

Classical Magnet School
Course Algebra II

	September	October	November	December	January	February	March	April	May	June
Themes	Linear relationships and functions / Matrices Models, functions and permutations	Matrices / Linear Systems	Linear systems / Quadratic equations and functions	Quadratic equations / Polynomials and polynomial functions	Polynomial Functions / Exponential and logarithmic functions	Exponential and logarithmic functions / Rational functions	Rational functions	Periodic functions and trigonometry / Quadratic Relations	Quadratic relations / More probability and statistics	Final Exam Prep All Standards Summative Review
Essential Questions	What is a linear relationship?	What is a matrix and what can it be used for?	Why would we prefer a quadratic equation to a linear equation? What situations in life are quadratic?	Where would polynomials be preferable other functions?	What situations in life are logarithmic? Exponential?	What is a domain, and how do rational functions lose pieces of the domain?		What makes something periodic? What in life is?	Why do we care about statistics?	What have we been learning and why?
Standards	1.2a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.	1.2a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.	1.2a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs.	1.1a. Describe relationships and make generalizations about patterns and functions.	1.1a. Describe relationships and make generalizations about patterns and functions.	1.1a. Describe relationships and make generalizations about patterns and functions.	1.3a. Manipulate equations, inequalities and functions to solve problems.	1.3a. Manipulate equations, inequalities and functions to solve problems.	4.1a. Create the appropriate visual or graphical representation of real data. 4.2a. Analyze real-world problems using real world data.	4.3a. Understand and apply the principles of probability in a variety of situations.
Major Skills	Graph and solve two variable equations and inequalities. Determine when a relation is a function. Add, subtract, and composition of functions. Vertical and horizontal translations of functions. Stud the real number system	Learn to solve systems both graphically and algebraically. Model real-world situations with linear programming. Learn to graph in three dimensions. Solve linear equations of three variables. Solve linear systems using matrices. Add, subtract, and multiply matrices. Use matrices to create geometric transformations. Determine, identify, solve and inverse matrices.	Learn to model data to fit a quadratic equation. Learn the properties of parabolas, inverse functions, and square roots. Learn the different forms of the quadratic equations. Learn how to complete the square and the quadratic formula to solve quadratic equations.	Learn the power functions and inverse functions. Solve polynomial equations. Use both long and synthetic division to solve polynomial equations. Expand binomials using the binomial Theorem and Pascal's triangle.	Use both exponential and logarithmic functions to model data. Learn how to convert from logarithmic to exponential functions. Learn the properties of logarithmic and exponential functions. Learn the natural logarithmic function.	Learn the inverse relation. Graph rational functions and their translations Simplify radical expressions. Add and subtract rational expressions. Solve rational equations.	Learn the inverse relation. Graph rational functions and their translations Simplify radical expressions. Add and subtract rational expressions. Solve rational equations.	Determine if a set of data is periodic. Learn the properties of the unit circle and the use of radian measure. Learn the sine, cosine, and tangent function. Apply the trig to right triangles. Study trig ratios in oblique triangles.	Identify conic sections. Study and solve parabola functions. Learn how to find the center and radius of a circle. Find the foci and graph an ellipse. Find the foci and graph a hyperbolic function. Translate conic functions. Make probability distribution from a set of data. Study conditional probability. Analyze a set of data. Identify the bias in a set of data.	Summative Evaluations and Course Synthesis

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Coached Projects	Cereal Box Probability	Hot! Hot! Hot! What is the best price to sell hot sauce to maximize profits	On Target Study of archery	Curves By design Find a polynomial equation to fit a curved object.	Aging Artifacts Find the age of artifacts	Under Pressure Determine the pressure and volume when diving	The Wave of the future Study of tidal waves	About Face! Create clown faces using quadratic relations	On the Move Solve a traffic problem and make a survey	
Seminars	Cereal Box	Ti Activity on linear programming.	Modeling Free Fall with Linear and Quadratic Functions	Polynomial functions.	Shroud of Turin	Rational Functions	Understanding periodic graphs	Rectangular Coordinate Equations of Conics	Growth of a Business	
Textbook Chapters	Ch: 1: Models, Function and Permutations Ch: 2: Linear Relationships and Functions	3: Matrices Ch. 4: Linear Systems	Ch. 4: Linear Systems Ch. 5: Quadratic Equations and Functions	Ch. 5: Quadratic Equations and Functions Ch.6: Polynomial Functions	Ch.6: Polynomial Functions Ch. 7: Exponential & Logarithmic Functions	Ch. 7: Exponential & Logarithmic Functions CAPT Prep	Ch.8: Rational Functions	Ch. 9: Periodic Functions and Trigonometry Ch. 10: Quadratic Relations	Ch. 10: Quadratic Relations Ch. 11: Probability and Statistics	Ch. 11: Probability and Statistics