Marietta City Schools

2023–2024 District Unit Planner

Honors Grade 6 Mathematics

Unit title	Unit 4: Building Conceptual Understanding of Expressions	**MYP year**	*1*	**Unit duration (hrs)**	*20 hours*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

GA DoE Standards

Standards

6.PAR.6: Identify, write, evaluate, and interpret numerical and algebraic expressions as mathematical models to explain authentic situations.
6.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

MCS.Gifted.S3C Use a variety of strategies for solving authentic, complex, real world problems through evaluative thinking and the engineering design processes.
MCS.Gifted.S4B Recognize and examine the value of others strengths, thoughts, ideas, and feelings during collaboration.
MCS.Gifted.S4D Respectfully collaborate and effectively communicate exchanges of constructive/critical feedback.
MCS.Gifted.S6 Students will become self-directed, independent learners.

Concepts/Skills to be Mastered by Students

Expectations		Evidence of Student Learning (not all inclusive; see Grade Level Overview for more details)		
6.PAR.6.1	Write and evaluate numerical expressions involving rational bases and whole-number exponents.	***Strategies and Methods*** • Students should interpret relevant, mathematical situations to write and evaluate numerical expressions.		
6.PAR.6.2	Determine greatest common factors and least common multiples using a variety of strategies to make sense of applicable problems.	***Strategies and Methods*** • Investigate the distributive property using sums and its use in adding numbers 1-100 with a common factor. • Students should apply these strategies to solve applicable, mathematical problems.	***Age/Developmentally Appropriate*** • Students should also be able to apply the least common multiple of two whole numbers less than or equal to 12 to solve applicable, mathematical problems. • Students should be able to determine the greatest common factor of 2 whole numbers (from 1-100) and use the distributive property to express a sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factors (GCF).	***Example*** • Hotdogs come in a package of 8 and buns in a package of 12. How many packages of hot dogs and packages of buns would you need to purchase to have an equal number of hot dogs and buns?
6.PAR.6.3	Write and read expressions that represent operations with numbers and variables in realistic situations.	***Strategies and Methods*** • Students should identify parts of an expression using mathematical terms (sum, difference, term, product, factor, quotient, coefficient, variable, constant); view one or more parts of an expression as a single entity. • Students should translate from a word form into variable expression. • Students should understand letters called variables represent unknown numbers and the same rules apply in operations with numbers also apply in operations with variables.	***Examples*** • Express the calculation "Subtract x from 9" as $9 - x$. • 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. • Some of the students at Georgia Middle School like to walk to and from school. They always walk unless it rains. Let d be the distance in miles from a student's home to the school. Write two different expressions that represent how far a student travels by walking in a two-week period if there is one rainy day each week. • Possible Solution: The distance to school, and therefore home, is d. Thus, the student rides (d + d) miles in one day. Equivalently, she rides (2d) miles in one day. Repeatedly adding the distance traveled in one day for each school day of the week, we find that in one week the student travels (2d + 2d + 2d + 2d + 2d) miles. Equivalently, she travels 5(2d) or (10d) miles in a normal, rain free week.	

6.PAR.6.4	Evaluate expressions when given values for the variables, including expressions that arise in everyday situations.	***Fundamentals*** • Students should evaluate algebraic expressions for a given value of a variable, using the order of operations. • Students should 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.PAR.6.5	Apply the properties of operations to identify and generate equivalent expressions.	***Example*** • Apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.	***Age/Developmentally Appropriate*** • This standard includes distributive property and combining like terms.

Vocabulary: K-12 Mathematics Glossary

Associative Property of Addition	Associative Property of Multiplication	Coefficient	Commutative Property of Addition	Commutative Property of Multiplication	Constant
Distributive Property	Exponent	Fraction	Greatest Common Factor	Least Common Multiple	Like Terms
Order of Operations	Term	Variable			

Key concept	Related concept(s)	Global context
Logic	Pattern Model Measurement	Orientation in Time and Space

Statement of inquiry

Expressions, equations and inequalities communicate real world scenarios through symbols, numbers, and algebraic thinking.

Inquiry questions

Factual— What is the order of operations? What is the purpose of an exponent? How are exponents used when evaluating expressions? How are the properties used to evaluate expressions? What is the purpose of a variable?

Conceptual— How can verbal expressions and algebraic expressions communicate the same information? How can I tell if two expressions are equivalent? What strategies help me to understand and represent real life situations mathematically?

Debatable— Which property of addition or multiplication are the most helpful for writing an equivalent expression?

MYP Objectives	**Assessment Tasks**	
*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Criterion A -Knowing and Understanding Criterion C- Communication	Students will be able to represent, evaluate, and translate different parts of an algebraic expression in real world mathematical problems. Students will also be able to use the properties to identify and generate equivalent expressions.	**Formative Assessment(s):** **Summative Assessment(s):** Unit 4 Mid-Topic Unit 4 Test

Approaches to learning (ATL)

Category: Social
Cluster: Collaboration Skills
Skill Indicator:
Give and receive meaningful feedback.

Category: Communication
Cluster: Communication
Skill Indicator: Read critically and for comprehension

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
6.PAR.6.1 Write and evaluate numerical expressions involving rational bases and whole number exponents.	**Exponent Notation** In this learning plan, students will explore exponent notation as a short-hand recording of repeated multiplication of a number times itself.	T-chart for students to record what they notice and wonder about the relationships in the Explore and Apply tasks prior to being expected to share these ideas with others. For their interest, the students may also compare the exponential sequences if the relationship between months and number of shoots is graphed on a number plane.
6.PAR.6.1 Write and evaluate numerical expressions involving rational bases and whole -number exponents. **6.PAR.6.3** Write and read expressions that represent operations with numbers and variables in realistic situations. **6.PAR.6.4** Evaluate expressions when given values for the variables, including expressions that arise in everyday situations. **6.PAR.6.5** Apply the properties of operations to identify and generate equivalent expressions.	**Pool Border Problem** In this learning plan, students will first construct expressions with numbers to determine the number of tiles that border a pool. They will use those numerical expressions to help them write an expression with variables. Then they will put the algebraic expression to the test and see if it helps them find the tiles for lots of pools very quickly. Students will also be asked to analyze different peer-generated expressions for equivalence.	Using square tiles (any square shaped food item like Cheez-Its or Chex), make your own pools of any square dimensions. T
Content Resources		
Georgia Standards Lessons and Resources website Savvas Topic 3		