

RATIOS AND RATES: APPLICATIONS OF PERCENTS*

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Abstract

This module is from Fundamentals of Mathematics by Denny Burzynski and Wade Ellis, Jr. This module discusses applications of percents. By the end of the module students should be able to distinguish between base, percent, and percentage and be able to find the percentage, the percent, and the base.

1 Section Overview

- Base, Percent, and Percentage
- Finding the Percentage
- Finding the Percent
- Finding the Base

2 Base, Percent, and Percentage

There are three basic types of percent problems. Each type involves a base, a percent, and a percentage, and when they are translated from words to mathematical symbols *each becomes a multiplication statement*. Examples of these types of problems are the following:

1. What number is 30% of 50? (Missing product statement.)
2. 15 is what percent of 50? (Missing factor statement.)
3. 15 is 30% of what number? (Missing factor statement.)

In problem 1 (list, p. 1), the product is missing. To solve the problem, we represent the missing product with P .

$$P = 30\% \cdot 50$$

Percentage

The missing product P is called the **percentage**. Percentage means *part*, or *portion*. In $P = 30\% \cdot 50$, P represents a particular *part* of 50.

In problem 2 (list, p. 1), one of the factors is missing. Here we represent the missing factor with Q .

$$15 = Q \cdot 50$$

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Percent

The missing factor is the **percent**. Percent, we know, means *per 100*, or *part of 100*. In $15 = Q \cdot 50$, Q indicates what part of 50 is being taken or considered. Specifically, $15 = Q \cdot 50$ means that if 50 was to be divided into 100 equal parts, then Q indicates 15 are being considered.

In problem 3 (list, p. 1), one of the factors is missing. Represent the missing factor with B .

$$15 = 30\% \cdot B$$

Base

The missing factor is the **base**. Some meanings of base are a *source of supply*, or a *starting place*. In $15 = 30\% \cdot B$, B indicates the amount of supply. Specifically, $15 = 30\% \cdot B$ indicates that 15 represents 30% of the total supply.

Each of these three types of problems is of the form

$$(\text{percentage}) = (\text{percent}) \cdot (\text{base})$$

We can determine any one of the three values given the other two using the methods discussed in here¹.

3 Finding the Percentage

3.1 Sample Set A

Example 1

<u>What number</u>	is	30%	of	50?	Missing product statement.
↓	↓	↓	↓	↓	
(percentage)	=	(percent)	·	(base)	
↓		↓	↓	↓	
P	=	30%	·	50	Convert 30% to a decimal.
P	=	.30	·	50	Multiply.
P	=	15			

Thus, 15 is 30% of 50.

Do Section 3.2 (Practice Set A), Exercise .

Example 2

<u>What number</u>	is	36%	of	95?	Missing product statement.
↓	↓	↓	↓	↓	
(percentage)	=	(percent)	·	(base)	
↓		↓	↓	↓	
P	=	36%	·	95	Convert 36% to a decimal.
P	=	.36	·	95	Multiply
P	=	34.2			

Thus, 34.2 is 36% of 95.

Do Section 3.2 (Practice Set A), Exercise .

Example 3

A salesperson, who gets a commission of 12% of each sale she makes, makes a sale of \$8,400.00. How much is her commission?

We need to determine what part of \$8,400.00 is to be taken. What *part* indicates *percentage*.

¹"Introduction to Fractions and Multiplication and Division of Fractions: Applications Involving Fractions"
 <<http://cnx.org/content/m34930/latest/>>

$$\begin{array}{cccccc}
 \text{What number} & \text{is} & 12\% & \text{of} & 8,400.00? & \text{Missing product statement.} \\
 \downarrow & & \downarrow & & \downarrow & \\
 \text{(percentage)} & = & \text{(percent)} & \cdot & \text{(base)} & \\
 \downarrow & & \downarrow & & \downarrow & \\
 P & = & 12\% & \cdot & 8,400.00 & \text{Convert to decimals.} \\
 P & = & .12 & \cdot & 8,400.00 & \text{Multiply.} \\
 P & = & 1008.00 & & &
 \end{array}$$

Thus, the salesperson's commission is \$1,008.00.
 Do Section 3.2 (Practice Set A), Exercise .

