

<b>Course Title:</b>	Math I Basic A
<b>Department:</b>	Special Education
<b>Course #:</b>	8126
<b>Grade Level/s:</b>	10-12
<b>Course Length:</b>	1-year
<b>Prerequisite:</b>	Transitional Math Basic or Transitional Math. Open to all diploma bound students with an IEP, with counselor, parent and teacher approval.

**Brief Course Description:** Math I Basic A is open to all diploma bound students. The purpose of Math I Basic A is to develop students' ability to think mathematically and develop their conceptual understanding of mathematics and procedural fluency in mathematics. Math I Basic A will extend the mathematics students learned in earlier grades and begin the development of concepts in Number and Quantity, Algebra, Functions, Modeling, Geometry, and Probability and Statistics. The critical topics of this course are: Relations and Functions, Linear Equations and Inequalities, Systems of Equations and Inequalities, Arithmetic and Geometric Sequences, Polynomial Expressions, Exponential Functions, Geometric Properties and Congruence, and Modeling Data. Extensive use of models (or real-world situations), manipulatives, graphs and diagrams will help students view how mathematics is a set of related topics as opposed to a set of discrete topics. In addition, students will solve problems graphically, numerically, algebraically, and to make verbal connections between these representations. Students routinely use the standards for mathematical practice to make sense of problems, justify solutions and conclusions, model with mathematics, and strategically use technology to analyze and solve real-world problems.

## I. GOALS

Engage and support all students in learning. Provide Specially Designed Academic Instruction to meet the unique needs of our students in accordance with their Individualized Educational Plan (IEP). Help students develop needed skills to meet or exceed the rigor of Algebra I or Mathematics I as aligned to the content standards of Section 512224.5 of the Ed Code.

The students will:

- A. Reason quantitatively and use units to solve problems

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- B. Interpret the structure of expressions
- C. Create equations that describe numbers or relationships
- D. Understand solving equations as a process of reasoning and explain the reasoning
- E. Solve equations and inequalities in one variable
- F. Solve systems of equations
- G. Represent and solve equations and inequalities graphically
- H. Understand the concept of a function and use function notation
- I. Interpret functions that arise in applications in terms of the context
- J. Analyze functions using different representations
- K. Build a function that models a relationship between two quantities
- L. Build new functions from existing functions
- M. Construct and compare linear and exponential models and solve problems
- N. Interpret expressions for functions in terms of the modeled situation
- O. Make geometric constructions
- P. Experiment with transformations in the plane
- Q. Understand congruence in terms of rigid motions
- R. Use coordinates to prove simple geometric theorems algebraically
- S. Summarize, represent, and interpret data on a single count measurement variable, as well as, on two categorical and quantitative variables
- T. Interpret linear models

These goals are aligned with the California State Standards, including the Standards Mathematical Practices. Coursework is IEP driven. More or less time will be spent on individual units depending on student needs

**II. OUTLINE OF CONTENT FOR MAJOR AREAS OF STUDY**

- A. Number and Quantity
  1. Define quantities and interpret expressions (N.Q.2, A.SSE.1)
  2. Interpret expressions and use units to understand problems (A.SSE.1, N.Q.1)
  3. Use units as a way to understand problems (N.Q.1)

