

MATH MCS MYP UNIT PLANNER

Teacher(s)	Schumacher	Subject group and discipline	Accelerated Algebra 1/Geometry A – Mathematics		
Unit title	Unit 1: Relationships Between Quantities and Expression	MYP year	Year 4	Unit duration (hrs)	9 hours (3 weeks)

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Form	Change, Equivalent, Quantity	Orientation in Space and Time – Scale, duration, frequency, and variability
Statement of inquiry		
Algebraic expressions represent scale, duration, and variability, can have equivalent forms, and are combined through the arithmetic operations.		
Inquiry questions		
<p>Factual</p> <ul style="list-style-type: none"> • What is a monomial? • What is a polynomial? • What is a rational number? • What is an irrational number? <p>Conceptual</p> <ul style="list-style-type: none"> • How do I interpret parts of an expression in terms of context? • How are polynomial operations related to operations in the real number system? • How can polynomials be used to express realistic situations? 		

<ul style="list-style-type: none"> How do you multiply, add, subtract and divide irrational numbers? <p>Debatable</p> <ul style="list-style-type: none"> What is the best way to multiply two polynomials? 	
MYP Objectives	Assessments
	<p>Common Formative Assessment (CFA): Unit 1 Mid-unit Checkpoint</p> <p>Summative: Unit 1- Relationships between Quantities and Expressions</p>
Approaches to learning (ATL)	
<ul style="list-style-type: none"> Understand and use mathematical notation Organize and depict information logically Use appropriate strategies for organizing complex information Draw reasonable conclusions and generalizations Test generalizations and conclusions Analyze complex concepts and project into their constituent parts and synthesize them into create new understanding Use models and simulations to explore complex systems and issues 	

Action: Teaching and learning through inquiry

Content Standards
<p><u>Extend the properties of exponents to rational exponents.</u> MGSE9–12.N.RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents. (i.e., simplify and/or use the operations of addition, subtraction, and multiplication, with radicals within expressions limited to square roots).</p> <p><u>Use properties of rational and irrational numbers.</u> MGSE9–12.N.RN.3 Explain why the sum or product of rational numbers is rational; why the sum of a rational number and an irrational number is irrational; and why the product of a nonzero rational number and an irrational number is irrational.</p> <p><u>Reason quantitatively and use units to solve problems.</u> MGSE9–12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems: a. Identify, use, and record appropriate units of measure within context, within data displays, and on graphs;</p>

- b. Convert units and rates using dimensional analysis (English-to-English and Metric-to-Metric without conversion factor provided and between English and Metric with conversion factor);
- c. Use units within multi-step problems and formulas; interpret units of input and resulting units of output.

MGSE9–12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling. Given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation.

MGSE9–12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. *For example, money situations are generally reported to the nearest cent (hundredth). Also, an answers' precision is limited to the precision of the data given.*

Interpret the structure of expressions

MGSE9–12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.

MGSE9–12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients, in context.

MGSE9–12.A.SSE.1b Given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors.

Perform arithmetic operations on polynomials

MGSE9–12.A.APR.1 Add, subtract, and multiply polynomials; understand that polynomials form a system analogous to the integers in that they are closed under these operations. *(For the purpose of this course, operations with polynomials will be limited to the second degree. Higher degree polynomials will be addressed in future courses.)*

Learning Activities and Experiences

Topic Lesson	Resources	Content Addressed	Standards Addressed
Introduction	Translating Expressions Guided Notes with Graphic Organizer	<ul style="list-style-type: none"> ● Introduction to writing expressions, transitions from arithmetic to algebra 	MGSE9–12.A.SSE.1
Radical Expressions	9-3 Rewriting Radical Expression Pearson enVision pg. 370 – 375	<ul style="list-style-type: none"> ● Use properties of exponents to rewrite radical expressions. ● Multiply radical expressions. ● Write a radical expression to model or represent a real-world problem. 	MGSE9–12.N.RN.2

	Visualizing Square Roots (DOE)	<ul style="list-style-type: none"> Introduction to representing and simplifying square roots 	MGSE9–12.N.RN.2
Operations with Polynomials	1-1 Operations on Real Numbers Pearson enVision: pg. 5 - 10	<ul style="list-style-type: none"> Reason about operations on real numbers 	MGSE9–12.N.RN.3
	7-1 Adding and Subtracting Polynomials Pearson enVision: pg. 259 – 262	<ul style="list-style-type: none"> Combine like terms to simplify polynomials 	MGSE9–12.A.APR.1 MGSE9–12.A.SSE.1a, b
	7-2 Multiplying Polynomials Pearson enVision: pg. 267 - 271	<ul style="list-style-type: none"> Use the Distributive Property with polynomials, recognizing that polynomials are closed under multiplication. Multiply polynomials using a table and an area model. 	MGSE9–12.A.APR.1
	7-3 Multiplying Special Cases enVision: pg. 275 – 278	<ul style="list-style-type: none"> Determine the square of a binomial. Find the product of a sum and difference of two squares. Solve real-world problems involving the square of a binomial. 	MGSE9–12.A.APR.1
	Additional Resources: <ul style="list-style-type: none"> Kitchen Floor Tiles (Illustrative Mathematics) - https://tasks.illustrativemathematics.org/content-standards/tasks/215 Leaky Faucet (DOE) Yogurt Packaging (Career and Technical Education Task) 		
Dimensional Analysis	Guided notes with graphic organizer	<ul style="list-style-type: none"> Simple dimensional analysis (unit conversions) Multi-step dimensional analysis (unit conversions) Including: English to English, Metric to Metric, Metric to English, English to Metric 	N.Q.1, 2, 3
Personalized Learning and Differentiation			

Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.

- SWD/504- Accommodations provided
- ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports
- Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring
- Extensions- Enrichment Tasks and Projects

Intervention Resources

Resources

Unit Web Links