California State University, Northridge
Summer Academic Enrichment Program

Algebra IAB

**A-G Subject Area Fulfillment:** Meets two semesters of the (C) Mathematics graduation requirement.

**Course Overview:**
Algebra I AB is designed to complete a year-long Algebra I class in an accelerated five-week time frame. In order to be successful in this course, the student needs a strong background in Pre-Algebra and a consistent work ethic. Be aware that the course is not an introduction to Algebra I. If the student needs to complete just one semester of this course, the student may register for just that one semester. However, there is no fee reduction. Also, if the student only needs to take the second semester, we recommend that s/he attends the first semester as well to help prepare her/him for the second.

**Course Goals and Objectives**

The course will cover five units
- Unit 1: Equations and Inequalities
- Unit 2: Functions
- Unit 3: Extensions of Linear Concepts
- Unit 4: Exponents, Radicals, and Polynomials
- Unit 5: Quadratic Functions

This summer course is meant to provide a low-pressure environment where individual attention by the teacher and personal reflection by the student is highly promoted. The volume of content to be learned will be intense and daunting (a full year’s topics in five weeks). It is therefore the student’s responsibility to ask “well thought-out” questions, complete assignments, and seek tutoring, if need be.

**Attendance is mandatory for learning to take place. Please be in class, and don’t get behind. Please give yourself extra time to get here in the mornings; being tardy is a distraction to the class’s attention.**

Common Core Standards Covered
Algebra I Overview [Detailed CCSS](https://www.cde.ca.gov) from [www.cde.ca.gov](http://www.cde.ca.gov)
Week 1

Day 1 – Unit 1 Equations and Inequalities
Salutations and first day chores
Diagnostic Test
Getting Ready – Review (page 2)
Numeric and Graphic Representations of Data (Lesson 1 – 1)
Writing Expressions (Lesson 1 – 2)
Homework Page 14, 1 – 13

Day 2
Review Homework
Writing and Solving Equations (Lesson 2 – 1)
Equations with Variables on Both Sides (Lesson 2 – 2)
Solving More Complex Equations (Lesson 2 – 3)
Equations with No Solution or Infinitely Many Solutions (Lesson 2 – 4)
Solving Literal Equations for a Variable (Lesson 2 – 5)
Homework Page 31, 1 – 40

Day 3
Review Homework
Embedded Assessment 1 – page 33
Inequalities and Their Solutions (Lesson 3 – 1)
Solving Inequalities (Lesson 3 – 2)
Compound Inequalities (Lesson 3 – 3)
Homework Page 47, 1 – 33

Day 4
Review Homework
Absolute Value Equations (Lesson 4 – 1)
Absolute Value Inequalities (Lesson 4 – 2)
Activity Practice page 59, 1 – 42
Relations and Functions (Lesson 5 – 1)
Domain and Range (Lesson 5 – 2)
Function Notation (Lesson 5 – 3)
Homework Page 79, 1 - 21
**Day 5**
Review Homework
Embedded Assessment 2 - page 61
Key Features of Graphs (Lesson 6 – 1)
More Complex Graphs (Lesson 6 – 2)
Graphs of Real World Situations (Lesson 6 – 3) Homework page 95, 1 - 22

**Day 6**
Review Homework
The Spring Experiment (Lesson 7 – 1)
The Falling Object Experiment (Lesson 7 – 2) The Radioactive Decay Experiment (Lesson 7 – 3)
Homework page 109, 1 - 14

**Day 7**
Review Homework
Exploring f(x) + k (Lesson 8 – 1)
Exploring f(x + k) (Lesson 8 – 2)
Activity Practice page 119, 1 – 31
Slope (Lesson 9 – 1)
Slope and Rate of Change (Lesson 9 – 2)
More About Slopes (Lesson 9 – 3)
Homework page 137, 1 - 21

**Day 8**
Review Homework
Embedded Assessment page 122
Direct Variation (Lesson 10 – 1)
Indirect Variation (Lesson 10 – 2)
Another Linear Model (Lesson 10 – 3)
Inverse Functions (Lesson 10 – 4)
Homework page 157, 1 - 24

