

Expression Detectives

Find the important parts of each expression.

GRADE 6 • 6.EE.A.2b

CCSS.Math.Content.6.EE.A.2b "Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example..."

NAME _____

DATE _____

PARTS WORK TOGETHER

A sum has terms, a product has factors, and a quotient has a numerator and denominator. A coefficient is the numerical factor of a variable term. A group in parentheses can be treated as one entity, even when the group is also a sum with its own terms.

WORKED EXAMPLE

Describe $12(4 + 9)$ using expression vocabulary.

1. The whole expression is a product.
2. Its two factors are 12 and $(4 + 9)$.
3. Treat $(4 + 9)$ as one factor, or one entity.
4. Inside that entity is a sum with terms 4 and 9.

Answer: $12(4 + 9)$ is a product with factors 12 and $(4 + 9)$. The factor $(4 + 9)$ is also a sum with terms 4 and 9.

PRACTICE 6 problems

- 1** Look at $7x + 11$. Identify the coefficient and the variable term.

ANSWER _____

- 2** Is $6(y + 8)$ a sum, product, or quotient? Name its two factors.

ANSWER _____

- 3** List all three terms in $11a + 15 + 5b$.

ANSWER _____

- 4** For $(m + 16)/8$, name the numerator and the denominator.

ANSWER _____

- 5** In $(a + 6)(b + 7)$, list the two factors. What can the first factor be viewed as?

ANSWER _____

- 6** In $18r + (q + 1)$, list the terms of the entire expression. Then tell what $(q + 1)$ is when viewed by itself.

ANSWER _____

APPLY IT Show your work

- 1** A gaming club earns 5 points for each win and gets a 13-point bonus. Its score is shown by $5w + 13$. Name the terms, identify the coefficient, and name the factors in the product term.

WORK SPACE

ANSWER _____

- 2** A music app charges a \$7 monthly fee plus \$2 for each song download. The cost is shown by $7 + 2d$. Name the two terms in the sum, then identify the product and its factors.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Describe $3(2x + 5) + 8$ in two layers. First list the terms in the outer sum. Then describe the first term as a product and describe its grouped factor.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Look at $7x + 11$. Identify the coefficient and the variable term.	Coefficient: 7; variable term: $7x$.
2	Is $6(y + 8)$ a sum, product, or quotient? Name its two factors.	It is a product. Its factors are 6 and $(y + 8)$.
3	List all three terms in $11a + 15 + 5b$.	The terms are 11a, 15, and 5b.
4	For $(m + 16)/8$, name the numerator and the denominator.	Numerator: $(m + 16)$; denominator: 8.
5	In $(a + 6)(b + 7)$, list the two factors. What can the first factor be viewed as?	The factors are $(a + 6)$ and $(b + 7)$. The first factor is a sum with terms a and 6.
6	In $18r + (q + 1)$, list the terms of the entire expression. Then tell what $(q + 1)$ is when viewed by itself.	The terms are $18r$ and $(q + 1)$. The expression $(q + 1)$ is a sum with terms q and 1.

PART 2 • APPLY IT

- Terms: $5w$ and 13; coefficient: 5; factors in $5w$: 5 and w .** The plus sign separates the two terms. The term $5w$ is a product, so 5 is the coefficient and 5 and w are its factors.
- Terms: 7 and $2d$; product: $2d$; factors: 2 and d .** The whole expression is a sum with terms 7 and $2d$. The variable term $2d$ is a product of 2 and d .

CHALLENGE

The outer sum has terms $3(2x + 5)$ and 8. The first term is a product with factors 3 and $(2x + 5)$, and $(2x + 5)$ is a sum with terms $2x$ and 5.

Accept terms and factors in either order. Accept equivalent wording such as grouped expression, parenthetical expression, or single entity for an expression in parentheses.