Example 4

A girl, by practicing typing on her home computer, has been able to increase her typing speed by 110%. If she originally typed 16 words per minute, by how many words per minute was she able to increase her speed?

We need to determine what part of 16 has been taken. What *part* indicates *percentage*.

$$\begin{array}{cccccc}
 \text{What number} & \text{is} & 110\% & \text{of} & 16? & \text{Missing product statement.} \\
 \downarrow & & \downarrow & & \downarrow & \\
 \text{(percentage)} & = & \text{(percent)} & \cdot & \text{(base)} & \\
 \downarrow & & \downarrow & & \downarrow & \\
 P & = & 110\% & \cdot & 16 & \text{Convert to decimals.} \\
 P & = & 1.10 & \cdot & 16 & \text{Multiply.} \\
 P & = & 17.6 & & &
 \end{array}$$

Thus, the girl has increased her typing speed by 17.6 words per minute. Her new speed is $16 + 17.6 = 33.6$ words per minute.

Do Section 3.2 (Practice Set A), Exercise .

Example 5

A student who makes \$125 a month working part-time receives a 4% salary raise. What is the student's new monthly salary?

With a 4% raise, this student will make 100% of the original salary + 4% of the original salary. This means the new salary will be 104% of the original salary. We need to determine what part of \$125 is to be taken. What *part* indicates *percentage*.

$$\begin{array}{cccccc}
 \text{What number} & \text{is} & 104\% & \text{of} & 125 & \text{Missing product statement.} \\
 \downarrow & & \downarrow & & \downarrow & \\
 \text{(percentage)} & = & \text{(percent)} & \cdot & \text{(base)} & \\
 \downarrow & & \downarrow & & \downarrow & \\
 P & = & 104\% & \cdot & 125 & \text{Convert to decimals.} \\
 P & = & 1.04 & \cdot & 125 & \text{Multiply.} \\
 P & = & 130 & & &
 \end{array}$$

Thus, this student's new monthly salary is \$130.
 Do Section 3.2 (Practice Set A), Exercise .

Example 6

An article of clothing is on sale at 15% off the marked price. If the marked price is \$24.95, what is the sale price?

Since the item is discounted 15%, the new price will be $100\% - 15\% = 85\%$ of the marked price. We need to determine what part of 24.95 is to be taken. What *part* indicates *percentage*.

<u>What number</u>	is	85%	of	\$24.95.	Missing product statement.
(percentage)	=	(percent)	.	(base)	
↓	↓	↓	↓	↓	
P	=	85%	.	24.95	Convert to decimals.
P	=	.85	.	24.95	Multiply.
P	=	21.2075			Since this number represents money,
P	=	21.21			we'll round to 2 decimal places

Thus, the sale price of the item is \$21.21.

3.2 Practice Set A

Exercise 1 *(Solution on p. 12.)*

What number is 42% of 85?

Exercise 2 *(Solution on p. 12.)*

A sales person makes a commission of 16% on each sale he makes. How much is his commission if he makes a sale of \$8,500?

Exercise 3 *(Solution on p. 12.)*

An assembly line worker can assemble 14 parts of a product in one hour. If he can increase his assembly speed by 35%, by how many parts per hour would he increase his assembly of products?

Exercise 4 *(Solution on p. 12.)*

A computer scientist in the Silicon Valley makes \$42,000 annually. What would this scientist's new annual salary be if she were to receive an 8% raise?

4 Finding the Percent

4.1 Sample Set B

Example 7

15	is	<u>what percent</u>	of	50?	Missing factor statement.
↓	↓	↓	↓	↓	
(percentage)	=	(percent)	.	(base)	[(product) = (factor) · (factor)]
↓	↓	↓	↓	↓	
15	=	Q	.	50	

Recall that (missing factor) = (product) ÷ (known factor).

$$Q = 15 \div 50 \quad \text{Divide.}$$

$$Q = 0.3 \quad \text{Convert to a percent.}$$

$$Q = 30\%$$

Thus, 15 is 30% of 50.

Do Section 4.2 (Practice Set B), Exercise .