**Day 9**
Review Homework
Identifying Arithmetic Sequences (Lesson 11 – 1)
A Formula for Arithmetic Sequences (Lesson 11 – 2)
Arithmetic Sequences as Functions (Lesson 11 – 3)
Recursive Formulas (Lesson 11 – 4) Slope-Intercept Form (Lesson 12 – 1)
Point Slope Form (Lesson 12 – 2) Homework page 171, 1 – 24, page 191, 1-15
**Day 10**
Review Homework
Embedded Assessment page 173
Standard Form (Lesson 12 – 3)
Slopes of Parallel and Perpendicular Lines (Lesson 12 – 4)
Scatter Plots and Trend Lines (Lesson 13 – 1)
Linear Regression (Lesson 13 – 2)
Quadratic and Exponential Regression (Lesson 13 – 3)
Homework page 191, 16 – 26, Page 205, 1 - 26

**Day 11**
Review Homework
Embedded Assessment page 207
Function Notation and Rate of Change (Lesson 14 – 1)
Writing Functions and Finding Domain and Range (Lesson 14 – 2)
Evaluating Functions & Graphing Piecewise-Defined Linear Functions (Lesson 14–3)
Comparing Functions (Lesson 14 – 4)
Writing Equations From Graphs and Tables (Lesson 15 – 1)
Homework page 225, 1 – 19, page 237, 1 – 6

**Day 12**
Review Homework
Comparing Functions and Inequalities (Lesson 15 – 2) Writing
Equations From Verbal Descriptions (Lesson 15 – 3)
Writing and Graphing Inequalities in 2 Variables (Lesson 16 – 1)
Graphing Inequalities in Two Variables (Lesson 16 – 2)
Solving Systems of Equations: The Graphing Method (Lesson 17 – 1)

**Day 13**
Review Homework
Embedded Assessment (page 249)
Using Tables and Substitution Method (Lesson 17 – 2)
The Elimination Method (Lesson 17 – 3)
Systems Without a Unique Solution (Lesson 17 – 4)
Classifying Systems of Equations (Lesson 17 – 5)
Homework page 271, 4 - 17

**Day 14**
Review Homework
Representing a Solution of a System of Inequalities (Lesson 18 – 1)
Interpreting the Solution of a System of Inequalities (Lesson 18 – 2)
Basic Exponential Properties (Lesson 19 – 1)
Negative and Zero Powers (Lesson 19 – 2) Additional
Properties of Exponents (Lesson 19 – 3)
Homework page 281, 1 – 13, page 297, 1 - 34

**Day 15**
Review Homework
Embedded Assessment page 283
Radical Expressions (Lesson 20 – 1)
Adding and Subtracting Radical Expressions (Lesson 20 – 2)
Multiplying and Dividing Radical Expressions (Lesson 20 – 3)
Identifying Geometric Sequences (Lesson 21 – 1)
Formulas for Geometric Sequences (Lesson 21 – 2)
Homework page 311, 1 – 37, page 321, 1 - 32

**Day 16**
Review Homework
Embedded Assessment page 323
Exponential Functions and Exponential Growth (Lesson 22 – 1)
Exponential Decay (Lesson 22 – 2)
Graphs of Exponential Functions (Lesson 22 – 3)
Compound Interest (Lesson 23 – 1)
Population Growth (Lesson 23 – 2)
Homework page 339, 1 – 32, page 351, 1 - 28

**Day 17**
Review Homework
Embedded Assessment page 353
Polynomial Terminology (Lesson 24 – 1)
Adding Polynomials (Lesson 24 – 2)
Subtracting Polynomials (Lesson 24 – 3)
Multiplying Binomials (Lesson 25 – 1)
Homework page 367, 1 – 31, page 381, 1 - 7

**Day 18**
Review Homework
Special Products of Binomials (Lesson 25 – 2)
Multiplying Polynomials (Lesson 25 – 3)
Factoring by Greatest Common Factor (Lesson 26 – 1)
Factoring Special Products (Lesson 26 – 2)
Factoring x²+ bx + c (Lesson 27 – 1)
Homework page 381, 8 – 29, page 391, 1 – 36

**Day 19**
Review Homework
Factoring ax²+ bx + c (Lesson 27 – 2) Simplifying
Rational Expressions (Lesson 28 – 1) Dividing
Polynomials (Lesson 28 – 2)
Multiplying and Dividing Rational Expressions (Lesson 28 – 3)
Adding and Subtracting Rational Expressions (Lesson 28 – 4)
Homework page 401, 17 – 37, page 417, 1 - 39

