

Expression Detectives

Name the parts and spot groups that act as one.

GRADE 6 • NY-6.EE.2.b

NY-6.EE.2.b "Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor, and quotient); view one or more parts of an expression as a single entity."

NAME _____

DATE _____

PARTS OF AN EXPRESSION

A term is a number, a variable, or a product of numbers and variables. A coefficient is the number that multiplies a variable. Addition makes a sum, subtraction makes a difference, multiplication makes a product, and division makes a quotient. Parentheses can group part of an expression so that group can be treated as one entity.

WORKED EXAMPLE

Identify the factors in $7(3x + 5)$. Then name the operation and terms inside the parentheses.

1. The parentheses make $3x + 5$ one entity.
2. The outside operation is multiplication, so the expression is a product.
3. Its factors are 7 and $(3x + 5)$.
4. Inside the parentheses, addition makes a sum with terms $3x$ and 5.

Answer: Factors: 7 and $(3x + 5)$. Inside: a sum with terms $3x$ and 5.

PRACTICE 6 problems

- 1** For $9x + 14$, write the terms and the coefficient of x .

ANSWER _____

- 2** Name the overall expression $31 - 6x$ as a sum, difference, product, or quotient.

ANSWER _____

- 3** In $4(2x + 11)$, treat the parentheses as one entity. What are the two factors of the product?

ANSWER _____

- 4** The expression $8x$ is a product. What are its factors?

ANSWER _____

- 5** For $45/x$, name the expression and identify its dividend and divisor.

ANSWER _____

- 6** In $13x + 16 - 2$, list the terms and the coefficient of x .

ANSWER _____

APPLY IT Show your work

- 1** At each of 4 game-design club meetings, the club spends \$9 for each of x art packs and \$20 on a room fee. The total cost is $4(9x + 20)$. Treat $(9x + 20)$ as one entity. What are the two factors, and what does the parenthesized entity mean?

WORK SPACE

ANSWER _____

- 2** A group orders custom skate stickers. There is a \$28 design fee plus \$6 for each of x sticker sheets, and 4 friends split the total equally. Each person's cost is $(28 + 6x)/4$. Name the quotient's dividend and divisor, then explain what the dividend represents.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Mina says that $11(2x - 17) + 19x$ has three terms: 11, $2x$, and -17 . Is Mina correct? Explain by listing the terms at the outermost level, the factors in the first term, and the terms inside the parentheses.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	For $9x + 14$, write the terms and the coefficient of x .	Terms: $9x$ and 14. Coefficient: 9.
2	Name the overall expression $31 - 6x$ as a sum, difference, product, or quotient.	difference
3	In $4(2x + 11)$, treat the parentheses as one entity. What are the two factors of the product?	4 and $(2x + 11)$
4	The expression $8x$ is a product. What are its factors?	8 and x
5	For $45/x$, name the expression and identify its dividend and divisor.	Quotient; dividend: 45, divisor: x.
6	In $13x + 16 - 2$, list the terms and the coefficient of x .	Terms: $13x$, 16, and -2. Coefficient: 13.

PART 2 • APPLY IT

- Factors: 4 and $(9x + 20)$. The parenthesized entity is the cost for one meeting.** The outside multiplication has factors 4 and the grouped expression. The group $9x + 20$ combines the art-pack cost and room fee for one meeting.
- Dividend: $28 + 6x$. Divisor: 4. The dividend is the total cost of the sticker order before the friends split it.** The expression is a quotient because the total cost is divided by 4. The grouped numerator is one entity, the full order cost.

CHALLENGE

Mina is not correct. The outermost terms are $11(2x - 17)$ and $19x$. The factors in the first term are 11 and $(2x - 17)$. Inside the parentheses, the difference has terms $2x$ and -17 .

Accept equivalent wording such as “grouped quantity” or “one-meeting cost” for a parenthesized entity. For terms separated by subtraction, accept -2 and -17 as terms, or accept descriptions that identify them as subtracted terms.