Example 8

$$\begin{array}{ccccccc}
 4.32 & \text{is} & \underbrace{\text{what percent}} & \text{of} & 72? & \text{Missing factor statement.} \\
 \downarrow & \downarrow & & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) & [(\text{product}) = (\text{factor}) \cdot (\text{factor})] \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 4.32 & = & Q & \cdot & 72 &
 \end{array}$$

$$\begin{aligned}
 Q &= 4.32 \div 72 && \text{Divide.} \\
 Q &= 0.06 && \text{Convert to a percent.} \\
 Q &= 6\%
 \end{aligned}$$

Thus, 4.32 is 6% of 72.
 Do Section 4.2 (Practice Set B), Exercise .

Example 9

On a 160 question exam, a student got 125 correct answers. What percent is this? Round the result to two decimal places.

We need to determine the percent.

$$\begin{array}{ccccccc}
 125 & \text{is} & \underbrace{\text{what percent}} & \text{of} & 160? & \text{Missing factor statement.} \\
 \downarrow & \downarrow & & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) & [(\text{product}) = (\text{factor}) \cdot (\text{factor})] \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 125 & = & Q & \cdot & 160 &
 \end{array}$$

$$\begin{aligned}
 Q &= 125 \div 160 && \text{Divide.} \\
 Q &= 0.78125 && \text{Round to two decimal places.} \\
 Q &= .78
 \end{aligned}$$

Thus, this student received a 78% on the exam.
 Do Section 4.2 (Practice Set B), Exercise .

Example 10

A bottle contains 80 milliliters of hydrochloric acid (HCl) and 30 milliliters of water. What percent of HCl does the bottle contain? Round the result to two decimal places.

We need to determine the percent. The total amount of liquid in the bottle is 80 milliliters + 30 milliliters = 110 milliliters.

$$\begin{array}{ccccccc}
 80 & \text{is} & \underbrace{\text{what percent}} & \text{of} & 110? & \text{Missing factor statement.} \\
 \downarrow & \downarrow & & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) & [(\text{product}) = (\text{factor}) \cdot (\text{factor})] \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 80 & = & Q & \cdot & 110 &
 \end{array}$$

$$\begin{aligned}
 Q &= 80 \div 110 && \text{Divide.} \\
 Q &= 0.727272. . . && \text{Round to two decimal places.} \\
 Q &\approx 73\% && \text{The symbol "\approx" is read as "approximately."}
 \end{aligned}$$

Thus, this bottle contains approximately 73% HCl.
 Do Section 4.2 (Practice Set B), Exercise .

Example 11

Five years ago a woman had an annual income of \$19,200. She presently earns \$42,000 annually. By what percent has her salary increased? Round the result to two decimal places.

We need to determine the percent.

$$\begin{array}{ccccccc}
 42,000 & \text{is} & \underbrace{\text{what percent}} & \text{of} & 19,200? & \text{Missing factor statement.} \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 42,000 & = & Q & \cdot & 19,200 \\
 \\
 Q & = & 42,000 \div 19,200 & & \text{Divide.} \\
 Q & = & 2.1875 & & \text{Round to two decimal places.} \\
 Q & = & 2.19 & & \text{Convert to a percent.} \\
 Q & = & 219\% & & \text{Convert to a percent.} \\
 \text{Thus, this woman's annual salary has increased 219\%.}
 \end{array}$$

4.2 Practice Set B

Exercise 5 *(Solution on p. 12.)*

99.13 is what percent of 431?

Exercise 6 *(Solution on p. 12.)*

On an 80 question exam, a student got 72 correct answers. What percent did the student get on the exam?

Exercise 7 *(Solution on p. 12.)*

A bottle contains 45 milliliters of sugar and 67 milliliters of water. What fraction of sugar does the bottle contain? Round the result to two decimal places (then express as a percent).

5 Finding the Base

5.1 Sample Set C

Example 12

$$\begin{array}{ccccccc}
 15 & \text{is} & 30\% & \text{of} & \underbrace{\text{what number?}} & \text{Missing factor statement.} \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) & [(\text{percentage}) = (\text{factor}) \cdot (\text{factor})] \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 15 & = & 30\% & \cdot & B & \text{Convert to decimals.} \\
 15 & = & .30 & \cdot & B & [(\text{missing factor}) = (\text{product}) \div (\text{known factor})] \\
 \\
 B & = & 15 \div .30 \\
 B & = & 50
 \end{array}$$

Thus, 15 is 30% of 50.

