LESSON MAKER PRO

# Expression Detective

*Read each expression as a story about quantities.*

**HIGH SCHOOL · HSA-SSE.A.1**

**CCSS.Math.Content.HSA-SSE.A.1** "Interpret expressions that represent a quantity in terms of its context. *"

NAME _____ DATE _____

## MATCH NUMBERS TO MEANING

An expression represents a quantity in a situation. Use the operation and grouping to decide what each number, variable, term, or factor means. A product often shows repeated groups, while addition or subtraction can show a starting amount, a fee, a bonus, or a cost.

## WORKED EXAMPLE

A movie theater charges $17 per ticket and adds a one-time $5 online fee. Write an expression for the total cost of n tickets.

1. Let n represent the number of tickets.
2. The ticket cost is 17n dollars.
3. Add the one-time online fee: 17n + 5.

**Answer: 17n + 5 represents the total cost, in dollars, of n tickets and the online fee.**

## PRACTICE 6 problems

**1** A streaming service charges a $12 monthly fee plus $4 for each movie rental. Its cost is 12 + 4m. What does 4m represent?

**ANSWER** _____

**2** A fundraiser earns $9 for each bracelet sold and has a $3 materials cost. Its net amount is 9b - 3. What does 9b - 3 represent?

**ANSWER** _____

**3** A player begins with 48 reward points and earns 7 points in each round. Their points are 48 + 7r. What does 48 represent?

**ANSWER** _____

**4** A rectangular garden has width 6 and length x + 8. Its area is 6(x + 8). What does x + 8 represent?

**ANSWER** _____

**5** A game pass costs $15. The expression 15p models the cost of p game passes. What quantity does 15p represent?

**ANSWER** _____

**6** A student has $20 on a gift card and spends $2 each day for d days. What does 20 - 2d represent?

**ANSWER** _____

## APPLY IT Show your work

**1** A student group sells T-shirts for a tournament. Each shirt sells for $13, and the printing setup costs $28. The group uses 13t - 28 to model its profit after selling t shirts. Explain what 13t, 28, and 13t - 28 mean. Then find the profit when t = 4.

WORK SPACE

**ANSWER** _____

**2** A bike-share service charges a $7 unlock fee plus $3 for each hour h that a bike is used. The total cost is 7 + 3h. Explain what the expression represents, then find the cost for 8 hours.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A gaming league gives each of 4 teams 3x points for completing x quests and 2 bonus points. Its total-points expression is 4(3x + 2). Explain why the parentheses are needed, what 3x + 2 represents, and what 4(3x + 2) represents. Then find the total when x = 7.

WORK SPACE AND ANSWER

**ANSWER KEY**

# Expression Detective

**HIGH SCHOOL · HSA-SSE.A.1**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | A streaming service charges a $12 monthly fee plus $4 for each movie rental. Its cost is 12 + 4m. What does 4m represent? | **4m represents the cost, in dollars, of renting m movies.** |
| 2 | A fundraiser earns $9 for each bracelet sold and has a $3 materials cost. Its net amount is 9b - 3. What does 9b - 3 represent? | **9b - 3 represents the net amount of money, in dollars, after selling b bracelets and paying the materials cost.** |
| 3 | A player begins with 48 reward points and earns 7 points in each round. Their points are 48 + 7r. What does 48 represent? | **48 represents the player's starting number of reward points.** |
| 4 | A rectangular garden has width 6 and length x + 8. Its area is 6(x + 8). What does x + 8 represent? | **x + 8 represents the length of the garden.** |
| 5 | A game pass costs $15. The expression 15p models the cost of p game passes. What quantity does 15p represent? | **15p represents the total cost, in dollars, of p game passes.** |
| 6 | A student has $20 on a gift card and spends $2 each day for d days. What does 20 - 2d represent? | **20 - 2d represents the amount of money, in dollars, remaining on the gift card after d days.** |

## PART 2 · APPLY IT

1. **13t is the revenue, in dollars, from selling t shirts. 28 is the printing setup cost, in dollars. 13t - 28 is the profit, in dollars. When t = 4, the profit is 13(4) - 28 = 24, so the profit is $24.** Accept equivalent descriptions of revenue, setup cost, and profit. Substitute 4 for t, then compute 52 - 28 = 24.
2. **7 + 3h represents the total bike-share cost, in dollars, including the unlock fee and h hours of use. For 8 hours, the cost is 7 + 3(8) = 31, so the cost is $31.** The 7 is the one-time unlock fee, and 3h is the hourly-use cost. Substitute 8 for h and add 7 + 24.

## CHALLENGE

**The parentheses are needed because each team receives both the quest points and the bonus points. 3x + 2 represents the points earned by one team. 4(3x + 2) represents the total points earned by all 4 teams. When x = 7, the total is 4(3(7) + 2) = 4(23) = 92 points.**

Accept equivalent descriptions of revenue, setup cost, and profit. Accept equivalent wording that correctly identifies the quantities and units.