup policy. What is the selling price of the bicycle?

b. The store is now going out of business and is selling all of the bicycles at a 30% discount. What is the sale price of the bicycle?

c. Will the store make money or lose money on the bicycle? How much?

11. The selling price of a skateboard is \$147. The store has a 75% markup policy. What is the cost of the skateboard to the store?

12. You buy a watch for \$60.

a. There is a 6% sales tax. What is your total cost for the watch?

b. Your friend buys the same watch a month later. It is now sold at a discount of 15%. What is the new sale price?

c. What is your friend's total cost for the watch including tax?

d. What is the percent of change in the total cost?

**6.6 Practice B**

Find the original price, discount, sale price, selling price, markup, or cost to store. Round to the nearest penny, if necessary.

1. Original price: \$130  
Discount: 45%  
Sale price:    ?
2. Original price: \$500  
Discount:    ?  
Sale price: \$175
3. Original price:    ?  
Discount: 5%  
Sale price: \$68.40
4. Cost to store: \$1600  
Markup: 33%  
Selling price:    ?
5. Cost to store: \$65  
Markup:    ?  
Selling price: \$91
6. Cost to store:    ?  
Markup: 25%  
Selling price: \$437.50
7. You are buying shoes online. The selling price is \$29.99. Round to the nearest penny, if necessary.
  - a. The sales tax is 6.5%. What is the total cost?
  - b. The cost of shipping is 15% of the total cost. What is the total cost plus shipping?
  - c. If the total cost plus shipping is greater than \$35, then you receive a 10% discount off the original selling price. Do you qualify? If so, what is the new total cost plus shipping?
8. You have a coupon for \$15 off a video game. You can use it on 2 separate days.
  - a. On Monday, the discounted price of your video game is \$22.99. What is the original price of the game?
  - b. What is the percent of discount to the nearest percent?
  - c. On Thursday, the discounted price of your video game is \$12.99. What is the original price of the game?
  - d. What is the percent of discount to the nearest percent?
9. You buy a bracelet for \$15. You sell it at a craft show for \$25. What is the percent of markup to the nearest percent?

## 6.6 Enrichment and Extension

### Would You Get the Job?

You are applying for a job selling electronics. The interviewer asks you to answer the following questions in order to prove that you would be able to do your job effectively.

1. A customer is purchasing last year's version of the Football Mania video game, which was originally \$55. It is on a sale rack that says 60% off. The customer has a coupon for 30% off his entire purchase. He incorrectly says, "I can't believe I'm getting this for 90% off!"
  - a. Find the cost of the video game after the coupon.
  - b. What would be the cost of the video game at 90% off?
  - c. How would you explain to the customer that he is not getting 90% off?
2. Your boss has decided to make room for new models of digital cameras by discounting old models. In order to sell them quickly, she wants to sell them at the store's original cost before markup. She asks you to change the price tags and make signs with the percent of discount. Knowing that the store's percent of markup on digital cameras is 40%, a co-worker suggests that you just mark them down by 40%.
  - a. How would you explain to your co-worker that the store would actually lose money if you did this?
  - b. The original price of a camera is \$175.50. What was the store's original cost on this camera?
  - c. What percent off will you write on the sign in order to sell this camera at cost? Round to the nearest percent.
3. If a customer brings an ad that shows a competitor is selling an item for less, you are permitted to match the competitor's price as long as the percent of discount is 15% or less.
  - a. The newest Blu-ray disc player is listed at \$307.99. You notice on your way to work that the same player is for sale at another store for \$298.79. Would you be allowed to match this store's price if asked? Explain.
  - b. The store sells a wireless Internet router for \$74.75. A customer has printed out a page from the Internet that shows the same router for \$59.97 plus 5% shipping and handling. Can you match this price? Explain.



## Puzzle Time

### What Does A Monster Say When Introduced?

Write the letter of each answer in the box containing the exercise number.

**Find the sale price or the selling price.**

1. \$99 watch with a 40% discount
2. \$32 earrings marked up 80%
3. \$59 cell phone with a 10% discount
4. \$65 digital camera marked up 50%
5. \$35 soccer cleats marked up 95%

**Find the original price.**

6. swimsuit discounted 65% on sale for \$20.30
7. tennis racket marked up 50% to \$36.75
8. backpack discounted 10% on sale for \$37.80
9. tickets marked up 35% to \$59.40
10. perfume discounted 25% on sale for \$27

**Find the percent of discount or markup.**

11. \$52 sweater on sale for \$31.20
12. \$23 rollerblades marked up to \$41.40
13. \$30 board game on sale for \$20.10
14. \$0.60 bottle of iced tea marked up to \$1.35
15. \$3.50 nail polish marked up to \$8.75

**Answers for Exercises 1–10**

T. \$68.25      U. \$53.10  
 E. \$97.50      A. \$42  
 L. \$44          O. \$57.60  
 A. \$58          D. \$24.50  
 S. \$36          E. \$59.40

**Answers for Exercises 11–15**

P. 125%      Y. 80%  
 E. 150%      T. 33%  
 O. 40%

14	9	1	6	10	4	7		13	2		15	8	5		12	11	3
----	---	---	---	----	---	---	--	----	---	--	----	---	---	--	----	----	---

**Activity  
6.7****Start Thinking!**

For use before Activity 6.7

Discuss the pros and cons of having a credit card.

