

Math 412: Algebra I

2018-2019 Syllabus

Part 1: Course Information

Instructor Information

Instructor: Aaron Ginsburg

Office: Room 218 (Across from the Math Center Room 217)

Tentative Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
7 th Period	6 th Period	5 th Period 7 th Period	3 rd Period 5 th Period	3 rd Period 4 th Period 6 th Period

School Day Tutoring in the Math Center Room 217: 5-6 Periods Daily, Check the Schedule

Telephone: 917-721-2500 (Not Direct) Ext. 3633

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Course Description

4 periods per week, 1 credit

This algebra course emphasizes foundational concepts and problem-solving strategies that are common to all branches of mathematics. Topics include the real number system, linear equations and inequalities, quadratic equations, statistics, and an in-depth study of functions. At the end of the course students take the New York State Regents Algebra 1 (Common Core) exam.

Prerequisite

- Pre-algebra

Course Materials

Required

- Google Classroom/Khan Academy/Delta Math Accounts
 - Google Classroom enrollment, Khan Academy, and Delta Math accounts will be set-up in class through student SHS email accounts and account for a majority of the course content.
- OpenStax Digital Textbook, Intermediate Algebra, Marecek
 - <https://openstax.org/details/books/intermediate-algebra>

Recommended Regents Self-Paced Practice

- JMAP Algebra I
 - www.jmap.org
- Algebra 1 Common Core, Pearson (Textbook available upon request)

Course Supplies/Access

- **TI-89 (Texas Instruments) Calculator**
 - *A TI-83 or above calculator is recommended for the Algebra I Regents exam*
 - *The TI-89 series calculator may be a more useful purchase as the calculator functions can be used throughout high school and into college math courses*
- A 3-ring binder with graphing paper/notebook and a folder
- Pencils and Erasers
- Desmos (www.desmos.com and Desmos App for iPhone or Android devices)
- Remind (Remind App for iPhone or Android devices)
- Internet connection (via a computing device at home/library or through mobile data)
 - Access to the Internet for assignments, posted notes, solution sets, review and additional resources is important and necessary.

Part 2: Student Learning Outcomes

- Quantities and Variables
 - How can quantities best be represented when analyzing relationships as quantities change?
- Functions
 - Why are functions important? How do key features of parent functions help explain relations across functions of the same form?
- Multiple Representations
 - What makes one representation of a function better suited to a problem than another?
- Rate of Change
 - How does a function's rate of change determine characteristics that uniquely define the function?
- Function Rules and Solutions
 - How do function representations help find and record all values that make a function true?
- Modeling
 - Which models best help analyze a situation? How do we assess the effectiveness of a model?

Students will meet the objectives listed above through a combination of the following:

- Attend all scheduled classes
- Complete all assignments with honesty and effort
- Participate openly in the course content

Part 3: Course Outline and General Topics

- **Foundations of Algebra**
 - Rates, Variables, Expressions, Operational Properties, Equivalence, Exponents, Notation and Structure, and Translating Words to Algebra
- **Linear Expressions, Equations, and Inequalities**
 - Equations and Solutions, Solving Equations, Linear Equations, Properties Used to Solve Equations, Justifying Solutions, Linear Word Problems, Consecutive Integers, Inequalities, Solving Linear Inequalities, Compound Inequalities, Interval Notation, and Modeling with Inequalities
- **Intro to Functions**
 - Functions, Function Notation, Graphs of Functions, Function Behavior, Functions on the Graphing Calculator, Average Rate of Change, and the Domain and Range of a Function
- **Linear Functions and Sequences (Arithmetic)**
 - Proportionality, Converting Units, Linear Relationships, Equations in Slope-Intercept Form, Modeling with Linear Functions, Horizontal and Vertical Lines, Absolute Value Functions, Step Functions, Graphical Relationships, Graphs of Linear Inequalities, and Arithmetic Sequences
- **Systems of Linear Equations and Inequalities**
 - Solutions to Systems of Equations, Solving Systems by Graphing, Solving Systems by Substitution, Solving Systems by the Elimination Method, Modeling with Systems of Equations, Solving Equations Graphically, Solving Systems of Inequalities, and Modeling with Systems of Inequalities
- **Exponents, Exponentials, and Sequences (Geometric)**
 - Simplifying Exponential Expressions, Zero and Negative Exponents, Exponential Growth and Decay, Exponential Functions, Percent Increase and Decrease, Exponential Models, and Geometric Sequences
- **Polynomials**
 - Operations with Polynomials, Conjugate Pairs, Factoring Polynomials, and Factoring Trinomials
- **Quadratic Functions and Their Algebra**
 - Quadratic Functions, Parabolas, Shifting Parabolas, Completing the Square, Stretching Parabolas, Zeroes, The Zero Product Law, and Quadratic Word Problems
- **Roots and Irrational Numbers**
 - Square Roots, Irrational Numbers, Square Root Functions, Solving Quadratics by Completing the Square, Using the Quadratic Formula, Quadratic Equations and Word Problems, and Cube Roots
- **Statistics**
 - Graphing Data, Quartiles and Box Plots, Measures of Central Tendency, Variation, Two Way Tables, Linear Regression, Predictions from Statistical Analysis, and Residuals
- **Functions**
 - Function Transformations, Discrete and Continuous Functions, Function Comparisons, Piecewise Functions, Quadratic Models, and Model Accuracy

Part 4: Grading Policy

Graded Course Activities

All assignments have the potential to have points awarded and recorded for the overall grade. Typical types of assignments are classwork, homework, pop-quizzes, quizzes, labs, tests, and projects. The points awarded will weight the assignment grade. For example, if a single homework is worth 5 points, a test may be worth 50 points.

Late Work Policy

Be sure to please pay close attention to deadlines. There is little acceptable discussion to make up assignments, quizzes, or late work without some form of prior notification (notification on the assignment due date is not prior) or a serious and compelling reason and approval.

Viewing Grades

Using the current school system we cannot push individual grade reports out through the portal. Grades are available upon student request and assignment reports are frequently printed and distributed in class.

Final

The final in Math 412 is the Algebra I Common Core Regents exam. Each year the Math Department determines the weight of the Regents score in the course final grade depending on the exam results. Typically, the Regents score is between 0-15% of the final course grade.

Letter Grade Assignment

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

Letter Grade	Min Percentage	Progress Level
A+	97%	Exceeding
A	93%	
A-	90%	
B+	87%	Meeting
B	83%	
B-	80%	
C+	77%	In Progress
C	73%	
C-	70%	
D+	67%	Limited Progress
D	65%	
F	<65%	Not Yet in Progress

Part 5: Course Policies

Attend Class

Students are expected to attend all class sessions. Necessary absences and the loss of seat-time can be assisted through email contact and by checking out course content via Google Classroom.

Participate

Ask questions. Be curious. Students will have moments to question and comment on content in class, but also outside of class using the Google Classroom platform. Thoughts, questions, and conjectures provide the discourse to establish reasoning.

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let me know as early as possible. As you will find, building rapport and effective relationships with your peers and teachers are key to becoming an effective student. Make sure that you are proactive in informing me (or any of the school support team) when difficulties arise during the semester so that we can help you find a solution.

Complete Assignments

Some assignments for this course may require an online submission. For example, if we have an online homework assignment, the online submissions are date-time stamped and will automatically be marked as late past the given due date. Assignments must be submitted by the given deadline or special permission must be requested from me *before the due date*. Late or missing assignments will affect the student's grade.

Commit to Integrity

As a student in this course you are expected to maintain high degrees of academic integrity, commitment to active learning, participation in this class, and also integrity in your behavior in and out of the classroom.