



WEST SHORE SCHOOL DISTRICT

Algebra II Learning Module 4

Title of Module	Polynomials	Grade Level	10-12
Curriculum Area	Algebra II	Time Frame	25 days

Desired Results

Best Practices				
<ul style="list-style-type: none"> • Make sense of the problems and persevere in solving them • Reason abstractly and quantitatively • Construct Viable Arguments and critique the reasoning of others • Model with Mathematics • Use appropriate tools strategically • Attend to precision • Look for and make use of structure • Look for and express regularity in repeated reasoning 				
Transfer Goals				
Students will be able to independently use their learning to... <ul style="list-style-type: none"> • Connect old problem solving techniques to new curriculum. • Connect new material to real world applications. • Create viable mathematical arguments and use them to critique the arguments of fellow classmates. 				
Key Learnings/Big Ideas				
Students will learn to factor, solve, graph, and analyze polynomials of varying degrees.				
Content, Reading and Writing Standards				
CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems. CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of functions	CC.2.1.HS.F.7 Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems. A	CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials.	CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs.	CC.2.2.HS.D.5 Use polynomial identities to solve problems.

Essential Questions	Vocabulary (Best Practices) Utilize concepts & competencies to add to vocabulary
<p>Unit EQ: How does the degree of a polynomial affect its roots, graph, and behavior?</p> <p>LEQs</p> <ol style="list-style-type: none"> 1. What is a polynomial? 2. How are polynomials of degrees higher than 2 factored? 3. What are the methods used to divide a polynomial by a first-degree binomial? 4. When a polynomial is divided by a binomial, what does the remainder represent? Why does the Remainder Theorem work? 5. What is the Rational Root Theorem? 6. What is the Fundamental Theorem of Algebra? 7. How is Pascal's used in the Binomial Theorem? 8. How can real-world problems be modeled with polynomials? 9. How are polynomials transformed? 	<p>Monomial Binomial Trinomial Coefficient Degree Polynomial Factor Parabola Quadratic Cubic Quartic Relative Minimum/Maximum End-Behavior Long-Division Synthetic Division Remainder Theorem Roots, Zeros, Solutions Pascal's Triangle Binomial Expansion Binomial Theorem Translation Vertical Stretch/Compression Transformation</p>
Concepts Students will know...	Skills/Competencies (I Can...) Based on LEQs Students will be able to...
<ol style="list-style-type: none"> 1. How to classify polynomials 2. How to factor polynomials 3. Find a quotient and remainder when a polynomial 4. Use the Rational Root theorem as it applies to the fundamental theorem of Algebra 5. Expand binomials using the Binomial Theorem 6. How to transform polynomials 	<ol style="list-style-type: none"> 1. I can classify polynomials 2. I can factor polynomials 3. I can find quotients and remainders when I divide a polynomial by a binomial 4. I can use the rational root theorem to find roots of polynomials 5. I can use the binomial theorem and Pascal's triangle to expand binomials 6. I can transform Binomials

Assessment Evidence

Formative Assessment

Think-Pair-Share, Organized Guided Notes and Checkpoints, Mini-Whiteboards

Summative Assessment

Common Assessments

Best Instructional Practices

21 Century Skills		
Learning and Innovation Skills	Information, Media, and Technology Skills	Life and Career Skills

Resources

Student	Teacher

Adapted from Wiggins, Grant and J. Mc Tighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development, ISBN # 0-87120-313-8 (ppk)

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