



Greenwich Public Schools Curriculum Overview

Extended Algebra

Personalized learning is achieved through standards-based, rigorous and relevant curriculum that is aligned to digital tools and resources.

Note: Teachers retain professional discretion in how the learning is presented based on the needs and interests of their students.

Course Description

Extended Algebra

Full Year

022110

8 Blocks

1 Credit

Prerequisites: Pre-Algebra with teacher recommendation and between a C and B- test and quiz average in 8th grade pre-Algebra

This course includes properties of real numbers, simplifying algebraic expressions, solving linear equations and inequalities and its applications, identifying relations and functions, graphing and writing linear functions and its applications, graphing scatter plots and lines of best fit, linear modeling and data analysis, and solving systems of linear equations and its applications. Also presented in this course are a review of the measures of central tendency and an introduction of simplifying, factoring and solving quadratic and polynomial expressions and equations.

Unit Guide

Unit 1: Linear Equations and Inequalities

Unit 2: Functions

Unit 3: Linear Functions: Graphing and Writing Equations of Lines

Midterm Review & Final Exam*

Unit 4: Applications of Linear Functions

Unit 5: Scatter Plots and Trend Lines

Unit 6: Systems of Linear Equations and Inequalities

Unit 7: Polynomial Functions

Unit 8: Measures of Central Tendency

Final Review & Final Exam*

***Note:** Semester exam review packets, answer keys and formula sheets can be found by joining our [Schology Math Department Review Course](#), using COURSE access code P9V9X-H6V37.

Mathematical Practices

- Make sense of 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.

Enduring Understandings

- *Unit 1:* To obtain a solution to an equation or an inequality, no matter how complex, always involves the process of undoing the operations.
- *Unit 2:* Functions are a mathematical way to describe relationships between two quantities that vary.
- *Units 3 & 4:* Linear functions are characterized by a constant average rate of change (or constant additive change).
- *Unit 5:* Although scatter plots and trend lines may reveal a pattern, the relationship of the variables may indicate a correlation, but not causation.
- *Unit 6:* A system of linear equations is an algebraic way to compare two equations that model a situation and find the break-even point or choose the most efficient or economical plan.
- *Unit 7:* To analyze the structure of polynomial equations and their real-life applications, we must extend the known rules of functions.
- *Unit 8:* Statistics is necessary to make accurate decisions involving data by identifying and appropriately by utilizing measures of central tendency, and by comparing two data distributions and addressing questions about differences between populations.

Essential Questions:

- *Unit 1:*
 - What is an expression?
 - What is an equation?
 - What does equality mean?
 - What is an inequality?
 - How can we use linear equations and linear inequalities to solve real world problems?
 - What is a solution set for a linear equation or linear inequality?
 - How can models and technology aid in the solving of linear equations and linear inequalities?
- *Unit 2:*
 - What is a function?
 - What are the different ways that functions may be represented?
 - How can functions be used to model real world situations, make predictions, and solve problems?
- *Units 3 & 4:*
 - What is a linear function?
 - What are the different ways that linear functions may be represented?
 - What is the significance of a linear function's slope and y-intercept?
 - How may linear functions model real world situations?
 - How may linear functions help us analyze real world situations and solve practical problems?
- *Unit 5:*
 - How do we make predictions and informed decisions based on current numerical information?
 - What are the advantages and disadvantages of analyzing data by hand versus by using technology?
 - What is the potential impact of making a decision from data that contains one or more outliers?
- *Unit 6:*
 - What does the number of solutions (none, one or infinite) of a system of linear equations represent?
 - What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically?

- **Unit 7:**
 - What properties / characteristics of quadratic functions are necessary in order to analyze and graph?
 - How do you perform operations with polynomial functions?
- **Unit 8:**
 - How can you tell when to use each measure of central tendency to represent a data set?
 - How do we make predictions and informed decisions based on current numerical information?
 - What are the advantages and disadvantages of analyzing data by hand versus by using technology?
 - What is the potential impact of making a decision from data that contains one or more outliers?

Resources and Assured Experiences

Textbook Information:

Algebra 1 with Calc Chat and Calc View
 Ron Larson and Laurie Boswell
 Big Ideas Learning (2022)
 ISBN 978-1-64432-864-4

Additional Resources:

- [Additional Resources: Big Ideas 2022 AGA curriculum suite](#)
- [CT DoE Math Model Curriculum Materials. Connecticut Model Curriculum for Algebra 1](#)
- [Arlington Math Project](#)

GHS Capstone Task:

[Vision of the Graduate](#) #3 - Explore, define, and solve complex problems

- Final Exam - to complete after Unit 6: Systems of Linear Equations and Inequalities

Quarterly Grading - Quarter Grades will be determined using the following components:

- Participation (includes Classwork) = 10%
- Extended Algebra Lab Classwork = 10%
- Preparation (includes Homework) = 20%
- Assessments (both Summative & Formative) = 60%

Connecticut Common Core State Standards

- **Unit 1:** CCSS.Math.Content.8.EE.C.7a, C.7b; HSA-CED.A.4; HSN-Q.A.1, A.2, A.3; HSA-REI.A.1, B.3; HSA-SSE.A.1a, A.1b.
- **Unit 2:** CCSS.Math.Content.8.F.A.1, B.5; HSA-CED.A.1, A.2; HSF-IF.A.1, A.2, B.5, C.9.
- **Units 3 & 4:** CCSS.Math.Content.HSF-IF.B.6, C.7a; HSF-LE.A.1a, A.1b, B.5.
- **Unit 5:** CCSS.Math.Content.8.SP.A.1, A.2, A.3; HSS-ID.B.6a, B.6b, B.6c, C.7, C.8, C.9.
- **Unit 6:** CCSS.Math.Content.HSA-CED.A.3; HSA-REI.C.5, C.6, D.11.
- **Unit 7:** CCSS.Math.Content.HSA-APR.A.1; HSF-IF.C.8a; REI.B.4b; HSA-SSE.B.3a.
- **Unit 8:** CCSS.Math.Content.HSS-ID.A.2, A.3.