LESSON MAKER PRO

Costs in Context

Rewrite totals to show what each part means.

GRADE 7 · 7A.AF.A.13

7A.AF.A.13 "Generate expressions in equivalent forms based on context and explain how the quantities are related."

NAME _____ DATE _____

ONE TOTAL, TWO FORMS

When every item has the same cost, multiply the number of items by the cost of one item. You can distribute the multiplier to show separate costs, or factor a shared multiplier to show the cost of one item.

WORKED EXAMPLE

A book club buys 9 notebooks. Each notebook costs $7, plus $5 for a cover. Write two equivalent expressions for the total cost, then find the total.

1. Cost of one notebook with a cover: 7 + 5
2. Cost of 9: 9(7 + 5)
3. Distribute: 9(7 + 5) = 9(7) + 9(5)
4. Add: 63 + 45 = 108

Answer: 9(7 + 5) and 9(7) + 9(5); $108

PRACTICE 6 problems

1 You play 4 arcade games. In each game, you win x tickets and earn 3 bonus tickets. Write two equivalent expressions for your total tickets.

ANSWER _____

2 A science club pays 6x + 18 dollars for 6 identical build kits. The x dollars covers the parts in each kit. Write the total in factored form and state the fee added to each kit.

ANSWER _____

3 Two siblings each have x dollars and spend $4 each. Write two equivalent expressions for the money they have left together.

ANSWER _____

4 A school orders 10 identical sets. Each set has x markers and 2 erasers. Write two equivalent expressions for the total number of items.

ANSWER _____

5 Each of 3 game bundles contains x tokens and 8 bonus tokens. The total is 3x + 24. What does the 24 count? Explain briefly.

ANSWER _____

6 A store sells 14 matching team hats. Each hat costs x dollars plus $2 for a logo. The total is 14x + 28. Write it in factored form and state the logo cost per hat.

ANSWER _____

APPLY IT Show your work

1 Four friends each buy a concert ticket for x dollars and spend $6 on snacks. They use one $12 coupon on the whole order. Write two equivalent expressions for their total cost. Then find the cost if x = 20.

WORK SPACE

ANSWER _____

2 An esports club buys 8 controller grips at x dollars each and 2 cases at $12 each. The store takes $2 off each grip. Write two equivalent expressions for the total cost. Then find the cost if x = 16.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Six friends each buy a game pass for x dollars and a snack for $4. A café takes $6 off the group's total. Sam writes 6(x + 4) - 6. Lee writes 6(x + 3). Do both expressions give the same total? Explain what the 3 means in Lee's expression.

WORK SPACE AND ANSWER

ANSWER KEY

Costs in Context

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	You play 4 arcade games. In each game, you win x tickets and earn 3 bonus tickets. Write two equivalent expressions for your total tickets.	**4(x + 3) and 4x + 12**
2	A science club pays 6x + 18 dollars for 6 identical build kits. The x dollars covers the parts in each kit. Write the total in factored form and state the fee added to each kit.	**6(x + 3); $3 per kit**
3	Two siblings each have x dollars and spend $4 each. Write two equivalent expressions for the money they have left together.	**2(x - 4) and 2x - 8**
4	A school orders 10 identical sets. Each set has x markers and 2 erasers. Write two equivalent expressions for the total number of items.	**10(x + 2) and 10x + 20**
5	Each of 3 game bundles contains x tokens and 8 bonus tokens. The total is 3x + 24. What does the 24 count? Explain briefly.	**The 24 counts all bonus tokens because 3 bundles each have 8 bonus tokens.**
6	A store sells 14 matching team hats. Each hat costs x dollars plus $2 for a logo. The total is 14x + 28. Write it in factored form and state the logo cost per hat.	**14(x + 2); $2 per hat**

PART 2 · APPLY IT

1. **4(x + 6) - 12 and 4x + 12; $92** Distribute to get 4x + 24 - 12 = 4x + 12. When x = 20, the total is 4(20) + 12 = 92.
2. **8(x - 2) + 2(12) and 8x + 8; $136** The grip discount and case costs give 8x - 16 + 24 = 8x + 8. When x = 16, the total is 8(16) + 8 = 136.

CHALLENGE

Yes. Both expressions equal 6x + 18. Each friend's snack costs $4, and each friend's share of the $6 group discount is $1, so the 3 represents $3 per friend after the discount.

Accept equivalent expressions in either order. For the challenge, accept explanations that correctly divide the one $6 group discount among the six friends.