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4. Explain each step in the process of solving an equation (A.REI.1)
  5. Rearrange formulas to solve for a variable (A.REI.3, A.CED.4)
  6. Solve literal equations (A.REI.1, A.REI.3, A.CED.4)
  7. Write inequalities to fit a context (A.REI.1, A.REI.3)
  8. Reason about inequalities and the properties of inequalities (A.REI.1, A.REI.3)
  9. Solve linear inequalities and represent the solution (A.REI.1, A.REI.3)
- B. Systems of Equations and Inequalities
1. Represent constraints with systems of inequalities (A.CED.3)
  2. Write and graph linear inequalities in two variables (A.CED.2, A.REI.12)
  3. Write and solve equations in two variables (A.CED.2, A.CED.4)
  4. Write and graph inequalities in two variables to represent constraints (A.CED.2, A.CED.3, A.REI.12)
  5. Graph the solution set of a linear system of inequalities (A.CED.3, A.REI.12)
  6. Solve systems of linear equations in two variables, including inconsistent and dependent systems (A.REI.6)
  7. Solve systems of linear inequalities representing constraints (A.CED.3)
- C. Arithmetic and Geometric Sequences
1. Represent arithmetic sequences with equations, tables, graphs, and story context (F.BF.1, F.LE.1a, F.LE.2, F.LE.5)
  2. Understand that arithmetic sequences have a constant difference between consecutive terms (F.BF.1, F.LE.1a/1c, F.LE.2, F.LE.5)
  3. Understand that arithmetic sequences either increase or decrease at a constant rate (F.BF.1, F.LE.1a/1b, F.LE.2, F.LE.5)
  4. Compare rates of growth in arithmetic and geometric sequences (F.BF.1, F.LE.1a/1c, F.LE.2, F.LE.5)
  5. Build recursive and explicit equations for arithmetic and geometric sequences and understand the difference between recursive and explicit equations (F.BF.1, F.BF.2, F.LE.1a/1b, F.LE.2, F.LE.5)
  6. Use rate of change to find missing terms in an arithmetic sequence (F.BF.1, F.LE.1a/1c, F.LE.2, F.LE.5)
  7. Use a constant ratio to find missing terms in a geometric sequence (F.BF.1, F.LE.1, F.LE.2)
  8. Develop fluency with geometric and arithmetic sequences (A.REI.3)
- D. Linear and Exponential Functions
1. Understand continuous linear and exponential functions (F.IF.3)
  2. Define linear and exponential functions based upon the pattern of change (F.LE.1, F.LE.2)
  3. Identify rates of change in linear and exponential functions (F.LE.1, F.LE.2)
  4. Distinguish between linear and exponential functions using various representations (F.LE.3, F.LE.5)
  5. Compare the growth of linear and exponential functions (F.LE.2, F.LE.3, F.LE.5, F.IF.7)
  6. Compare linear and exponential models of population (F.BF.1, F.BF.2, F.LE.1, F.LE.2, F.LE.3)
  7. Interpret equations that model linear and exponential functions (A.SSE.1, A.CED.2, F.LE.5)

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8. Evaluate the use of various forms of linear and exponential equations (A.SSE.1, A.SSE.3, A.CED.2, F.LE.5)
9. Understand and interpret formulas for exponential growth and decay (A.SSE.1, A.CED.2, F.LE.5, F.IF.7)
10. Solve exponential and linear equations (A.REI.3)

**III. ACCOUNTABILITY DETERMINANTS**

Coursework is IEP driven. More or less time will be spent on individual units depending on student needs.

**A. Key Assignments**

1. In the task "Taking Sides" from Number and Quantity Unit, students extend work with solving linear equations to solving linear inequalities in one variable and to solving literal equations that are linear in the variable being solved for.
2. In the task "Taken Out of Context" from Systems of Equations and Inequalities Unit, students complete a strategy for solving a system of linear equations to a situation that contains three equations and three unknowns.
3. In the task "I Know...What Do You Know?" from Arithmetic and Geometric Sequences Unit, students practice their fluency in using various representations for both arithmetic and geometric sequences.
4. In the task "Up a Little, Down A Little" from Linear and Exponential Functions Unit, students consider how a percent change is written in a formula in both an exponential growth and decay situation; in addition, a formula for depreciation.

**B. Assessment Methods**

1. Daily Student Observations, Classroom Participation, Effort and Achievement
2. Classwork/Homework, Attendance and Participation
3. Performance Tasks and Computer Adaptive Programs
4. Projects
5. Quizzes
6. End of Unit Tests
7. Semester Final Exams
8. District-wide Benchmark Exams

**IV. INSTRUCTIONAL MATERIALS AND METHODOLOGIES**

**A. Required Textbook(s)**

Bellman, Allan, et al. California Algebra 1. Boston: Pearson Prentice Hall, 2009

**B. Supplementary Materials**

1. Hendrickson, Honey, et al. Secondary One Mathematics: An Integrated Approach. Mathematics Vision Project, 2013. This is an e-book located at <http://www.mathematicsvisionproject.org>
2. Holt McDougal, Explorations in CORE Math for Common Core Algebra 1. Houghton Mifflin Harcourt Publishing Company, 2010
3. [www.geogebra.org](http://www.geogebra.org)

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4. [www.illustrativemathematics.org](http://www.illustrativemathematics.org)
5. [www.bigideasmath.com](http://www.bigideasmath.com)
6. Instructional resources available on Haiku Learning Management System.

C. Instructional Methodologies

1. Guided Inquiry
2. Direct Instruction
3. Cooperative Learning
4. Discourse
5. Problem-Based Learning
6. Visual Representations and Concrete Models