LESSON 3.5

NAME _____ DATE _____

Practice with Examples

For use with pages 160–165

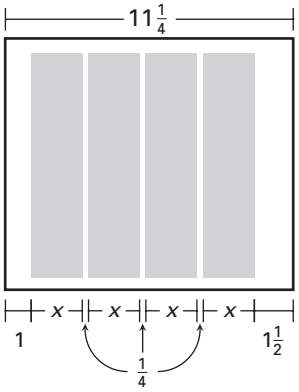
GOAL **Draw a diagram to understand real-life problems and use a table to check your answers**

EXAMPLE 1 Drawing a Diagram

The front page of your school newspaper is $11\frac{1}{4}$ inches wide. The left margin is 1 inch and the right margin is $1\frac{1}{2}$ inches. The space between the four columns is $\frac{1}{4}$ inch. Find the width of each column.

SOLUTION

The diagram shows that the page is made up of the width of the left margin, the width of the right margin, three spaces between the columns, and the four columns.



Verbal Model

$$\boxed{\text{Left margin}} + \boxed{\text{Right margin}} + 3 \cdot \boxed{\text{Space between columns}} + 4 \cdot \boxed{\text{Column width}} = \boxed{\text{Page width}}$$

Labels

Left margin = 1	(inch)
Right margin = $1\frac{1}{2}$	(inches)
Space between columns = $\frac{1}{4}$	(inch)
Column width = x	(inches)
Page width = $11\frac{1}{4}$	(inches)

Algebraic Model

$$1 + 1\tfrac{1}{2} + 3\left(\tfrac{1}{4}\right) + 4x = 11\tfrac{1}{4}$$

Solving for x, you find that each column can be 2 inches wide.

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Exercise for Example 1

1. Rework Example 1 if the front page of the newspaper has three columns.

EXAMPLE 2 *Using a Table as a Check*

While on business, your mother drove 65 miles per hour in an automobile and traveled 260 miles per hour in an airplane. She drove twice as many hours as she flew and the total mileage for the trip was 780 miles. How many hours did she drive?

a. Using the verbal model below, write and solve an algebraic equation.

b. Make a table to check your solution.

Driving rate	·	Driving time	+	Flying rate	·	Flying time	=	Total distance

SOLUTION

a. $65 \cdot 2x + 260 \cdot x = 780$ Write algebraic model.

$130x + 260x = 780$ Simplify.

$390x = 780$ Combine like terms.

$x = 2$ Divide each side by 390.

You find that $x = 2$ hours flying time; therefore, she drove $2x = 4$ hours.

b.

Flying time, x (in hours)	1	2	3	4
Flying distance (in miles)	260	520	780	1040
Driving time, 2x (in hours)	2	4	6	8
Driving distance (in miles)	130	260	390	520
Total distance (in miles)	390	780	1170	1560

From the table you can see that the total distance is 780 miles when driving time $2x = 4$.

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Exercise for Example 2

2. Rework Example 2 if she drove three times as many hours as she flew and the total mileage for the trip was 1365 miles.