**Activity  
6.7****Warm Up**

For use before Activity 6.7

**Find the sale price for the item. Round to the nearest cent.**

1. Original price: \$300; Discount: 25%
2. Original price: \$75; Discount: 40%
3. Original price: \$1300; Discount: 20%
4. Original price: \$95; Discount: 15%
5. Original price: \$725; Discount: 10%
6. Original price: \$845; Discount: 35%



You earned \$150 babysitting. You want to open a savings account. What factors must you consider before opening an account?

**An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.**

1. \$750 at 2% for 3 years
2. \$300 at 6% for 2 years
3. \$1400 at 4% for 5 years
4. \$600 at 4.5% for 7 years
5. \$550 at 8% for 6 months
6. \$1200 at 3.5% for 6 months

**6.7 Practice A**

**An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.**

1. \$200 at 3% for 5 years
2. \$750 at 8% for 2 years
3. \$1600 at 5% for 1 year
4. \$500 at 12% for 6 months

**Find the annual interest rate.**

5.  $I = \$18$ ,  $P = \$150$ ,  $t = 6$  years
6.  $I = \$164.50$ ,  $P = \$940$ ,  $t = 2.5$  years

**Find the amount of time.**

7.  $I = \$72$ ,  $P = \$600$ ,  $r = 4\%$
8.  $I = \$174$ ,  $P = \$1450$ ,  $r = 8\%$
9. You deposit \$350 in a savings account. The account earns 2.5% simple interest per year. What is the balance after 2 years?

**Find the amount paid for the loan.**

10. \$1000 at 8% for 5 years
11. \$3500 at 10% for 2 years
12. You deposit \$2000 in a savings account earning 5% simple interest. How long will it take for the balance of the account to be \$3800?
13. Your parents charge a family ski trip of \$3000 on a credit card.
  - a. The simple interest rate is 20%. The charges are paid after 6 months. What is the amount of interest paid?
  - b. What is the total amount paid for the ski trip?
14. Your parents could have taken out a loan for the ski trip in Exercise 13.
  - a. The simple interest rate is 6% and the time for the loan is 2 years. What would have been the total amount paid for the \$3000 ski trip?
  - b. What would be the monthly payment, if there were equal monthly payments?
  - c. Which loan option costs less, the credit card or the loan?
15. You deposit \$1200 in an account earning 8% simple interest.
  - a. What is the account balance after 1 year?
  - b. At the end of the first year, you deposit the balance of the account in a CD (certificate of deposit) earning 8% simple interest. What is the account balance after another year?

**6.7 Practice B**

**An account earns simple interest. (a) Find the interest earned. (b) Find the balance of the account.**

1. \$2600 at 3.2% for 4 years                      2. \$75,000 at 8.5% for 3 months

**Find the annual interest rate.**

3.  $I = \$41.80$ ,  $P = \$440$ ,  $t = 2$  years      4.  $I = \$893.75$ ,  $P = \$5500$ ,  $t = 30$  months

**Find the amount of time.**

5.  $I = \$9.90$ ,  $P = \$360$ ,  $r = 5.5\%$       6.  $I = \$2064$ ,  $P = \$10,000$ ,  $r = 6.88\%$

**Find the amount paid for the loan.**

7. \$20,000 at 7.5% for 10 years
8. \$6000 at 12% for 2.5 years
9. You deposit \$2000 in an account. The account earns \$120 simple interest in 8 months. What is the annual interest rate?
10. You put money in two different accounts for one year each. The total simple interest for the two accounts is \$140. You earn 6% interest on the first account, in which you deposited \$1000. You deposited \$800 in the second account. What is the annual interest rate for the second account?
11. You deposit \$1200 in an account.
- The account earns 2.7% simple interest rate. What is the balance of the account after 3 months?
  - The interest rate changes, and your new balance now earns 2% simple interest rate. What is the balance of the account after the next 6 months? Round to the nearest penny, if necessary.
  - The interest rate changes again, and your new balance now earns 2.6% simple interest rate. What is the balance of the account after an additional 3 months? Round to the nearest penny, if necessary.
  - How much did the account earn in simple interest for the year?
  - Based on the interest in part (d), what is the actual simple interest rate for the year? Round to the nearest tenth of a percent.
12. You purchase a new guitar and take out a loan for \$450. You have 18 equal monthly payments of \$28 each. What is the simple interest rate for the loan? Round to the nearest tenth of a percent, if necessary.

## 6.7 Enrichment and Extension

### Buying the Car of Your Dreams

People who sell cars are usually good negotiators. So, being an educated consumer is important. Most car loans are based on *compound interest*, which means that you pay interest on your interest. You will be better able to negotiate a good deal on a car if you understand how compound interest is calculated.

