LESSON MAKER PRO

Costs and Counts

Build equations, solve, and explain what x means.

GRADE 8 · 8.AF.C.11.b

8.AF.C.11.b "Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem."

NAME _____ DATE _____

THE BIG IDEA

Let x stand for the amount you need to find. Use the facts to write an equation, solve it, then check that your answer makes sense in the situation.

WORKED EXAMPLE

An order of club badges costs $31 in all. How many badges were ordered?

ORDER COSTS

Item	Cost
Badge	$6 each
Delivery	$7

1. 6x + 7 = 31
2. 6x = 24
3. x = 4

Answer: 4 badges

PRACTICE 4 problems

1 Solve: 3x + 8 = 23

ANSWER _____

2 Solve: 5(x - 2) = 30

ANSWER _____

3 A bus pass costs $9 plus $2 per ride. You paid $29. Write an equation and find the number of rides.

ANSWER _____

4 You start with 45 game points and lose 3 each round. You end with 18. Write an equation and find the number of rounds.

ANSWER _____

APPLY IT Show your work

1 A music app costs $11 per month plus a one-time $13 fee. Your total is $101. Write an equation and find the number of months.

WORK SPACE

ANSWER _____

2 Two gaming cafés charge the rates shown. After how many hours will they cost the same? Write an equation.

GAMING CAFÉ RATES

Café	Entry fee	Cost per hour
Arcade A	$12	$3
Arcade B	$2	$5

ANSWER _____

CHALLENGE One step up

Student tickets cost $8 and adult tickets cost $13. A group buys 10 tickets for $115. Write one equation and find how many of each ticket they bought.

WORK SPACE AND ANSWER

ANSWER KEY

Costs and Counts

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve: 3x + 8 = 23	**x = 5**
2	Solve: 5(x - 2) = 30	**x = 8**
3	A bus pass costs $9 plus $2 per ride. You paid $29. Write an equation and find the number of rides.	**9 + 2x = 29; 10 rides**
4	You start with 45 game points and lose 3 each round. You end with 18. Write an equation and find the number of rounds.	**45 - 3x = 18; 9 rounds**

PART 2 · APPLY IT

1. **11x + 13 = 101; 8 months** Subtract 13 from 101, then divide by 11.
2. **12 + 3x = 2 + 5x; 5 hours** Set the two total costs equal and solve for x. Both cafés cost $27 after 5 hours.

CHALLENGE

Let x be the number of student tickets. 8x + 13(10 - x) = 115; 3 student tickets and 7 adult tickets.

Accept equivalent equations. For the challenge, x may represent adult tickets if the equation and both ticket counts are correct.