

Simplify Algebraic Expressions

Family Letter

Dear Family,

In this module, *Simplify Algebraic Expressions*, students will use their prior knowledge of operations with algebraic expressions, greatest common factors, and the distributive property to simplify algebraic expressions. By simplifying algebraic expressions, students will be able to make sense of complex algebraic models and be ready to solve multi-step algebraic equations.

What Did Students Learn Previously?

In grade 6, students used variables to write algebraic expressions and equations that modeled real-world scenarios. For example, given that Aaron is 2 years older than Juan, students would represent Aaron's age by the expression $j + 2$. If they were then told that Aaron is 10 years old, they would write $10 = j + 2$ and find that Juan is 8 years old.

What Will Students Learn in This Module?

Combine Like Terms

- Students will combine like terms by combining the coefficients of the terms containing the same variable.
- Students will add algebraic expressions by combining the like terms.

Distribute Integers Across Algebraic Expressions

- Students will recognize parentheses as indicating multiplication. For example, students will recognize $3(x)$ as meaning 3 times x .
- Students will eliminate parentheses by distributing integer constants to the terms inside the parentheses. For example, students will rewrite $3(x + 2)$ as $3x + 6$.
- Students will subtract linear expressions by distributing the subtraction to each term of the subtracted expression. For example: students will understand $x + 2 - (-x + 5)$ as meaning $x + 2 - -x - + 5$, and will remove the double operators to write $x + 2 + x - 5$. They should then be able to combine like terms to write: $2x - 3$.

Factor Linear Expressions

- Students will identify the greatest common factor (GCF) for a set of monomials using prime factorization. In the prime factorization shown, the factors shared by both $18a$ and $20ab$ are 2 and a . The GCF is $2a$.

$$18a = \textcircled{2} \cdot \textcircled{3} \cdot \textcircled{3} \cdot \textcircled{a}$$

$$20ab = \textcircled{2} \cdot \textcircled{2} \cdot \textcircled{5} \cdot \textcircled{a} \cdot \textcircled{b}$$

- Students will factor expressions by writing them as a product of their GCF and the remaining factors.
- Students will identify algebraic expressions with no common factors.

What Vocabulary Terms Will Students Use?

Term	Definition
coefficient	The numerical factor of a term that contains a variable.
constant	A term that does not contain a variable.
factored form	An algebraic expression written as the product of its GCF and the remaining factors.
greatest common factor	The greatest possible monomial that is a factor of all terms given.
like terms	Terms that contain the same variable(s) raised to the same power.
linear expression	An algebraic expression in simplest form in which the variable is raised to the first power.
monomial	A number, variable, or a product of a number and one or more variables.
simplest form	The form of an expression when it has no parentheses and no like terms.
term	A number, variable, or product of a number and variable(s).

How You Can Provide Support

- Algebraic expressions can be used to model the cost of almost any project. You can support your child's understanding of writing and *simplifying algebraic expressions* by having them model the cost of a project using an algebraic expression. For example, suppose you are making a blouse that requires 1.5 yards of fabric and 8 buttons. The cost could be modeled by the expression: $1.5y + 8b$, where y is the cost for a yard of fabric, and b is the cost for a button.
 - Account for materials that you already have:* Materials that you already have can be modeled by subtracting a linear expression. For instance, in the example above, if you already had 1 yard of fabric and 3 buttons, the cost expression could be written $1.5y + 8b - (y + 3)$, which should then be simplified to $0.5y + 5b$.
 - Multiple projects:* Multiple projects can be modeled with the distributive property. For example, suppose you wanted to make 2 blouses. The cost expression could be written $2(1.5y + 8b)$, which should then be simplified to $3y + 16b$.
- Encourage your child to have a positive, growth-oriented attitude towards mathematics and their learning.
 - Encourage them to ask questions – both at home and in class. Sometimes, an answer to a question will generate more questions. That's how you know they are learning!
 - Encourage your child to embrace challenges and remind them that every challenge is an opportunity to learn something new.
 - Celebrate successes – both small and large.
- Contact me to arrange a time to discuss the specifics of your child's performance and how we can work together to help them succeed in this module.

Sincerely,

(Teacher's Name)

(Email/Phone)