Try Exercise in Section 5.2 (Practice Set C).

Example 13

$$\begin{array}{ccccccc}
 56.43 & \text{is} & 33\% & \text{of} & \underbrace{\text{what number?}} & \text{Missing factor statement.} \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 (\text{percentage}) & = & (\text{percent}) & \cdot & (\text{base}) \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \\
 56.43 & = & 33\% & \cdot & B & \text{Convert to decimals.} \\
 56.43 & = & .33 & \cdot & B & \text{Divide.}
 \end{array}$$

$$B = 56.43 \div .33$$

$$B = 171$$

Thus, 56.43 is 33% of 171.

Try Exercise in Section 5.2 (Practice Set C).

Example 14

Fifteen milliliters of water represents 2% of a hydrochloric acid (HCl) solution. How many milliliters of solution are there?

We need to determine the total supply. The word *supply* indicates *base*.

15	is	2%	of	<u>what number?</u>	Missing factor statement.
↓		↓	↓	↓	
(percentage)	=	(percent)	·	(base)	
↓		↓	↓	↓	
15	=	2%	·	<i>B</i>	Convert to decimals.
15	=	.02	·	<i>B</i>	Divide.

$$B = 15 \div .02$$

$$B = 750$$

Thus, there are 750 milliliters of solution in the bottle.

Try Exercise in Section 5.2 (Practice Set C).

Example 15

In a particular city, a sales tax of $6\frac{1}{2}\%$ is charged on items purchased in local stores. If the tax on an item is \$2.99, what is the price of the item?

We need to determine the price of the item. We can think of *price* as the *starting place*. *Starting place* indicates *base*. We need to determine the base.

2.99	is	$6\frac{1}{2}\%$	of	<u>what number?</u>	Missing factor statement.
↓		↓	↓	↓	
(percentage)	=	(percent)	·	(base)	
↓		↓	↓	↓	
2.99	=	$6\frac{1}{2}\%$	·	<i>B</i>	Convert to decimals.
2.99	=	6.5%	·	<i>B</i>	
2.99	=	.065	·	<i>B</i>	[(missing factor) = (product) ÷ (known factor)]

$$B = 2.99 \div .065 \text{ Divide.}$$

$$B = 46$$

Thus, the price of the item is \$46.00.

Try Exercise in Section 5.2 (Practice Set C).

Example 16

A clothing item is priced at \$20.40. This marked price includes a 15% discount. What is the original price?

We need to determine the original price. We can think of the original price as the *starting place*. *Starting place* indicates *base*. We need to determine the base. The new price, \$20.40, represents $100\% - 15\% = 85\%$ of the original price.

$ \begin{array}{ccccccc} 20.40 & \text{is} & 85\% & \text{of} & \underbrace{\text{what number?}} & & \\ \downarrow & \downarrow & \downarrow & \downarrow & & & \\ \text{(percentage)} & = & \text{(percent)} & \cdot & \text{(base)} & & \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \\ 20.40 & = & 85\% & \cdot & B & & \\ 20.40 & = & .85 & \cdot & B & & \\ B = 20.40 \div .85 & \text{Divide.} & & & & & \end{array} $	<p>Missing factor statement.</p> <p>Convert to decimals.</p> <p>[(missing factor) = (product) ÷ (known factor)]</p>
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Thus, the original price of the item is \$24.00.
 Try Exercise in Section 5.2 (Practice Set C).

5.2 Practice Set C

Exercise 8 *(Solution on p. 12.)*

1.98 is 2% of what number?

Exercise 9 *(Solution on p. 12.)*

3.3 milliliters of HCl represents 25% of an HCl solution. How many milliliters of solution are there?

Exercise 10 *(Solution on p. 12.)*

A salesman, who makes a commission of $18\frac{1}{4}\%$ on each sale, makes a commission of \$152.39 on a particular sale. Rounded to the nearest dollar, what is the amount of the sale?

