

MATH MCS MYP UNIT PLANNER

Teacher(s)	Echo Fritch	Subject group and discipline	Accelerated 2 Geo B / Algebra 2		
Unit title	Unit 1 – Quadratics Revisited (GaDOE Accelerated Geo B/Alg II Unit 4)	MYP year	5	Unit duration (hrs)	12 hours (3 Weeks)

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Logic	Generalization Model Representation	Scientific and Technological Innovations Exploration: Systems, Models, Methods
Statement of inquiry		
Modelling using a logical process helps us to understand the world.		
Inquiry questions		
<p>Factual—</p> <ul style="list-style-type: none"> • What is the pattern for the powers of i? • What are the different methods of factoring? • What is a complex conjugate? • How do I add, subtract, multiply, and divide complex numbers? <p>Conceptual—</p> <ul style="list-style-type: none"> • What are imaginary numbers and how are they related to solving quadratics? • Why is it important to allow solutions for $x^2 + 1 = 0$? • What is the discriminant and what is its purpose? • What is a rational exponent and how is it used to solve equations? <p>Debatable—</p> <ul style="list-style-type: none"> • Which method is “best” to solve quadratic equations? 		

MYP Objectives	Assessments
MYP B—Patterns of i MYP D—Real World Applications of Quadratics	MYP B Quiz (Patterns Rubric B) Unit 4 Cumulative Test

Approaches to learning (ATL)

- Give and receive meaningful feedback
- Negotiate ideas and knowledge with peers and teachers
- Use and interpret a range of discipline-specific terms and symbols
- Draw reasonable conclusions and generalisations
- Apply existing knowledge to generate new ideas, products or processes
- Apply skills and knowledge in unfamiliar situations

Action: Teaching and learning through inquiry

Content Standards

Perform arithmetic operations with complex numbers.

MGSE9-12.N.CN.1 Understand there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ where a and b are real numbers.

MGSE9-12.N.CN.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

MGSE9-12.N.CN.3 Find the conjugate of a complex number; use the conjugate to find the absolute value (modulus) and quotient of complex numbers.

Use complex numbers in polynomial identities and equations.

MGSE9-12.N.CN.7 Solve quadratic equations with real coefficients that have complex solutions by (but not limited to) square roots, completing the square, and the quadratic formula.

MGSE9-12.N.CN.8 Extend polynomial identities to include factoring with complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.*

Solve equations and inequalities in one variable

MGSE9-12.A.REI.4 Solve quadratic equations in one variable.

MGSE9-12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (~~limit to real number solutions~~)

Extend the properties of exponents to rational exponents. Moved to Unit 5 with Polynomials

MGSE9-12.N.RN.1. Explain how the meaning of rational exponents follows from extending the properties of integer exponents to rational numbers, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{(1/3)}$ to be the cube root of 5 because we want $[5^{(1/3)}]^3 = 5[(1/3) \times 3]$ to hold, so $[5^{(1/3)}]^3$ must equal 5.*

MGSE9-12.N.RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Learning Activities and Experiences

Topic	Task	Content Addressed	Standards Addressed
Complex Numbers	2-4 Complex Numbers and Operations Pearson enVision pg. 95 – 99	<ul style="list-style-type: none"> Understand there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ where a and b are real numbers. Add, subtract, and multiply complex numbers using the properties of operations and the relation $i^2 = -1$ Use complex numbers to represent numbers that are not on the real number line. Find the conjugate of a complex number; use the conjugate to find the quotient of complex numbers. 	CN.1, CN.2, CN.3
	Additional Resources: <ul style="list-style-type: none"> Rules of Exponents - Practice Imaginary Numbers - Practice Complex Number Operations - Practice Guided Notes with Graphic Organisers; Teacher Notes: <ul style="list-style-type: none"> Number Sets Rules of Exponents Imaginary Numbers Complex Operations 		
Solving Quadratic Equations	2-3 Factored Form of a Quadratic Function Pearson enVision pg. 88 – 94	<ul style="list-style-type: none"> Write a quadratic equation in factored form and use it to identify zeros of the function it defines. Determine the intervals over which a quadratic function is positive or negative. 	REI.4, REI.4b
	2-1 Vertex Form of a Quadratic Function Pearson enVision pg. 73 – 79 2-5 Completing the Square Pearson enVision pg. 103 – 109	<ul style="list-style-type: none"> Transform a quadratic equation into the form $(x - p)^2 = q$ by completing the square Complete the square to reveal the minimum or maximum value of a quadratic expression 	CN.7, REI.4, REI.4b
	2-6 The Quadratic Formula Pearson enVision pg. 110 – 116	<ul style="list-style-type: none"> Use the Quadratic Formula to solve quadratic equations that have complex solutions. 	CN.7, REI.4, REI.4b
	Additional Resources: <ul style="list-style-type: none"> Completing the Square - Practice Quadratic Formula - Practice Guided Notes with Graphic Organisers; Teacher Notes: <ul style="list-style-type: none"> Completing the Square Quadratic Formula 		

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
- Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring
- Extensions- Enrichment Tasks and Projects

Resources

DOE Framework Tasks
Savvas Textbook Resources