

Core Content

Cluster Title: Apply and extend previous understandings of arithmetic to algebraic expressions.

Standard 2: Write, read, and evaluate expressions in which letters stand for numbers.

b. 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, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.*

Concepts and Skills to Master

Conceptual:

Understand that terms are values in an expression separated by addition and subtraction (e.g., $x + 3$ contains two terms; $2x - 5$ contains two terms).

Understand that multiplication and division in an expression represent a single term (e.g., $3y$ is a term, $\frac{1}{2}x$ is a term).

Know that a coefficient is a number that multiplies a variable (e.g., 3 is the coefficient of $3y$).

Procedural:

Read an expression correctly using appropriate mathematical terms (e.g., $2(8 + 7)$ is read as the product of 2 times the quantity or sum of $8 + 7$).

Identify parts of an expression (e.g., in the expression $2x - 5$, $2x$ is the first term where 2 is the coefficient of the variable x and 5 is the second term, a constant).

Representational:

Represent the parts of an expression with manipulatives, diagrams, or coordinate plane.

Supports for Teachers

Critical Background Knowledge

Conceptual:

Recognize that variables represent unknown quantities.

Know the meaning of the terms sum, product, factor, quantity, and quotient.

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| <p>Procedural: Read expressions of single operations (e.g., $3y$, $x + 7$, $4 + 3$).</p> <p>Representational: Represent the four operations (addition, subtraction, multiplication and division) with manipulatives, diagrams, number lines, and story context.</p> | |
| <p>Academic Vocabulary and Notation Coefficient, Dividend, Divisor, Equation, Expression, Factor, Multiplier, Product, Quotient, Sum, Term (optional term – Constant), Parentheses</p> | |
| <p>Instructional Strategies Used</p> <ol style="list-style-type: none"> 1. Give an example of an expression, such as $4x + 7 + x$, and identify the parts. The terms are $4x$, 7 and x. The coefficients are 4 and 1 (since there is one x). The values 4 and x are both factors of the product $4x$. Give additional examples to students to identify parts of expressions in small groups. 2. Give the students word problems such as the following and have them find the solutions: The sum of twice a number plus 13 is 75. Write the equation and find the number. 3. Use the algebra tiles to represent terms in an expression (e.g., $2x$ requires two x pieces) <p><u>Game 1:</u> Give students two sets of cards. The first set contains equations and the second set contains the academic vocabulary. Students turn over an equation card. Then students match academic vocabulary to the parts of the equation.</p> <p><u>Game 2:</u> Start with a small expression, such as $2x - 4$. Break the expression into distinct parts. Write on separate cards 2, x, $-$, and 4.</p> | <p>Resources Used</p> <p>http://nlvm.usu.edu/en/nav/category_g_3_t_2.html Algebra Tiles</p> |

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| <p>Assign a child a card to hold and line the children in the front of the classroom in the order of the expression.</p> <p>To identify parts of the expression, have students sit down when you say the vocabulary word that corresponds with their card.</p> <p>Example: Teacher says “coefficient.” Student holding the 2 sits down. Teacher says “term.” Students holding 2 and x may link arms and sit, as well as student holding 4.</p> | | |
| Assessment Tasks Used | | |
| Skill-based Task: Provide an expression (e.g., $6x + 4$) for students to identify the parts. Write an expression that has two terms and a product. Write an expression that has a coefficient and a sum. | Problem Task: This is a skill-based standard. Therefore, there is no problem task. | |