LESSON MAKER PRO

Costs in Context

Turn real situations into algebraic expressions.

HIGH SCHOOL · FA.A.2

FA.A.2 "Create expressions that can be modeled by a real-world context."

NAME _____ DATE _____

BUILD THE EXPRESSION

Decide what x counts, then match each action in the situation to an operation. Multiply a per-item amount by x, and use parentheses when an operation applies to a whole group.

WORKED EXAMPLE

A print shop charges a $31 setup fee and $14 for each custom sticker sheet. A voucher takes $18 off the entire order. Write an expression for the cost of x sheets.

1. The sheets cost 14x dollars.
2. Add the setup fee: 31 + 14x.
3. Subtract the voucher: 31 + 14x - 18.

Answer: 14x + 13

PRACTICE 6 problems

1 An arcade charges $8 to enter and $2 per game. Write an expression for the cost of playing x games.

ANSWER _____

2 A transit card has 25 credits. Each ride uses 4 credits. Write an expression for the credits left after x rides.

ANSWER _____

3 A shirt costs $9, but each shirt is discounted by $2. Write an expression for the cost of x shirts.

ANSWER _____

4 A club buys x snack packs for $5 each and splits the total cost equally among 4 members. Write an expression for each member's share.

ANSWER _____

5 You have a playlist with x clips and remove 6 clips. You then make 2 copies of the shorter playlist. Write an expression for the total number of clips in both copies.

ANSWER _____

6 A skating rink charges $12 per person plus one $5 booking fee. If x people split the total cost equally, write an expression for each person's cost. Assume $x > 0$.

ANSWER _____

APPLY IT Show your work

1 An online game sells expansion packs for $10 each. You buy x packs with a 20% discount on the packs, then pay a $6 processing fee. Write an expression for your total cost.

WORK SPACE

ANSWER _____

2 A student-run concert sells x tickets for $8 each. A sponsor adds an amount equal to 50% of ticket revenue, and the group pays $40 to rent lights. Write an expression for the money left after the rental.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Festival tickets cost $30 each, plus a $2 service fee per ticket. A 10% discount applies to the ticket cost but not the service fee. Write an expression for the total cost of x tickets. Explain why multiplying the entire cost by 0.9 would be incorrect.

WORK SPACE AND ANSWER

Costs in Context

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	An arcade charges $8 to enter and $2 per game. Write an expression for the cost of playing x games.	**8 + 2x**
2	A transit card has 25 credits. Each ride uses 4 credits. Write an expression for the credits left after x rides.	**25 - 4x**
3	A shirt costs $9, but each shirt is discounted by $2. Write an expression for the cost of x shirts.	**(9 - 2)x**
4	A club buys x snack packs for $5 each and splits the total cost equally among 4 members. Write an expression for each member's share.	**5x/4**
5	You have a playlist with x clips and remove 6 clips. You then make 2 copies of the shorter playlist. Write an expression for the total number of clips in both copies.	**2(x - 6)**
6	A skating rink charges $12 per person plus one $5 booking fee. If x people split the total cost equally, write an expression for each person's cost. Assume x > 0.	**(12x + 5)/x**

PART 2 · APPLY IT

1. **0.8(10x) + 6** The packs cost 10x dollars before the discount. Pay 80% of that amount, then add the fee.
2. **8x + 0.5(8x) - 40** Ticket revenue is 8x dollars, and the sponsor adds half that amount. Subtract the $40 rental cost.

CHALLENGE

0.9(30x) + 2x = 29x. Multiplying the entire cost by 0.9 would also discount the service fees, which are not part of the offer.

Accept equivalent expressions, such as 7x for problem 3 and 12x - 40 for the second word problem. In the challenge, the explanation must keep the service fee outside the discount.