

**MT. DIABLO UNIFIED SCHOOL DISTRICT
COURSE OF STUDY**

COURSE TITLE: Dynamic Algebra I

COURSE NUMBER: 771310

CALPADS NUMBER: 2403

LENGTH OF COURSE: One Year

CREDITS PER SEMESTER: 5

GRADE LEVEL(S): 8-12

REQUIRED OR ELECTIVE: This course fulfills one year of the high school mathematics requirement

BOARD OF EDUCATION ADOPTION: April 2024

COURSE OVERVIEW

Dynamic Algebra I is intended for students with significant cognitive disabilities who are anticipated to earn an Alternative High School Diploma through the alternative pathway in accordance with California Education Code 51225.31.

The course provides the transition from computation and problem solving into understanding the dynamic changes and relationships in the world, and universe, around us. Students will relate systems of equations to each other to find solutions in multiple ways. An understanding of content will be developed through integration with technology and applications with real life examples.

In addition to the **California Common Core State Standards for Mathematics**, students will experience and gain fluency with the **8 Standards for Mathematical Practice**:

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Use appropriate tools strategically
4. Attend to precision
5. Look for and make use of structure
6. Look for and express regularity in repeated reasoning

Overall, the quality of a learning environment depends on the extent to which it provides opportunities for students along the following five dimensions:

1. The richness of disciplinary concepts and practices (“the content”) available for learning;
2. Student sense-making and “productive struggle”;
3. Meaningful and equitable access to concepts and practices for all students;

1. Means for constructing positive disciplinary identities through presenting, discussion and refining ideas; and
2. The responsiveness of the environment to student thinking.

COURSE CONTENT:

Unit 1: Solving Linear Equations

This unit presents the foundational skills related to solving linear equations, solving absolute value equations, and rewriting equations and formulas. Students will activate prior knowledge and help to connect concepts to each other.

Students will demonstrate their understanding of each lesson's concepts and will complete computational and applied problems.

Sample activities will include calculating time, distance, age, earnings and other computational problems. Students will do this by using verbal models; drawing diagrams; sketching a graph or number line; writing equations; making a table; looking for patterns; making a list and breaking the problem into parts.

Unit 2: Solving Linear Inequalities

Techniques used in solving linear equations are applied to linear inequalities. Students will learn to write and graph linear inequalities, using graphs to both display and check their answers. This may include multi-step, compound and absolute value inequalities. Students will do this by following the steps for solving an equation and reversing the inequality symbol when multiplying or dividing by a negative number for simple inequalities..

Sample activities will include determining inequities in time, money, age, earnings and other real life problems. Students will do this by using verbal models, drawing diagrams, sketching a graph or number line, making a table, looking for patterns, making a list or breaking the problem into parts.

Unit 3: Graphing Linear Functions

Students will review what functions are and how each variable impacts results.

Sample activities include through locating various point on a graph, creating graphs with different variables, and solving one variable using a graph when a variable is presented (e.g, on a graph of pizza purchases, trace the graph to a point and tell the number of pizzas purchased and the total cost of the pizzas.) Students will do this by using verbal models, drawing diagrams, sketching a graph or number line, making a table, looking for patterns, making a list or breaking the problem into parts.

Unit 4: Writing Linear Functions

This unit covers scatter plots and lines of best fit. Students will learn to use scatter plots and graphs to compare different scenarios. Lastly, students will be able to make predictions based on arithmetic sequences.

Sample activities include comparing the cost/sales of different items or time/productivity, two other variables in a scenario when reviewing graphs, (e.g., more coffees are sold at a less expensive price but the profit margin is lower). Students will do this by using verbal models, drawing diagrams, sketching a graph or number line, making a table, looking for patterns, making a list or breaking the problem into parts.

Unit 5: Solving Systems of Linear Functions

This unit covers solving systems of linear equations by graphing, substitution, or elimination. Students will develop attention to detail as they compare equations in a system to each other as

they need to develop a plan to determine which method is the best to solve the system. The unit ends with students applying the same skill set for solving systems of inequalities.

Sample activities include finding solutions through a variety of methods including graph, scatter chart or equation (e.g., using a chart to show cost vs. sales price of an item of different sizes or using a bar graph to compare time to use various methods of public transportation methods in relation to an activity.). Students will do this by using verbal models, drawing diagrams, sketching a graph or number line, making a table, looking for patterns, making a list or breaking the problem into parts.

Unit 6: Exponential Functions and Sequences

This unit encompasses exponents and radicals. Students transition into a new topic of visualizing and understanding exponential relationships and the properties that drive them, including making quantities very large or small quickly. They will solve simple problems with technology, such as simple interest.

Sample activities include demonstrating understanding that exponents are a form of multiplying the number by itself or by calculating interest on a purchase. Students will do this by using verbal models, using a number line, making a table, looking for patterns, or breaking the problem into parts.

Unit 7: Polynomial Equations and Factoring

This unit covers operations with polynomials and solving polynomial equations in factored form. Students will add, subtract, multiply and divide polynomials. Students will also be able to solve for a single variable.

Sample activities include using the four basic mathematical operations to solve for a single variable and will demonstrate understanding of number families when using basic mathematical operations. Students will do this by using verbal models, using a number line, making a table, looking for patterns, or breaking the problem into parts.

Unit 8: Solving Quadratic Equations

This unit introduces/reviews the properties of radicals. It also teaches students to solve equations using the four basic mathematical operations by using several different methods: graphing, using square roots, and completing the square.

Sample activities include using data to construct sample graphs and tables and interpreting the data. Students will do this by using verbal models, using a number line, making a table, looking for patterns, or breaking the problem into parts.

Unit 10: Radical Functions and Equations

Students will use the basic mathematical operations to calculate squares and cubes of numbers. Students continue to build their skill set by using inductive reasoning. They explore the various graphs of squares and cubed root graphs to demonstrate understanding of the rate of increase.

Unit 11: Data Analysis and Displays

Students will study the foundation of statistics and measurement. Students will explore different types of data, both given and collected on their own and understand how different types of presentation and statistical calculation affects the data's appearance and conclusions that can be made. Students will also explore ways to ask unbiased questions and create surveys in order to obtain accurate information and results.

Sample activities include creating surveys to obtain accurate information and analyzing the data (e.g. - asking customers how much they would pay for a product in a school business and using that data to guide future product lines).

COURSE MATERIALS

- Teacher support resources can also be found in the [Educational Services Website](#)).
- Teacher support resources can also be found in the Special Education Google Classrooms

EVALUATION OF STUDENT PROGRESS:

ASSESSMENT METHODS

Formative:

- Mathematical Discourse
- Reflection questions
- Teacher observations/evidence
- Student discussions
- Quiz
- Exit ticket

Summative:

- Performance task
- Unit Assessment