

Middlesex County Schools Curriculum Pacing Guide

Grade/Course Algebra 2

Revised 08/2015

| Time Frame | Unit/SOLs | SOL # | Term | Essential Knowledge/ Understandings |
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| 6 days | Review of polynomial basics Field Properties Number Hierarchy | AII.3 | 1 | <ul style="list-style-type: none"> • Place the following sets of numbers in a hierarchy of subsets: complex, pure imaginary, real, rational, irrational, integers, whole, and natural. • Recognize that the square root of -1 is represented as i. |
| 7 days | Factor | AII.1 d | 1 | <ul style="list-style-type: none"> • Factor polynomials by applying general patterns including difference of squares, sum and difference of cubes, and perfect square trinomials. • Factor polynomials completely over the integers. • Verify polynomial identities including the difference of squares, sum and difference of cubes, and perfect square trinomials |
| 5 days | Solve Quadratic Equations | AII 4 b | 1 | <ul style="list-style-type: none"> • Solve a quadratic equation over the set of complex numbers using an appropriate strategy. • Calculate the discriminant of a quadratic equation to determine the number of real and complex solutions. • Recognize that the quadratic formula can be derived by applying the completion of squares to any quadratic equation in standard form |
| 6 Days | Transformations and Family of functions | AII.6 | 1/2 | <ul style="list-style-type: none"> • Recognize graphs of parent functions. • Given a transformation of a parent function, identify the graph of the transformed function. • Given the equation and using a transformational approach, graph a function. |

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| | | | | <ul style="list-style-type: none"> • Given the graph of a function, identify the parent function. • Given the graph of a function, identify the transformations that map the preimage to the image in order to determine the equation of the image. • Using a transformational approach, write the equation of a function given its graph. |
| 3 days | Variation | AII.10 | 2 | <ul style="list-style-type: none"> • Translate “y varies jointly as x and z” as $y = kxz$. • Translate “y is directly proportional to x” as $y = kx$. • Translate “y is inversely proportional to x” as $y = \frac{k}{x}$. • Given a situation, determine the value of the constant of proportionality. • Set up and solve problems, including real-world problems, involving inverse variation, joint variation, and a combination of direct and inverse variations. |
| 3 Days | Systems | AII.5 | 2 | <ul style="list-style-type: none"> • Predict the number of solutions to a nonlinear system of two equations. • Solve a linear-quadratic system of two equations algebraically and graphically. • Solve a quadratic-quadratic system of two equations algebraically and graphically. |
| 3 days | Statistics – Data Collection and Modeling | AII.9 | 2 | <ul style="list-style-type: none"> • Collect and analyze data. • Investigate scatterplots to determine if patterns exist and then identify the patterns. • Find an equation for the curve of best fit for data, using a graphing calculator. Models will include polynomial, exponential, and logarithmic functions. • Make predictions, using data, scatterplots, or the equation of the curve of best fit. • Given a set of data, determine the model that would best describe the data. |

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| 9 days | Rational Expressions and Equations | AII 1 <i>a</i> AII 4 <i>c</i> | 3 | <ul style="list-style-type: none"> • Add, subtract, multiply, and divide rational algebraic expressions. • Simplify a rational algebraic expression with common monomial or binomial factors. • Recognize a complex algebraic fraction, and simplify it as a quotient or product of simple algebraic fractions.. • Verify possible solutions to an equation containing rational or radical expressions. • Solve absolute value equations and inequalities algebraically and graphically. • Solve equations containing rational algebraic expressions with monomial or binomial denominators algebraically and graphically. |
| 9 days | Radicals Complex Numbers | AII.3 AII.1 <i>b,c,d</i> | 3 | <ul style="list-style-type: none"> • Recognize that the square root of -1 is represented as i. • Determine which field properties apply to the complex number system. • Simplify radical expressions containing negative rational numbers and express in $a+bi$ form. • Simplify powers of i. • Add, subtract, and multiply complex numbers. • Write a real number in $a+bi$ form. • Write a pure imaginary number in $a+bi$ form. • Simplify radical expressions containing positive rational numbers and variables. • Convert from radical notation to exponential notation, and vice versa. • Add and subtract radical expressions. • Multiply and divide radical expressions not requiring rationalizing the |

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| | | AII.4 | | <p>denominators.</p> <ul style="list-style-type: none"> • Solve an equation containing a radical expression algebraically and graphically. • Apply an appropriate equation to solve a real-world problem. |
| 2 days | Counting Principles Permutations and Combinations | AII.12 | 3 | <ul style="list-style-type: none"> • Compare and contrast permutations and combinations. • Calculate the number of permutations of n objects taken r at a time. • Calculate the number of combinations of n objects taken r at a time. • Use permutations and combinations as counting techniques to solve real-world problems. |
| 7 days | Statistics Normal Curve | AII.11 | 4 | <ul style="list-style-type: none"> • Identify the properties of a normal probability distribution. • Describe how the standard deviation and the mean affect the graph of the normal distribution. • Compare two sets of normally distributed data using a standard normal distribution and z-scores. • Represent probability as area under the curve of a standard normal probability distribution. • Use the graphing calculator or a standard normal probability table to determine probabilities or percentiles based on z-scores. |
| 5 Days | Series and Sequences | AII.2 | 4 | <ul style="list-style-type: none"> • Distinguish between a sequence and a series. • Generalize patterns in a sequence using explicit and recursive formulas. • Use and interpret the notations \sum, n, n^{th} term, and a_n. • Given the formula, find a_n (the n^{th} term) for an arithmetic or a geometric sequence. • Given formulas, write the first n terms and find the sum, S_n, of the first n terms of an |

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| | | | | arithmetic or geometric series. <ul style="list-style-type: none">• Given the formula, find the sum of a convergent infinite series.• Model real-world situations using sequences and series. |
| 10 days | Review | All | 4 | |
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