**Day 20**
Review Homework
Embedded Assessment page 419
Modeling with a Quadratic Function (Lesson 29 – 1) Graphing
and Analyzing a Quadratic Function (Lesson 29 – 2)
Translations of the Quadratic Parent Function (Lesson 30 – 1)
Stretching and Shrinking of the Quadratic Parent Function (Lesson 30 – 2)
Multiple Transformations of the Quadratic Parent Function (Lesson 30 – 3)
Homework page 431, 1 - 15, page 451, 1 – 17

**Day 21**
Review Homework
Embedded Assessment page 453
Solving Quadratic Equations by Graphing or Factoring (Lesson 31 – 1)
The Axis of Symmetry and the Vertex (Lesson 31 – 2)
Graphing a Quadratic Functions (Lesson 31 – 3)
Homework page 465, 1 – 30

**Day 22**
Review Homework
The Square Root Method (Lesson 32 – 1)
Completing the Square (Lesson 32 – 2)
The Quadratic Formula (Lesson 32 – 3)
Choosing a Method and Using the Discriminant (Lesson 32 – 4)
Complex Solutions (Lesson 32 – 5)
Homework page 483, 1 - 36

**Day 23**
Review Homework
Fitting Data with a Quadratic Function (Lesson 33 – 1)
Interpreting Solutions of Quadratic Equations (Lesson 33 – 2)
Practice page 491, 1 – 27
Embedded Assessment page 493
Review for Final
Homework: Study for Final

**Day 24**
Final Review Questions
Final Exam
Final Exam Questions
Diagnostic Test
Standards of Practice
MP1. Make sense of problems and persevere in solving them
MP2. Reason abstractly and quantitatively.
MP3. Construct viable arguments and critique the reasoning of others
MP5. Use appropriate tools strategically.
MP6. Attend to precision.
MP7. Look for and make use of structure.
MP8. Look for and express regularity in repeated reasoning.

Course Materials:
Textbook: Springboard Algebra 1

Textbook will be purchased first day of class. Students will keep textbook and will be able to write and take notes in it.

Each student is to have the following materials daily:
1. Three-ring binder with appropriate pages from text inserted.
2. 3-hole punched lined, college-rule paper.
3. Stationery, such as pencils, red pens, etc.
4. Scientific calculator
5. Graph paper

Course Grading

Homework, Embedded Assessments and Tests

- **Homework** is assigned daily and is due the following school day. Each assignment is worth **10 points**.
- **Embedded Assessments** – After each section (as outlined in schedule) an Embedded Assessment will be given. Each assessment will be worth **25 points**.
- A **Final** will be given after each 2 ½ week session. It will only cover the topics in that session and will be worth **100 points** each.

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<th>Component</th>
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<tr>
<td>Homework</td>
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<td>Embedded Assessments</td>
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<td>Final Exam</td>
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<td>Class Participation</td>
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<td><strong>Total</strong></td>
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**Classroom Behavior:**

The student is expected to demonstrate mature, polite behavior and extend courtesy to everyone at all times:

1. Actively participate, and respectful verbal and nonverbal interaction with all opinions must be shown at all times.
2. Since differing views will be expressed, the teacher and the student(s) will mutually maintain a safe environment for courteous dialogue.
3. Respect is to be shown for all CSUN property.
4. No food or beverages will be permitted in the classroom. Snacks must be eaten outside between the designated breaks.
5. Warnings for behavior / discipline problems will be given once. Any further problems will result in a phone call to the parent(s) or guardian(s) and possible dismissal from the program.

**SAEP Electronics Policy**

**Cell phones, music players and headphones are not permitted to be used during class hours.**

a. Please put your cell phone on silent (NOT vibrate).

b. No texting is allowed during class.

You will be given one verbal warning if the above is not followed. Should a second warning be necessary, your cell phone, music player and/or headphones will be confiscated and held by the teacher until after class. If a third time occurs, your cell phone, music player and/or headphones will be confiscated and held in the SAEP office and MUST BE PICKED UP BY A PARENT.
Algebra IAB

After reading through the syllabus, please sign and date and have your student return it to class. The signature constitutes your commitment to the class as we partner to make the next five weeks a life-long educational experience for your student.

Student/ Parent Agreement:
Please bring this signed and dated Algebra IAB syllabus agreement to class tomorrow.

If you do not understand any portion of this syllabus, or if you have any questions regarding this class, please do not hesitate to email the teacher.

We have read and understand the contents of this syllabus.

Student name ______________________________________________________

Student signature____________________________________________________

Date__________________

Parent/Guardian name _______________________________________________

Parent/Guardian signature_____________________________________________

Date_________________

Phone _____________________________________________________________

E-mail_____________________________________________________________