MATH MCS MYP UNIT PLANNER

Teacher(s)	**Algebra 1 PLC**	**Subject group and discipline**	**Algebra 1**		
Unit title	**Unit 1: Relationships Between Quantities and Expression**	**MYP year**	**Year 4**	**Unit duration (hrs)**	**12**

Inquiry: Establishing the purpose of the unit

Key concept	**Related concept(s)**	**Global context**
Relationships	Quantity, Equivalence, Measurement	Scientific and Technical Innovation

Statement of inquiry

Measurements help us to understand, make inferences, and draw conclusions about the world.

Inquiry questions

Factual

- What is a monomial?
- What is a polynomial?
- What is a rational number?
- What is an irrational number?

Conceptual

- 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?
- How do you multiply, add, subtract and divide irrational numbers?

Debatable

- What is the best way to multiply two polynomials?

MYP Objectives	**Assessments**
Objective A: Knowing and Understanding	Common Formative Assessment (CFA): Unit 1 Mid-unit Checkpoint Summative: Unit 1- Relationships between Quantities and Expressions

Approaches to learning (ATL)

- 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

Extend the properties of exponents to rational exponents.
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).

Use properties of rational and irrational numbers.
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.

Reason quantitatively and use units to solve problems.
***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 utilise formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors.
*Addressed through Unit 1 and Unit 2

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.)*

Moved to Milestone Review

Reason quantitatively and use units to solve problems.

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;*
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 modelling. 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.

Learning Activities and Experiences

Topic	Resource	Content Covered	Standards Addressed
Polynomial Operations	**7-1 Adding and Subtracting Polynomials** **Pearson enVision: pg. 259 – 262**	● Combine like terms to simplify polynomials	MGSE9–12.A.APR.1 MGSE9–12.A.SSE.1a
	7-2 Multiplying Polynomials **Pearson enVision: pg. 267 – 271**	● 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 **Pearson enVision: pg. 275 – 278**	● 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: DOE Tasks - MAPshell Resources - Illustrative Math Tasks - Desmos Student Activities - DeltaMath - Khan Academy - Nearpod Activities and Lesson		
Radical Expressions	**9-3 Rewriting Radical Expression** **Pearson enVision pg. 370 – 371**	• 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
	1-1 Operations on Real Numbers **Pearson enVision: pg. 5 – 10**	• Reason about operations on real numbers	MGSE9–12.N.RN.3
	Additional Resources: DOE Tasks - MAPshell Polynomial and Radical Activities Illustrative Math Tasks on Expressions Desmos Operations on Polynomials Activities DeltaMath (Unit 1 Topics and key skills) Khan Academy (Quantitative and expressions Unit) Nearpod Activities and Lesson On unit 1 and topics		

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

Resources

Savvas Textbook Resources

Unit Web Links

- **Graham Fletcher 3 Act Tasks Resource link**
- **Dan Myer 3 Act Task List Link**