

Expression Detectives

Model situations with expressions and find their values.

GRADE 6 • 6.PAR.6

6.PAR.6 "Identify, write, evaluate, and interpret numerical and algebraic expressions as mathematical models to explain relevant situations."

NAME _____

DATE _____

TURN WORDS INTO MATH

An expression uses numbers, operations, and sometimes x to represent a situation. First decide what x means, then translate each part of the situation. To evaluate, replace x with its value and follow the order of operations.

WORKED EXAMPLE

A music shop earns \$11 for each album sold and also earns a \$17 bonus. Evaluate $11x + 17$ when $x = 13$.

1. Substitute 13 for x : $11(13) + 17$

2. Multiply: $143 + 17$

3. Add: 160

Answer: \$160

PRACTICE 6 problems

- 1** A game gives you x coins each day for 5 days, then gives you 4 extra coins. Write an expression for the total number of coins.

ANSWER _____

- 2** Evaluate $7x - 3$ when $x = 8$.

ANSWER _____

- 3** Three boxes each hold x markers. There are also 5 loose markers. Write an expression for the total number of markers.

ANSWER _____

- 4** Which situation can be modeled by $4x + 5$?
A. You have 4 stickers, then get x more stickers, then get 5 more. B. You get 4 stickers in each of x packs, then get 5 extra stickers. C. You have 5 packs with 4 stickers each and give away x stickers.

ANSWER _____

- 5** Evaluate $3(x + 2)$ when $x = 7$.

ANSWER _____

- 6** A gamer earns 8 points for each level, x , and then loses 2 points. The score is represented by $8x - 2$. What does the -2 represent?

ANSWER _____

APPLY IT Show your work

- 1** The esports club sells x snack bundles for \$4 each. The club spends \$7 on posters. Write an expression for the money the club has after paying for posters. Then find the amount when $x = 12$.

WORK SPACE

ANSWER _____

- 2** A student starts a reading challenge with 5 points. The student earns 8 points for each book read, x . Write an expression for the total points. Then find the total after 3 books.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A team orders x hoodies for \$12 each and 3 water bottles for \$5 each. The store takes \$8 off the whole order. Write one expression for the total cost. Then evaluate it when $x = 4$ and explain what each part of the expression represents.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A game gives you x coins each day for 5 days, then gives you 4 extra coins. Write an expression for the total number of coins.	$5x + 4$
2	Evaluate $7x - 3$ when $x = 8$.	53
3	Three boxes each hold x markers. There are also 5 loose markers. Write an expression for the total number of markers.	$3x + 5$
4	Which situation can be modeled by $4x + 5$? A. You have 4 stickers, then get x more stickers, then get 5 more. B. You get 4 stickers in each of x packs, then get 5 extra stickers. C. You have 5 packs with 4 stickers each and give away x stickers.	B
5	Evaluate $3(x + 2)$ when $x = 7$.	27
6	A gamer earns 8 points for each level, x , and then loses 2 points. The score is represented by $8x - 2$. What does the -2 represent?	The gamer loses 2 points.

PART 2 • APPLY IT

- $4x - 7$; \$41** Multiply the number of bundles by \$4, then subtract the \$7 poster cost. Substitute 12: $4(12) - 7 = 41$.
- $8x + 5$; 29 points** Multiply the books read by 8, then add the 5 starting points. Substitute 3: $8(3) + 5 = 29$.

CHALLENGE

$12x + 3(5) - 8 = 55$. $12x$ is the cost of the hoodies, $3(5)$ is the cost of the water bottles, and -8 is the discount.

Accept equivalent expressions with terms in a different order, such as $4 + 5x$ for $5x + 4$. For interpretation items, accept clear wording that correctly connects each term to the situation.