NAME _____ DATE _____

3–7 Cost, Income, and Value Problems

Objective: To solve problems involving cost, income, and value.

Formulas

Cost = number of items × price per item

Income = hours worked × wage per hour

Total value = number of items × value per item

Example 1 Tickets for a concert cost \$8 for adults and \$4 for students. A total of 920 tickets worth \$5760 were sold. How many adult tickets were sold?

Solution

Step 1 The problem asks for the number of adult tickets sold.

Step 2 Let x = the number of adult tickets sold.
Then $920 - x$ = the number of student tickets sold.
Make a chart.

	Number	× Price per ticket =	Cost
Adult	x	8	$8x$
Student	$920 - x$	4	$4(920 - x)$

Step 3 The only fact not recorded in the chart is that the total cost of the tickets was \$5760. Write an equation using this fact.

Adult ticket cost + Student ticket cost = 5760
$8x + 4(920 - x) = 5760$

Step 4

$$\begin{aligned} 8x + 4(920 - x) &= 5760 \\ 8x + 3680 - 4x &= 5760 \\ 4x + 3680 &= 5760 \\ 4x &= 2080 \\ x &= 520 \quad \leftarrow \text{adult tickets} \\ 920 - x &= 400 \quad \leftarrow \text{student tickets} \end{aligned}$$

Step 5 *Check:* 520 adult tickets at \$8 each cost \$4160.
400 student tickets at \$4 each cost \$1600.
The total number of tickets is 520 + 400, or 920. √
The total cost of the tickets is \$4160 + \$1600, or \$5760. √

520 adult tickets were sold.

Solve. Complete the chart first.

1. Forty students bought caps at the baseball game. Plain caps cost \$4 each and deluxe ones cost \$6 each. If the total bill was \$236, how many students bought the deluxe cap?

	Number ×	Price =	Cost
Deluxe	d	?	?
Plain	?	?	?

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3–7 Cost, Income, and Value Problems *(continued)*

Solve. Complete the chart first.

2. Adult tickets for the game cost \$6 each and student tickets cost \$3 each. A total of 1040 tickets worth \$5400 were sold. How many student tickets were sold?

	Number ×	Price =	Cost
Adult	?	?	?
Student	s	?	?

3. A collection of 60 dimes and nickels is worth \$4.80. How many dimes are there? (*Hint:* In your equation, use 480¢, instead of \$4.80.)

	Number ×	Value of coin =	Total value
Dimes	d	?	?
Nickels	?	?	?

4. A collection of 54 dimes and nickels is worth \$3.80. How many nickels are there? (*Hint:* In your equation, use 380¢ instead of \$3.80.)

	Number ×	Value of coin =	Total value
Dimes	?	?	?
Nickels	n	?	?

5. Henry paid \$.80 for each bag of peanuts. He sold all but 20 of them for \$1.50 and made a profit of \$54. How many bags did he buy? (*Hint:* Profit = selling price − buying price.)

	Number ×	Price (¢) =	Cost (¢)
Bought	b	?	?
Sold	?	?	?

6. Paula paid \$4 for each stadium cushion. She sold all but 12 of them for \$8 each and made a profit of \$400. How many cushions did she buy? (*Hint:* Profit = selling price − buying price.)

	Number ×	Price (¢) =	Cost (¢)
Bought	b	?	?
Sold	?	?	?

Solve. Make and complete a chart first.

7. I have three times as many dimes as quarters. If the coins are worth \$6.60, how many quarters are there?

8. I have 12 more nickels than quarters. If the coins are worth \$5.40, how many nickels are there?

Mixed Review Exercises

Simplify.

1. $\dfrac{30 \div 5 + 2}{13 - 5}$

2. $24 \div \dfrac{1}{4}$

3. $\dfrac{1}{4}(28y - 12) + 6$

4. $(-5)(4)(-2)$

5. $3(2x + 5) + 4(-x)$

6. $6(x - y) + 5(2y + x)$

Evaluate if $a = 2$, $b = 3$, and $c = 8$.

7. $\dfrac{3a + b}{c - 5}$

8. $\dfrac{bc}{2a}$

9. $2(c - a) - b \div 3$