

**AIM HIGH SCHOOL**

11648 N. Main Street

Whitmore Lake, MI 48189

(734) 550 9595

www.aimhighschool.com

Curriculum Map – 2012

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| **COURSE TITLE:** | Algebra 2 | **DESCRIPTION OF** **COURSE:**  Algebra 2 provides a review and extension of the concepts taught in Algebra 1. Topics covered will include equations and inequalities, coordinates and graphs, general functions, polynomial and rational functions, exponential and logarithmic function, trigonometric functions of angles and of real numbers, analytic trigonometry, systems of equations and inequalities, sequences and series. Graphing calculator skills will be taught and use extensively in this course. Throughout this course, students will develop learning strategies, critical thinking skill, and problem solving techniques to prepare for future math courses and college entrance exams.  |
| **PREREQUISITES:** | Algebra 1, Geometry |

Every student should understand and use all concepts and skills from the previous grade levels. The standard is designed so that new learning builds on preceding skills.

\* Daily Quizzes (DQ) and tests correspond to chapters and sections of the 2012 Geometry Textbook by Holt McDougal, unless otherwise specified.

\* Some content can be skipped if students can demonstrate that they have mastered material on the Algebra 2 pretest

| **CONTENT** | **CORE CONCEPTS** | **ASSESSMENT** | **COMMON CORE STANDARDS** |
| --- | --- | --- | --- |
| **Unit 1:** **Intro to Algebra 2** | * Functions vs. Relations
* Domain and Range
* Analyzing characteristics of functions
* Identify Linear, Absolute Value, Square Root, Radical, Quadratic, Cubic, Polynomial, Rational, Exponential, Logarithmic, Trigonometric, and Hyperbolic Functions
* Identify Conic Relations
* Y-intercept, x-intercepts, and end behavior
 | **Core Concepts Quiz****Test** | A1.2.9, A2.3.1, A2.3.3, A2.4.1 |
| **Unit 2:** **Linear Functions** | * Graph linear equations
* Solve linear equations
* Systems of equations
 | **Core Concepts Quiz****Test** | L1.2.1, A1.1.1, A1.1.4, A1.1.5, A2.2.1, A1.1.1, A1.2.2, A1.2.9, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3 |
| **Unit 3:** **Absolute Value Functions** | * Identify Absolute Value Functions
* Graph parent functions and translations
* Write an absolute value function from a graph
* Describe the domain and Range
 | **Core Concepts Quiz****Test** | A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.3.1, A2.3.3 |
| **Unit 4:****Quadratic Functions** | * Graph
* Graph
* Solve quadratic equations by graphing
* Graph functions in intercept form
* Solve a quadratic equation by using the zero product property
* Factor quadratic equations and solve
* Factor quadratic equations that are the difference of squares
* Factor the quadratic equations that are perfect squares
* Solve quadratic equations (missing the middle term) using the square root method
* Solve quadratic equations by using the Quadratic Formula
* Graph functions in vertex form
* Graph and solve quadratic Inequalities
* Solve Quadratic Systems
 | **Core Concepts Quiz****Test** | A1.1.1, A1.1.4, A1.1.5, A1.2.2, A1.2.2, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3 |
| **Unit 5:****Cubic Functions, Polynomials, and Polynomial Functions** | * Identify Parent Functions
* Graph parent functions and translations
* Write a function from it’s graph
* Describe the domain and Range
* Find the degree of a polynomial
* Write polynomials in standard form
* Graph polynomials
* Divide polynomials
* Factor polynomials using long division
* Factor polynomials by synthetic division
* Write polynomial functions in factored form and solve using the zero product property
 | **Core Concepts Quiz****Test** | A1.2.2, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3, A1.1.1, A1.1.4, A1.1.5, L2.3.2, A1.2.1, A1.2.5, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3 |
| **Unit 6:****Square Root, Rational Exponents, and Radical Functions** | * Identify Parent Functions
* Graph parent functions and translations
* Write a function from it’s graph
* Describe the domain and Range
* Solve equations with square roots and radical exponents
 | **Core Concepts Quiz****Test** | A1.2.2, A1.2.8, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3, A3.6.1, A3.6.2 |
| **Unit 7:****Composition and Inverse Functions** | * Evaluate compositions  ,  ,  ,  , and
* Define an inverse function graphically and algebraically
* Find an inverse function graphically
* Find an inverse function algebraically
 | **Core Concepts Quiz****Test** |  |
| **Unit 8:****Exponential and Logarithmic Functions** | * Identify the base and the exponent in a monomial
* Multiply and divide monomials
* Find the power of a product
* Find the power of a power
* Simplify expressions containing negative and zero exponents
* Graph exponential growth functions
* Graph exponential decay functions
* Use functions involving e
 | **Core Concepts Quiz****Test** | A1.1.1, A1.1.4, A1.1.5, A1.2.8, A1.2.9, A2.1.3, A2.1.5, A1.1.6, A1.2.3, A1.2.7, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3, A3.2.3, A3.2.3 |
| **Unit 9:****Rational Functions** | * Identify Parent Function
* Graph parent functions and translations
* Write a function from it’s graph
* Describe the domain and Range
 | **Core Concepts Quiz****Test** |  |
| **Unit 10:****Quadratic Relations and Conic Sections** | * Graph and write equations of circles, ellipses, and hyperbolas
* Translate and Classify Conic Sections
 |  | A1.2.2, A1.2.5, A1.2.8, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.2, A2.4.1, A2.4.2, G1.7.1, G1.7.2, G1.7.3, A2.3.1, A2.3.3, A2.4.1, A2.4.3 |
| **Unit 11: Trig Functions** | * Use Trig with Right Triangles
* Find angle measure and radian measure
* Evaluate Inverse Trigonometric Functions
* Graph sine, cosine, and tangent functions
* Verify Trig Functions
* Solve trigonometric equations
* Write Trigonometric functions and models
* Apply sum and double angle formulas
 | **Core Concepts Quiz****Test** | A1.2.2, A1.2.5, A1.2.7, A1.2.8, A1.2.9, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3, A2.1.1, A2.1.2, A2.1.3, A2.1.6, A2.1.7, A2.2.1, A2.2.2, A2.2.3, A2.3.1, A2.3.3, A2.4.1, A2.4.2, A2.4.3 |
| **Unit 12:****Sequences and Irration** | * Define and Use Sequences and Series
* Analyze Arithmetic Sequences and Series
* Analyze Geometric Sequences and Series
* Find Sums of Infinite Geometric Series
* Use Recursive Rules with Sequences and Functions
 | **Core Concepts Quiz****Test** | L1.3.1, L2.2.1, L2.2.2, L2.2.3 |
| **Unit 13:****Data Examining** | * Construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales
* Determine which kinds of plots are appropriate for different types of data
* Compare data sets and interpret differences based on graphs and summary statistics
* Interpret and calculate mean, median, and mode
* Explain uses, advantages and disadvantages of each measure given a particular set of data and its context
 | **Core Concepts Quiz****Test** | S1.1.1, S1.2.1 |

* Add and subtract polynomials
* Use properties of exponents to simplify expressions
* Property of radicals
* Use Properties of Rational Exponents
* Multiply polynomials and recognize special products