**Example:** A loan for \$15,560 is taken out for 5 years at a yearly interest rate of 7.2% that is compounded annually. (a) What is the balance after 5 years? (b) What is the monthly payment?

$$\mathbf{a.} \quad B = P(1 + r)^t \quad \begin{array}{l} B = \text{balance, } P = \text{principal, } r = \text{interest rate (in decimal form),} \\ t = \text{number of times the interest is compounded} \end{array}$$

$$= 15,560(1 + 0.072)^5 \quad \text{Substitute 15,560 for } P, 0.072 \text{ for } r, \text{ and 5 for } t.$$

$$= 15,560(1.072)^5 \quad \text{Add.}$$

$$= 22,028.43 \quad \text{Simplify.}$$

The balance after 5 years is \$22,028.43.

**b.** There are 60 months in 5 years. So, divide the balance by 60.

$$\frac{22,028.43}{60} \approx 367.14$$

The monthly payment is \$367.14.

1. A salesman offers two discount options on the car in the example. He can decrease the initial cost of the car by \$500 or decrease the interest rate by 0.5%. Find the final cost of both options. Which is the better deal?
2. Find the final cost of the loan in the example if the interest were compounded monthly instead of annually. (*Hint:* Divide the yearly interest rate by 12 to find the monthly interest rate.) Why are some loans compounded monthly and even daily?
3. Find the price of your dream car on the Internet, in the newspaper, or from another source. Then research the current interest rate at a dealership or other lender and how often their interest is compounded. Calculate the final cost and monthly payment for your dream car on a 5-year loan.



## Puzzle Time

### What Question Can You Never Answer Yes To?

Write the letter of each answer in the box containing the exercise number.

**Find the interest earned.**

- |  |  |
|--|--|
| 1. \$500 at 4% for 3 years             | 2. \$1200 at 7% for 5 years            |
| D. \$50    E. \$60    F. \$100         | A. \$420    B. \$240    C. \$400       |
| 3. \$750 at 6% for 18 months           | 4. \$1500 at 8.5% for 6 months         |
| T. \$58.50    U. \$67.50    V. \$56.75 | J. \$62.50    K. \$65.50    L. \$63.75 |

**Find the annual interest rate.**

- |  |   |
|--|---|
| 5. $I = \$200, P = \$1000, t = 4$ years  | 6. $I = \$30, P = \$600, t = 2$ years   |
| E. 5%    F. 6%    G. 7%                  | M. 1.5%    N. 2.25%    O. 2.5%          |
| 7. $I = \$150, P = \$2500, t = 9$ months | 8. $I = \$75, P = \$800, t = 15$ months |
| R. 6%    S. 8%    T. 9%                  | D. 6.5%    E. 7.5%    F. 8.5%           |

**Find the amount of time.**

- |  |  |
|--|--|
| 9. $I = \$144, P = \$400, r = 6\%$       | 10. $I = \$236.25, P = \$750, r = 4.5\%$   |
| P. 3 years    Q. 4 years    R. 6 years   | N. 3 years    O. 5 years    P. 7 years     |
| 11. $I = \$87.50, P = \$3500, r = 5\%$   | 12. $I = \$108.75, P = \$2000, r = 7.25\%$ |
| W. 3 years    X. 3 months    Y. 6 months | A. 9 months    B. 6 months    C. 3 months  |

2	9	5		11	6	3		12	7	4	1	8	10
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**Chapter**  
**6****Technology Connection**

For use after Section 6.4

**Finding Percents with a Calculator**

In Section 6.4, to solve the percent equation  $a = p \cdot w$  you converted the percent  $p$  to fraction or decimal form. You could also use a calculator with a  $\boxed{\%}$  key to solve the equation.

**EXAMPLE** What number is 55% of 176?**SOLUTION****Step 1** This problem can be modeled by the equation  $a = 55\% \cdot 176$ .**Step 2** On your calculator, enter  $55 \boxed{\%} \boxed{\times} 176 \boxed{=}$ .**ANSWER** 96.8**EXAMPLE** 42 is 15% of what number?**SOLUTION****Step 1** This problem can be modeled by the equation  $42 = 15\% \cdot w$ .**Step 2** On your calculator, enter  $42 \boxed{\div} 15 \boxed{\%} \boxed{=}$ .**ANSWER** 280**Use a calculator to solve the percent problem.**

1. What number is 84% of 325?
2. What number is 250% of 4?
3. What number is 90% of 30?
4. What number is 15% of 450?
5. 75% of what number is 225?
6. 98 is 14% of what number?
7. 6.2 is 40% of what number?
8. 0.5% of what number is 2?
9. According to the NCAA, only 2% of high school athletes receive an athletic scholarship for college. Your school has a total of 250 athletes. How many athletes would you expect to receive a scholarship?
10. In a fundraiser, 15% of the money collected goes to your school. If your school earns \$780, how much money is collected?