Unit 5: Expressions

Content Area: **Mathematics**
Course(s):
Time Period: **Trimester 2**
Length: **19 Days**
Status: **Published**

Brief Summary of Unit

In this unit, students dive into the world of mathematical and algebraic expressions. They begin by grasping the fundamentals of numerical expressions, identifying crucial elements like order of operations, variables, and constants. As they progress, they explore algebraic expressions, focusing on understanding mathematical properties such as commutative and distributive properties. Through hands-on activities and problem-solving tasks, students learn to use these properties to identify equivalent expressions, strengthening their foundational knowledge of mathematical concepts.

Revision Date: June 2024

Standards

1	Make sense of problems and persevere in solving them
2	Reason abstractly and quantitatively
P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
3	Construct viable arguments and critique the reasoning of others
4	Model with mathematics
P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
5	Use appropriate tools strategically
P.9	Work productively in teams while using cultural/global competence.
6	Attend to precision
7	Look for and make use of structure
L.VL.6.3	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, including technical meanings, choosing flexibly from a range of strategies.
8	Look for and express regularity in repeated reasoning
L.VI.6.4	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
6.EE	Expressions and Equations
6.EE.A	Apply and extend previous understandings of arithmetic to algebraic expressions
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.

6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.A.2.a	Write expressions that record operations with numbers and with letters standing for numbers.
6.EE.A.2.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.
6.EE.A.2.c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
6.EE.A.3	Apply the properties of operations to generate equivalent expressions.
6.EE.A.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).
6.EE.B.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Essential Questions

- How can we identify equivalent expressions and use this knowledge to solve problems efficiently?
- In what ways can we translate real-world scenarios into mathematical and algebraic expressions, and how does this help us in problem-solving?
- What role do mathematical properties such as commutative and distributive properties play in simplifying and manipulating expressions?
- What strategies can we employ to analyze and evaluate expressions, ensuring accuracy and precision in our mathematical work?

Enduring Understandings

- Students will develop analytical skills, enabling them to evaluate expressions critically and choose appropriate strategies for problem-solving based on mathematical properties and principles.
- Students will apply their knowledge of expressions to real-world scenarios, translating verbal descriptions into mathematical representations and using them to solve practical problems.
- Students will grasp the fundamental differences between numerical and algebraic expressions, understanding the role of variables and constants in each type.
- Students will internalize the importance of mathematical properties such as the commutative and distributive properties, using them to simplify and manipulate expressions effectively.
- Students will learn to identify equivalent expressions and recognize when such equivalences can streamline problem-solving processes.

Students Will Know

- A variable represents a number that can change.
- The commutative, associative, and distributive properties and how they affect the structure and simplification of algebraic expressions.
- The components of numerical and algebraic expressions, including variables, constants, and

operations.

- The concept of combining like terms and equivalent expressions and strategies for identifying and verifying their equivalence.
- The order of operations and its significance in evaluating numerical expressions.
- The process of translating verbal descriptions into mathematical expressions and interpreting algebraic expressions in real-world contexts.

Students Will Be Skilled At

- Applying algebraic expressions to solve real-world problems involving mathematical reasoning and critical thinking.
- Applying math properties to simplify expressions.
- Simplifying numerical expressions by applying the order of operations.
- Substituting numbers for variable and determining an expression's value.
- Substituting numbers for variables and determining an expression's value.
- Translating verbal expressions into algebraic expressions and vice versa.

Evidence/Performance Tasks

Assessments

- Formative: Daily assessments using examples from class notes, iReady MyPath, Big Ideas Math online platform problems, and NJSLA test bank problems
- Summative: Teacher-created assessments, NJSLA test bank problems, Big Ideas Math online platform problems, Big Ideas Math unit assessments
- Benchmark: iReady diagnostic assessments and district placement assessments in addition to unit assessments from Big Ideas Math
- Alternative Assessments: Student-centered activities such as scavenger hunts, various projects involving real world applications, and adaptive learning tasks in iReady, Khan Academy, and Big Ideas Math

Learning Plan

Day 1-2: Introduction to numerical expressions

- Identifying exponents

- Write an expression using exponents
- Understanding order of operations

Day 3: Quiz - Numerical Expressions and Order of Operations.

Day 4-5: Introduction to Algebraic Expressions.

- Define parts of an expression

Day 6-7: Evaluate algebraic expressions

- Substituting numbers for variables in expressions
- Substituting numbers for variables in tables

Day 8: Quiz on parts of expressions and evaluating algebraic expressions

Day 9-12: Identifying Equivalent Expressions

- Define and practice combining like terms
- Define and practice commutative property
- Define and practice distributive property
- Define and practice associative property

Day 13 Mixed review of combining like terms and commutative, Distributive and Associative Properties

Day 14: Quiz on Writing Equivalent Expressions

Day 15-17: Translating Algebraic Expressions

- Identify words that represent add, subtract, multiply and divide
- Write mathematical and algebraic expressions from phrases
- Write mathematic and algebraic expressions from word problems.
- Practice writing expressions, focusing on real world applications.

Day 18: Review concepts from entire unit

Day 19: Unit Assessment.

Total Number of Days 19

Materials

Core Instructional Materials: Core Book List including Big Ideas Math Modeling Real Life Online Textbook, Big Ideas Student Journal Workbook

Supplemental Instructional Materials: Khan Academy, iReady, IXL (for intervention)

Suggested Strategies for Modifications

Suggested Strategies for Modifications for Grade 6