TOPIC 4

Generate Equivalent Expressions

In this topic, students work with algebraic expressions, which are mathematical expressions with at least one variable (such as 4x or t - 5). They use properties of operations to write and analyze expressions, focusing on the Distributive Property.

CONNECT THE MATH

Numerical expressions are used when all parts of the expression are known. Algebraic expressions are used when part of the expression is unknown or can change.

Suppose a dog-walker earns \$15 for each dog walked. The expression 15d represents the amount of money the dog-walker earns for walking d dogs. When the dog-walker walks 11 dogs, the value of 15d is 165, so the dog-walker earns \$165.

Look for opportunities to discuss situations in which something is unknown or may vary. What part of the situation would be represented by a variable? What algebraic expression could describe the situation?





LESSON 4-1

Write and Evaluate Algebraic Expressions

Algebraic expressions can represent mathematical and real-life quantities with unknown, or variable, expressions. To evaluate an algebraic expression, substitute values for the variables.

LESSON OBJECTIVES

• Write and evaluate algebraic expressions.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- How Do You Turn a Verbal Phrase into a Two-Step Algebraic Expression?
- How Do You Evaluate an Algebraic Expression with One Variable?

You can use these search terms and phrases to help your student find additional help online:

- writing algebraic expressions
- evaluating an algebraic expression for a given value

LESSON 4-2 Generate Equivalent Expressions

Equivalent expressions have the same value. The Distributive Property and other properties of operations are used to write equivalent expressions.

LESSON OBJECTIVES

- Write equivalent expressions by using properties and by combining like terms.
- Identify equivalent expressions.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- What Are Equivalent Expressions?
- How Can You Tell If Two Expressions Are Equivalent?

You can use these search terms and phrases to help your student find additional help online:

- using properties of operations with expressions
- combining like terms
- identifying equivalent expressions

LESSON 4-3 Simplify Expressio

Simplify Expressions

To simplify expressions with rational coefficients, apply the properties of operations to combine like terms.

LESSON OBJECTIVES

- Identify and combine like terms.
- Simplify expressions using like terms.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- How Do You Use the Associative Property?
- What Is Simplest Form?

You can use these search terms and phrases to help your student find additional help online:

- using properties of operations
- combining like terms

LESSON 4-4 Expand Expressions

Using the Distributive Property to expand an expression provides an equivalent way to represent the expression.

LESSON OBJECTIVES

- Apply the Distributive Property to expand linear expressions.
- Use area models to represent the Distributive Property.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- What Is the Distributive Property?
- What Is an Identity Equation?

You can use these search terms and phrases to help your student find additional help online:

- expanding an expression that includes a variable
- using the Distributive Property with variables

LESSON 4-5

Factor Expressions

A linear expression can be factored using the greatest common factor of its terms and the Distributive Property. To factor an expression means to write an equivalent expression that is the product of two or more expressions.

LESSON OBJECTIVES

- Find common factors of linear expressions using the Distributive Property.
- Recognize that factoring is the opposite of expanding expressions.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- How Do You Use the Associative Property?
- How Do You Find the Greatest Common Factor of Three Numbers?

You can use these search terms and phrases to help your student find additional help online:

- finding the greatest common factor with variables
- comparing expressions that include variables

LESSON 4-6

Add Expressions

When adding expressions, the rules for adding integers apply to the constants and coefficients of like terms.

LESSON OBJECTIVES

- Add expressions with rational coefficients using the Commutative and Associative Properties.
- Add expressions that represent real-world situations.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- How Do You Use the Associative Property?
- What Are Equivalent Expressions?

You can use these search terms and phrases to help your student find additional help

online:

- adding algebraic expressions
- using properties of operations

LESSON 4-7 Subtract Expressions

Integer properties can be used to simplify linear expressions. Subtracting integers can also be thought of as adding the opposite integer. This concept can be used to subtract linear expressions.

LESSON OBJECTIVES

- Recognize how subtracting integers and subtracting linear expressions are alike.
- Simplify linear expressions involving subtraction.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- What Is the Distributive Property?
- What Are the Commutative Properties of Addition and Multiplication?

You can use these search terms and phrases to help your student find additional help online:

- subtracting algebraic expressions
- using properties of operations

LESSON 4-8

Analyze Equivalent Expressions

Equivalent expressions can be used to look at a problem in a different way to demonstrate a deeper understanding of the situation and how the quantities are related.

LESSON OBJECTIVES

- Write equivalent expressions by combining like terms, using the Distributive Property, and performing other mathematical operations.
- Use equivalent expressions to examine relationships between quantities and interpret information in real-world problems.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- What Are Equivalent Expressions?
- How Can You Tell If Two Expressions Are Equivalent?

You can use these search terms and phrases to help your student find additional help online:

- identifying equivalent expressions
- writing equivalent expressions