College Prep Math

Unit 1: What's My Line?

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

II.A.1 Compare real numbers.

II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, inequalities, ~~and systems of linear equations.~~

II.C.2 Explain the difference between the solution set of an equation and the solution set of an inequality.

II.D.1 Interpret multiple representations of equations and relationships.

Unit Big Ideas/Learning Targets

- I can formulate and solve linear equations in mathematical and real-world situations using multiple tools and representations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can formulate and solve linear inequalities in mathematical and real-world situations using multiple tools and representations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can solve absolute value equations in one variable in mathematical and real-world situations using multiple tools and representations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can solve absolute value inequalities in one variable in mathematical and real-world situations using multiple tools and representations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.

College Prep Math

Unit 2: Piecing it Together

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
1A apply mathematics to problems arising in everyday life, society, and the workplace;
1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
1E create and use representations to organize, record, and communicate mathematical ideas;
1F analyze mathematical relationships to connect and communicate mathematical ideas; and
1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards
II.C.2. Explain the difference between the solution set of an equation and the solution set of an inequality.
II.D.2. Translate among multiple representations of equations and relationships.
III.C.1. Make connections between geometry and algebra.
VII.A.2. Recognize and distinguish between different types of functions.
VII.B.1. Understand and analyze features of a function.
VII.B.2 Algebraically construct and analyze new functions.
VII.C.1. Apply known function models

Unit Big Ideas/Learning Targets

- I can graph a linear equation from standard form and slope-intercept form and identify the key features to describe mathematical and real world contexts.
- I can calculate and compare the slope of lines in order to analyze and interpret mathematical and real world problems.
- I can write a linear equation in point-slope form, standard form, and slope-intercept from tables, graphs, and verbal descriptions. I can use representations to make sense of and solve problem situations.
- I can represent the solution set of a linear inequality by graphing from standard form and slope-intercept form in order to make sense of real world situations.
- I can graph piecewise functions, parent functions, and their transformations by selecting appropriate tools and techniques. I can describe key features of functions using precise mathematical language.

College Prep Math

Unit 3: What's the Point?

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

II.C.1 Recognize and use algebraic properties, concepts, procedures, and algorithms to solve ~~equations, inequalities,~~ and systems of linear equations.

II.C.2 Explain the difference between the solution set of an equation and the solution set of an inequality.

Unit Big Ideas/Learning Targets

- I can solve systems of two linear equations by the substitution method, elimination, and graphing, in mathematical and real world situations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can solve systems of three linear equations by the substitution method or elimination in mathematical and real world situations. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can analyze given information to formulate and solve a system of two or three linear equations by selecting a method in mathematical and real world situations. I can analyze and justify the efficiency of my process and evaluate my solution for reasonableness.
- I can represent the solution set to a system of linear inequalities for real world situations using a graph.

College Prep Math

Unit 4: I've Got the Power

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

II.B.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.

II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, ~~inequalities, and systems of linear equations.~~

II.D.1 Interpret multiple representations of equations and relationships.

II.D.2 Translate among multiple representations of equations and relationships.

VII.B.1 Understand and analyze features of a function

Unit Big Ideas/Learning Targets

- I can use the laws of exponents to simplify algebraic expressions in mathematical situations. I can explain why they are equivalent using precise mathematical language.
- I can identify and describe a polynomial. I can add, subtract, and multiply polynomials and explain why they are equivalent using precise mathematical language.
- I can factor polynomials by selecting and using appropriate algebraic methods.
- I can formulate and solve polynomial equations by factoring in mathematical and real world contexts. I can explain my thinking and justify reasonableness of my solutions.

College Prep Math

Unit 5: Operating Rationally

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

II.B.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.

II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, ~~inequalities, and systems of linear equations.~~

VII.B.1 Understand and analyze features of a function

Unit Big Ideas/Learning Targets

- I can multiply and divide rational expressions in mathematical or real-world problems and explain why they are equivalent using precise mathematical language.
- I can add and subtract rational expressions in mathematical or real-world problems and explain why they are equivalent using precise mathematical language.
- I can divide polynomials using long division or synthetic division and explain why they are equivalent using precise mathematical language.
- I can analyze given information, formulate, and solve a rational equation by selecting a method in mathematical and real-world situations. I can analyze and justify the efficiency of my process and evaluate my solution for reasonableness.