Exercise 11 *(Solution on p. 12.)*

At "super-long play," $2\frac{1}{2}$ hours of play of a video cassette recorder represents 31.25% of the total playing time. What is the total playing time?

6 Exercises

For the following 25 problems, find each indicated quantity.

Exercise 12 *(Solution on p. 12.)*

What is 21% of 104?

Exercise 13

What is 8% of 36?

Exercise 14

What is 98% of 545?

Exercise 15

What is 143% of 33?

Exercise 16

What is $10\frac{1}{2}\%$ of 20?

Exercise 17

3.25 is what percent of 88?

Exercise 18

22.44 is what percent of 44?

Exercise 19

0.0036 is what percent of 0.03?

Exercise 20

31.2 is what percent of 26?

Exercise 21

266.4 is what percent of 74?

Exercise 22

0.0101 is what percent of 0.0505?

(Solution on p. 12.)

Exercise 23

2.4 is 24% of what number?

Exercise 24

24.19 is 41% of what number?

(Solution on p. 12.)

Exercise 25

61.12 is 16% of what number?

Exercise 26

82.81 is 91% of what number?

(Solution on p. 12.)

Exercise 27

115.5 is 20% of what number?

Exercise 28

43.92 is 480% of what number?

(Solution on p. 12.)

Exercise 29

What is 85% of 62?

Exercise 30

29.14 is what percent of 5.13?

(Solution on p. 12.)

Exercise 31

0.6156 is what percent of 5.13?

Exercise 32

What is 0.41% of 291.1?

(Solution on p. 12.)

Exercise 33

26.136 is 121% of what number?

Exercise 34

1,937.5 is what percent of 775?

(Solution on p. 12.)

Exercise 35

1 is what percent of 2,000?

Exercise 36

0 is what percent of 59?

(Solution on p. 12.)

Exercise 37

An item of clothing is on sale for 10% off the marked price. If the marked price is \$14.95, what is the sale price? (Round to two decimal places.)

Exercise 38

A grocery clerk, who makes \$365 per month, receives a 7% raise. How much is her new monthly salary?

(Solution on p. 12.)

Exercise 39

An item of clothing which originally sells for \$55.00 is marked down to \$46.75. What percent has it been marked down?

Exercise 40

On a 25 question exam, a student gets 21 correct. What percent is this?

(Solution on p. 13.)

Exercise 41

On a 45 question exam, a student gets 40%. How many questions did this student get correct?

Exercise 42*(Solution on p. 13.)*

A vitamin tablet, which weighs 250 milligrams, contains 35 milligrams of vitamin C. What percent of the weight of this tablet is vitamin C?

Exercise 43

Five years ago a secretary made \$11,200 annually. The secretary now makes \$17,920 annually. By what percent has this secretary's salary been increased?

Exercise 44*(Solution on p. 13.)*

A baseball team wins $48\frac{3}{4}\%$ of all their games. If they won 78 games, how many games did they play?

Exercise 45

A typist was able to increase his speed by 120% to 42 words per minute. What was his original typing speed?

Exercise 46*(Solution on p. 13.)*

A salesperson makes a commission of 12% on the total amount of each sale. If, in one month, she makes a total of \$8,520 in sales, how much has she made in commission?

Exercise 47

A salesperson receives a salary of \$850 per month plus a commission of $8\frac{1}{2}\%$ of her sales. If, in a particular month, she sells \$22,800 worth of merchandise, what will be her monthly earnings?

Exercise 48*(Solution on p. 13.)*

A man borrows \$1150.00 from a loan company. If he makes 12 equal monthly payments of \$130.60, what percent of the loan is he paying in interest?

Exercise 49

The distance from the sun to the earth is approximately 93,000,000 miles. The distance from the sun to Pluto is approximately 860.2% of the distance from the sun to the Earth. Approximately, how many miles is Pluto from the sun?

Exercise 50*(Solution on p. 13.)*

The number of people on food stamps in Maine in 1975 was 151,000. By 1980, the number had decreased to 59,200. By what percent did the number of people on food stamps decrease? (Round the result to the nearest percent.)

