LESSON MAKER PRO

Expression Detective

Read what each part tells you.

GRADE 8 · 8.PAR.3.1

8.PAR.3.1 "Interpret expressions and parts of an expression, in context, by utilizing formulas or expressions with multiple terms and/or factors."

NAME _____ DATE _____

READ THE PARTS

An expression can combine a per-unit amount, a fixed amount, and grouped quantities. Read what the variable means first, then use multiplication and grouping to decide what each term or factor tells you. To find a total for a given value, substitute and follow the order of operations.

WORKED EXAMPLE

A bike rental costs $C = 4h + 7$ dollars, where h is the number of rental hours. What do $4h$ and 7 mean? Find C when $h = 3$.

1. $4h$ is the hourly rental cost, \$4 for each of h hours.
2. 7 is a one-time rental fee.
3. Substitute $h = 3$: $C = 4(3) + 7$.
4. $C = 12 + 7 = 19$.

Answer: 4h is the hourly cost, 7 is the one-time fee, and C = $19.

PRACTICE 6 problems

1 A music download bundle costs $6n + 10$ dollars, where n is the number of downloads. What does $6n$ represent?

ANSWER _____

2 A club's score is modeled by $S = 9w + 14$, where w is the number of wins. What does 14 represent?

ANSWER _____

3 A game gives a player $2(b + 8)$ coins, where b is the number of bonus-chest coins. What does the factor 2 tell you?

ANSWER _____

4 A practice score is modeled by $S = 11t - 5$, where t is the number of hours practiced. What do $11t$ and -5 represent?

ANSWER _____

5 A fundraiser has a \$20 donation before selling meal tickets. Its total is $F = 15m + 20$, where m is the number of tickets sold. Find F when $m = 2$.

ANSWER _____

6 The area of a rectangular banner is $A = 18x$ square centimeters, where x is the width in centimeters. What do 18 and x represent?

ANSWER _____

APPLY IT Show your work

1 An esports club orders custom jerseys. The total cost is C = 16j + 25 dollars, where j is the number of jerseys. The jerseys cost $16 each, and the logo setup has a fixed fee. Explain what 16j and 25 mean. Then find C when j = 5.

WORK SPACE

ANSWER _____

2 A video creator saves files using S = 8(9 + v) gigabytes, where 9 is the number of starter clips and v is the number of new clips. Explain what 8 and (9 + v) mean. Find S when v = 6.

WORK SPACE

ANSWER _____

CHALLENGE One step up

An art club makes 5 identical gift packs. Each pack has s stickers that cost $2 each and a $9 packaging fee. The total cost is T = 5(2s + 9). Explain why 5 multiplies the whole expression in parentheses. Then find T when s = 13.

WORK SPACE AND ANSWER

ANSWER KEY

Expression Detective

GRADE 8 · 8.PAR.3.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A music download bundle costs 6n + 10 dollars, where n is the number of downloads. What does 6n represent?	**The cost of n downloads at $6 each.**
2	A club's score is modeled by S = 9w + 14, where w is the number of wins. What does 14 represent?	**The club's starting score of 14 points.**
3	A game gives a player 2(b + 8) coins, where b is the number of bonus-chest coins. What does the factor 2 tell you?	**The game doubles the total of the bonus-chest coins and the 8 daily coins.**
4	A practice score is modeled by S = 11t - 5, where t is the number of hours practiced. What do 11t and -5 represent?	**11t adds 11 points for each practice hour, and -5 subtracts 5 points.**
5	A fundraiser has a $20 donation before selling meal tickets. Its total is F = 15m + 20, where m is the number of tickets sold. Find F when m = 2.	**F = $50.**
6	The area of a rectangular banner is A = 18x square centimeters, where x is the width in centimeters. What do 18 and x represent?	**18 is the banner's length in centimeters, and x is its width in centimeters.**

PART 2 · APPLY IT

1. **C = $105.** 16j is the cost of j jerseys at $16 each, and 25 is the fixed logo setup fee. Substitute 5 for j: C = 16(5) + 25 = 80 + 25 = 105.
2. **S = 120 gigabytes.** 8 is the storage used by each clip, and (9 + v) is the total number of clips. There are 9 + 6 = 15 clips. Multiply by 8 gigabytes per clip: S = 8(15) = 120.

CHALLENGE

The 5 represents five identical gift packs, so it multiplies both the sticker cost and the packaging fee. T = $175.

Accept equivalent wording that correctly identifies per-unit amounts, fixed amounts, totals, and grouped quantities. For calculation items, accept correct equivalent numerical work and the correct unit.