Course Overview Algebra 1

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **35 weeks**
Status: **Published**

School Mission Statement

The mission of Chartertech is to provide artists the opportunity to blend principles of artistic expression with cutting-edge technology, so artists will excel in academic, career, and civic pursuits and contribute to the harmony and productivity of the 21" century.

Artistic integration: Performing arts will be accessible to all artists as a skill and content area and will serve as a vehicle for imparting, enlivening, and motivating excellence in all academic topics, as well as providing a platform for learning multicultural appreciation and empathy, not just tolerance.

Technological integration: Technology will serve as the foundation for instructional delivery systems leading to knowledge acquisition, concept understanding, and skill mastery in all academic subjects. Technology will not be studied as a separate entity but infused into the very fabric of educational pursuits, exactly as it occurs in the business world. Artists will be prepared to compete in the modern workplace or post-secondary institution.

"Education has always been torn between vocational and utilitarian purposes on one hand and creative and holistic purposes on the other... We are rapidly entering a world that is hard to imagine. By developing the problem-solving skills, creativity, and discipline required in the arts, artists can prepare for life in the 21st century."

From Understanding How the Arts Contribute to Excellent Education

National Endowment for the Arts, 1991

School Goals

Goals for Arts Education:

Artists will learn the knowledge, skills, and abilities necessary to turn their passions and gifts in the arts into vocations or serious avocations.

Objective 1: Each year, each artist will take two semesters (10 credits) of career-oriented training (80 minutes per day) in their artistic major.
Objective 2: Each marking period, each artist will perform or produce frequently, in diverse settings and for diverse audiences.

Objective 3**:** Artistic instruction will be integrated into the study of all academic subjects.
Objective 4: Each year, each artist will complete at least twenty after-school "lab" hours in their artistic major. These will constitute career-oriented service to the school and/or community, and demonstrate accomplishment of the NJCCCS crosscutting workplace readiness standards.

Goal for Technology:
Chartertech will model the technology-intense workplace and artists will be able to compete successfully and perform well in a technology-intense workplace.

Objective 5: Each artist will routinely use technology in a workplace-like manner to acquire, analyze, communicate, and present information in every subject.
Objective 6: Each artist will have access to a computer every day, every class so that automated sources will be the main conduit for educational content.
Objective 7: All administrative and instructional functions of the school will be supported by the most modern technology available.

Goals for Academic Achievement:
Artists will apply themselves in the serious pursuit of knowledge and skills, especially skills in critical thinking, problem solving, decision making, and communication.

Objective 8: Each year, and to be promoted to the next grade each artist will pass five credits in English, Health, Social Studies, Science, Mathematics, and PE/Health. Between grades 9-12 artists will also complete 1year of Spanish.

Objective 9: In each academic subject, each year, each artist will complete a significant project that involves critical thinking, problem solving, decision making, and communication skills, and which demonstrates cross-content workplace readiness skills.

Objective 10: Each year artists will develop a artist resume to guide his/her academic and artistic studies and to document his/her academic and artistic accomplishments. This work will be done under the mentorship of the faculty in the artist's artistic major.

Objective 11: Academic instruction in all subjects will be highly cross-curricular, in accordance with curricula design and continuously improved by teachers, in compliance with the New Jersey Artist Learning Standards.

Course Description

Course Title:	Algebra 1
Departmen t:	Math
Prerequisit e:	Pre-Algebra
Number of Credits:	5
Grade	9

Level(s):	
Standards:	Aligned to New Jersey Student Learning Standards for High School Mathematics
Description of Course	The Algebra I course is designed to provide an in depth understanding on the fundamental concepts found within the New Jersey Student Learning Standards for Algebra. The first unit will review basic number sense as well as the steps required in solving equations and inequalities (simple and compound). The rules of equations will then be expanded upon through the study of equations and inequalities with a strong focus on applying equations and inequalities to model and analyze various phenomena. The second unit will introduce students to function notation and evaluation. Artists will explore the concepts of domain & range and their connection to the coordinate plane. They will also learn to perform mathematical operations upon and between various functions. A focus of this unit will be on comparing and contrasting functions given different information. Artists will be expected to analyze and discuss functions in their traditional notation, a function graph, or a data set. In the third unit, artists will move from analyzing general function graphs into learning about some of the more common function graphs (linear and exponential) and their associated graphing techniques. The unit will begin with an in depth look at slope as the average rate of change for a function. Artists will then discover that linear functions have a constant rate of change and will learn how to graph linear functions from standard, slope-intercept, and point slope form. Artist will then investigate functions that have a rate of change with a multiplication pattern: the exponential function. This will lead into the study of exponential growth and decay. The fourth unit will focus on factoring and quadratic functions. Artists will use function notation in conjunction with the new multiplying function skills, from prior unit, to reverse the process through factoring. Artists will learn to identify roots through basic factoring techniques, factoring by grouping, and the quadratic formula. Throughout this chapter, artists will be expected to connect their solutions found algebraically to the graph of the quadratics. The fifth unit of Algebra 1 will cover Systems of Equations. Artists will apply the various techniques they had already learned to solve various functions to solve a system of two equations. Artists will discover the solutions of linear and quadratic systems. The chapter will conclude with the study of systems of inequalities. The sixth and final chapter of the course will focus on Descriptive Statistics. Artists will use

	all of their previously learned algebraic techniques to model data sets. The artists will connect these techniques to various statistical methods in order to analyze the data sets in depth.

Overview & Pacing

Unit #	Major Content	Expected Time
Unit #1	Number Sense, Equations & Inequalities	6 weeks
Unit #2	Functions	5 weeks
Unit #3	Linear vs. Exponential Models	7 weeks
Unit #4	Factoring and Quadratics	8 weeks
Unit #5	Systems of Equations	6 weeks
Unit #6	Descriptive Statistics	3 weeks