College Prep Math

Unit 6: Radical Thinking

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

I.A.2 Define and give examples of complex numbers.

I.B.1 Perform computations with real and complex numbers.

II.B.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.

II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, ~~inequalities, and systems of linear equations.~~

Unit Big Ideas/Learning Targets

- I can rewrite radical expressions to generate equivalent forms. I can explain why they are equivalent using precise mathematical language.
- I can use the law of exponents to simplify expressions containing rational exponents and explain why they are equivalent using precise mathematical language.
- I can add, subtract, and multiply radical expressions and complex numbers. I can explain my reasoning using logical arguments and determine the reasonableness of my solutions.
- I can solve radical equations. I can explain my reasoning using logical arguments and determine the reasonableness of my solutions.

College Prep Math

Unit 7: Getting to the Root of the Problem

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards

II.B.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.

II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, ~~inequalities, and systems of linear equations.~~

II.D.1 Interpret multiple representations of equations and relationships.

II.D.2 Translate among multiple representations of equations and relationships.

VII.A.2 Recognize and distinguish between different types of functions.

VII.B.1 Understand and analyze features of a function

VII.C.1 Apply known function models.

Unit Big Ideas/Learning Targets

- I can graph quadratic functions, analyze the key attributes, and represent the domain and range using precise mathematical language and notation.
- I can solve a quadratic equation by the square root property or completing the square. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can solve a quadratic equation by using the quadratic formula. I can explain my reasoning using logical arguments and determine reasonableness of solutions.
- I can analyze given information, formulate, and solve equations using quadratic methods in mathematical and real-world situations. I can analyze and justify the efficiency of my process and evaluate my solution for reasonableness.

College Prep Math

Unit 8: Return to Base

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
1A apply mathematics to problems arising in everyday life, society, and the workplace;
1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
1E create and use representations to organize, record, and communicate mathematical ideas;
1F analyze mathematical relationships to connect and communicate mathematical ideas; and
1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Texas College and Career Readiness Standards
II.B.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.
II.C.1 Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, ~~inequalities, and systems of linear equations.~~
II.D.1 Interpret multiple representations of equations and relationships.
II.D.2. Translate among multiple representations of equations and relationships.
VII.A.2 Recognize and distinguish between different types of functions.
VII.B.1 Understand and analyze features of a function
VII.B.2 Algebraically construct and analyze new functions.
VII.C.1 Apply known function models.

Unit Big Ideas/Learning Targets

- I can add, subtract, multiply, divide and construct compositions of functions.
- I can graph exponential and logarithmic functions and determine the effects of parameter changes on their graphs. I can determine reasonable domain and range and express using interval notation.
- I can analyze and apply given information in order to solve exponential and logarithmic equations by selecting a method in mathematical and real world situations. I can analyze and justify the efficiency of my process and evaluate my solution for reasonableness.
- I can use the properties of logarithms to evaluate or transform logarithmic expressions.

College Prep Math

Unit 9: GPS- Final Destination

Texas Essential Knowledge and Skills (TEKS)

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1A apply mathematics to problems arising in everyday life, society, and the workplace;

1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

1E create and use representations to organize, record, and communicate mathematical ideas;

1F analyze mathematical relationships to connect and communicate mathematical ideas; and

1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Unit Big Ideas/Learning Targets

- I can use my understanding of plane geometry to solve mathematical and real-world problems. I can use precise mathematical language to describe and justify my thinking.
- I can use my understanding of transformations and symmetry to solve mathematical and real-world problems. I can use precise mathematical language to describe and justify my thinking.
- I can use my understanding of linear, area and three-dimensional measurements to solve mathematical and real-world problems. I can use precise mathematical language to describe and justify my thinking.
- I can interpret data from a variety of representations. I can justify my thinking using precise mathematical language.
- I can use statistical measures to make sense of data. I can justify my thinking using precise mathematical language.
- I can use probabilistic reasoning to make sense of mathematical and real-world situations. I can justify my thinking using precise mathematical language.