LESSON 1.3

GOAL

Translate verbal phrases into expressions.

Vocabulary

A **verbal model** describes a situation using words as labels and using math symbols to relate the words.

A **rate** is a fraction that compares two quantities measured in different units.

A **unit rate** is a rate whose fraction has a denominator of 1.

EXAMPLE 1

Translate verbal phrases into expressions

Translate the phrase into an expression.

a. 8 more than the product of 5 times a number w

b. The quotient of 11 and the sum of 7 and a number x

c. The square of a number y decreased by 13

Solution

Verbal Phrase	Expression
a. 8 more than the product of 5 times a number w	$8 + 5w$
b. The quotient of 11 and the sum of 7 and a number x	$\frac{11}{7+x}$
c. The square of a number y decreased by 13	$y^2 - 13$

Exercises for Example 1

Translate the phrase into an expression.

1. The difference of 3 times a number m and 5

2. 26 divided by a number n

3. $\frac{1}{3}$ of a number p

EXAMPLE 2
Use a verbal model to write an expression

A student reads p pages of a 230-page book. Write an expression for the number of unread pages in the book.

Solution

STEP 1 Write a verbal model. Pages in book – Pages read
STEP 2 Translate the verbal model into an algebraic expression. 230 $-p$

An expression that represents the number of unread pages in the book is $230 - p$.

Exercises for Example 2

Write an expression for the situation.

5. Total cost of n notebooks if each notebook costs $1.25
6. The time it takes to get to school and home again if you walk 5 minutes to the bus stop and ride the bus for m minutes

EXAMPLE 3
Find a unit rate

An airport checks in 460 passengers in 5 hours. Find the unit rate.

Solution

$$\frac{460 \text{ Passengers}}{5 \text{ hours}} = \frac{460 \text{ Passengers} \div 5}{5 \text{ hours} \div 5} = \frac{92 \text{ Passengers}}{1 \text{ hours}}$$

The unit rate is 92 passengers per hour.

Exercises for Example 3

Find the unit rate.

7. $\frac{129 \text{ miles}}{6 \text{ gallons}}$

$\frac{18 \text{ People}}{3 \text{ Tabs}}$

Answer Key

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Study Guide

1. $3m - 5$
2. $\frac{26}{n}$
3. $\frac{1}{3}p$
4. $9 + k^2$
5. $1.25n$
6. $2(5 + m)$
7. 21.5 miles per gallon
8. 6 people per table
9. \$7 per ticket
10. 200 meters per minute