Exercise 51

In Nebraska, in 1960, there were 734,000 motor-vehicle registrations. By 1979, the total had increased by about 165.6%. About how many motor-vehicle registrations were there in Nebraska in 1979?

Exercise 52*(Solution on p. 13.)*

From 1973 to 1979, in the United States, there was an increase of 166.6% of Ph.D. social scientists to 52,000. How many were there in 1973?

Exercise 53

In 1950, in the United States, there were 1,894 daily newspapers. That number decreased to 1,747 by 1981. What percent did the number of daily newspapers decrease?

Exercise 54*(Solution on p. 13.)*

A particular alloy is 27% copper. How many pounds of copper are there in 55 pounds of the alloy?

Exercise 55

A bottle containing a solution of hydrochloric acid (HCl) is marked 15% (meaning that 15% of the HCl solution is acid). If a bottle contains 65 milliliters of solution, how many milliliters of water does it contain?

Exercise 56*(Solution on p. 13.)*

A bottle containing a solution of HCl is marked 45%. A test shows that 36 of the 80 milliliters contained in the bottle are hydrochloric acid. Is the bottle marked correctly? If not, how should it be remarked?

6.1 Exercises For Review**Exercise 57**

(here²) Use the numbers 4 and 7 to illustrate the commutative property of multiplication.

Exercise 58*(Solution on p. 13.)*

(here³) Convert $\frac{14}{5}$ to a mixed number.

Exercise 59

(here⁴) Arrange the numbers $\frac{7}{12}$, $\frac{5}{9}$ and $\frac{4}{7}$ in increasing order.

Exercise 60*(Solution on p. 13.)*

(here⁵) Convert 4.006 to a mixed number.

Exercise 61

(here⁶) Convert $\frac{7}{8}$ % to a fraction.

²"Multiplication and Division of Whole Numbers: Properties of Multiplication" <<http://cnx.org/content/m34867/latest/>>

³"Introduction to Fractions and Multiplication and Division of Fractions: Proper Fractions, Improper Fractions, and Mixed Numbers" <<http://cnx.org/content/m34912/latest/>>

⁴"Addition and Subtraction of Fractions, Comparing Fractions, and Complex Fractions: Comparing Fractions" <<http://cnx.org/content/m34937/latest/>>

⁵"Decimals: Converting a Decimal to a Fraction" <<http://cnx.org/content/m34958/latest/>>

⁶"Ratios and Rates: Fractions of One Percent" <<http://cnx.org/content/m34997/latest/>>

Solutions to Exercises in this Module

Solution to Exercise (p. 4)

35.7

Solution to Exercise (p. 4)

\$1,360

Solution to Exercise (p. 4)

4.9

Solution to Exercise (p. 4)

\$45,360

Solution to Exercise (p. 6)

23%

Solution to Exercise (p. 6)

90%

Solution to Exercise (p. 6)

40%

Solution to Exercise (p. 8)

99

Solution to Exercise (p. 8)

13.2ml

Solution to Exercise (p. 8)

\$835

Solution to Exercise (p. 8)

8 hours

Solution to Exercise (p. 8)

21.84

Solution to Exercise (p. 8)

534.1

Solution to Exercise (p. 8)

2.1

Solution to Exercise (p. 8)

51

Solution to Exercise (p. 8)

120

Solution to Exercise (p. 9)

20

Solution to Exercise (p. 9)

59

Solution to Exercise (p. 9)

91

Solution to Exercise (p. 9)

9.15

Solution to Exercise (p. 9)

568

Solution to Exercise (p. 9)

1.19351

Solution to Exercise (p. 9)

250

Solution to Exercise (p. 9)

0

Solution to Exercise (p. 9)

390.55

Solution to Exercise (p. 9)

84

Solution to Exercise (p. 10)

14

Solution to Exercise (p. 10)

160

Solution to Exercise (p. 10)

\$1,022.40

Solution to Exercise (p. 10)

36.28%

Solution to Exercise (p. 10)

61

Solution to Exercise (p. 10)

19,500

Solution to Exercise (p. 10)

14.85

Solution to Exercise (p. 11)

Marked correctly

Solution to Exercise (p. 11)

$2\frac{4}{5}$

Solution to Exercise (p. 11)

$4\frac{3}{500}$