LESSON MAKER PRO

Make It Add Up

Write equations and inequalities for everyday costs and goals.

HIGH SCHOOL · A.CED.A.1.a

A.CED.A.1.a "Create equations and inequalities in one variable and use them to solve problems."

NAME _____ DATE _____

FROM WORDS TO MATH

Let x stand for the unknown amount. Write an equation when a total is exact, or an inequality when the situation gives a limit. Then solve and check that your answer makes sense.

WORKED EXAMPLE

A parking lot charges $11 to enter and $7 per hour. Your total is $53. Write an equation and find the number of hours.

1. Let x be the number of hours: 11 + 7x = 53.
2. Subtract 11: 7x = 42.
3. Divide by 7: x = 6.

Answer: 6 hours

PRACTICE 6 problems

1 A skate rink charges $9 to enter and $4 per hour. Your total is $29. Write an equation for x hours and find x.

ANSWER _____

2 You earn $3 per bracelet and spend $8 on supplies. Your profit is $16. Write an equation for x bracelets and find x.

ANSWER _____

3 You start with $40 on a gift card and spend $5 per visit. After x visits, $15 remains. Write an equation and find x.

ANSWER _____

4 Four friends split the cost of a meal equally. Each also buys a $12 movie ticket. If each person pays $20 total, write an equation for the meal cost, x, and find x.

ANSWER _____

5 You have $34 for a game. Entry costs $10, and each round costs $3. Write an inequality for x rounds you can afford, then find the greatest whole-number x.

ANSWER _____

6 A team's goal is at least 27 points. It has 9 points and earns 2 points per win. Write an inequality for x wins needed, then find the least whole-number x.

ANSWER _____

APPLY IT Show your work

1 You have $92 for a concert. Your ticket costs $47, and round-trip train fare costs $15. T-shirts cost $10 each. Write an inequality and find the most T-shirts you can buy.

WORK SPACE

ANSWER _____

2 You sell handmade stickers for $4 each. Printing costs $28 up front, plus $1 per sticker. Write an inequality and find how many stickers you must sell to earn at least $50 in profit.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A bike-share company offers Plan A for $18 plus $2 per ride. Plan B costs $8 plus $4 per ride. For which nonnegative whole numbers of rides is Plan A no more expensive than Plan B? Write and solve an inequality, and explain what happens at the boundary.

WORK SPACE AND ANSWER

ANSWER KEY

Make It Add Up

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A skate rink charges $9 to enter and $4 per hour. Your total is $29. Write an equation for x hours and find x.	**9 + 4x = 29; x = 5 hours**
2	You earn $3 per bracelet and spend $8 on supplies. Your profit is $16. Write an equation for x bracelets and find x.	**3x - 8 = 16; x = 8 bracelets**
3	You start with $40 on a gift card and spend $5 per visit. After x visits, $15 remains. Write an equation and find x.	**40 - 5x = 15; x = 5 visits**
4	Four friends split the cost of a meal equally. Each also buys a $12 movie ticket. If each person pays $20 total, write an equation for the meal cost, x, and find x.	**x/4 + 12 = 20; x = $32**
5	You have $34 for a game. Entry costs $10, and each round costs $3. Write an inequality for x rounds you can afford, then find the greatest whole-number x.	**10 + 3x <= 34; greatest x = 8 rounds**
6	A team's goal is at least 27 points. It has 9 points and earns 2 points per win. Write an inequality for x wins needed, then find the least whole-number x.	**9 + 2x >= 27; least x = 9 wins**

PART 2 · APPLY IT

1. **47 + 15 + 10x <= 92; at most 3 T-shirts** After the ticket and train fare, $30 remains. Solve 10x <= 30 to get x <= 3.
2. **4x - (28 + x) >= 50; at least 26 stickers** Subtract total printing costs from sales revenue. Simplifying gives 3x - 28 >= 50, so x >= 26.

CHALLENGE

18 + 2x <= 8 + 4x, so x >= 5. At 5 rides, both plans cost $28; for more rides, Plan A costs less.

Accept equivalent equations and inequalities that use a clearly defined x. For the challenge, accept any explanation that identifies 5 rides as the break-even point.