

Course Syllabus

Mathematics, Algebra

Jefferson County Schools Curriculum, Final
Jefferson County Schools

The Terra Nova Complete Battery for Mathematics is "designed to help students show what they know and can do. Many questions call for critical thinking, reasoning, and problem solving. Questions allow students to use different strategies and to take individual paths to a solution. Real-world topics engage students' interest, and the extensive use of graphics reduces the need for explanatory text and provides a supportive context. Themes group items into meaningful configurations, and items are generally sequenced to promote initial success so that students will continue with confidence to more challenging questions.

The [Terra Nova] tests taps broad mathematical power, yet retains the specifics from the traditional curriculum. The first section of the test includes computation, computation in context, and estimation items, and is administered without calculators. The second section covers a broad range of core skills and may be administered with calculators. Some questions require the use of rulers, which are supplied with the testing materials."

The Tennessee Mathematics Curriculum Standards provide standards, performance indicators, and accomplishments for students in mathematics.

The Algebra I End-of-course test is given after completion of Algebra I.

Algebraic Concepts

The Algebraic Concepts Unit includes Competencies/Objectives which focus on algebraic equations and operations. Students explore the symbolic nature of algebraic concepts by identifying and extending patterns in algebra, by following algebraic procedures, and by proving theorems with properties.

- The learner will be able to communicate and use algebraic properties in symbolic manipulation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.14 week tested: 36.
- The learner will be able to perform operations on simple expressions, and informally justify the procedures selected.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2.3 week tested: 36.
- The learner will be able to informally explain and illustrate the concept of inverse.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1,1.3 week tested: 36.
- The learner will be able to obtain solutions to problems in measurement and approximation using algebraic thought processes and symbolism.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.5 week tested: 36.
- The learner will be able to apply the elimination method to obtain a solution to a system of two linear equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to apply the graphing method to obtain a solution to a system of two linear equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to obtain solutions to linear systems employing a variety of methods including matrices.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.4 week tested: 36.
- The learner will be able to model the associative properties of addition and multiplication using manipulatives.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to model the commutative properties of addition and multiplication using manipulatives.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to write an equation to explain the relationship between data sets.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to symbolically express a problem solving scenario by writing an equation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.

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- The learner will be able to make translations of verbal sentences into algebraic equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to identify the transformation of the graph that exists when coefficients and/or constants of the corresponding linear equations are changed.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 3 week tested: 36.
- The learner will be able to explain the transformations of the graph that exist when coefficients and/or constants of the corresponding linear equations are changed.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.18 week tested: 36.
- The learner will be able to apply integers to obtain solutions to one- and two-step linear equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to obtain solutions to linear equations that involve more than two steps and variables on one side of the equation only.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to apply manipulatives to model the steps for solving basic linear equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to obtain solutions to linear equations that involve more than two steps and have variables on both sides of the equation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to obtain solutions to linear equations that involve more than two steps and have one set of parentheses on each side of the equation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to recognize the graph of the solution to a one-variable inequality on a number line.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to interpret graphs of inequalities.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.16 week tested: 36.
- The learner will be able to explain the absolute value of a number as distance from the origin by creating a number line.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to investigate a variety of illustrations of absolute value.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to connect concrete, graphical, oral, and symbolic illustrations of absolute value.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, 1.6 week tested: 36.
- The learner will be able to add algebraic expressions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to subtract algebraic expressions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to determine an answer for a first degree algebraic expression when given values for one or more variables.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to determine an answer for an algebraic expression when given values for one or more variables applying grouping symbols and/or exponents less than four.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.

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- The learner will be able to apply manipulatives to illustrate algebraic expressions and operations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to translate word expressions into algebraic expressions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to perform multiplication on two polynomials with each polynomial having two terms or less.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to simplify a monomial expressed in expanded form by applying exponents.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to choose the area illustration for a specific product of two one-variable binomials having positive constants and coefficients.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 3 week tested: 36.
- The learner will be able to describe the inverse operations of addition/subtraction and multiplication/division.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, 1.4 week tested: 36.
- The learner will be able to use inverse operations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, 1.4 week tested: 36.
- The learner will be able to use the concept of inverse.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, 1.3 week tested: 36.
- The learner will be able to model inverse operations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, 1.4 week tested: 36.
- The learner will be able to interpret the outcomes of algebraic procedures.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.10 week tested: 36.
- The learner will be able to illustrate an understanding of rates and various derived and indirect measurements.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, 2.6 week tested: 36.
- The learner will be able to use the concept of slope to illustrate rate of change in a real world scenario.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 3 week tested: 36.
- The learner will be able to describe the definition of a variable in an expression, equation, and inequality.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.6 week tested: 36.
- The learner will be able to apply the idea of a variable in obtaining solutions to inequalities.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.11 week tested: 36.
- The learner will be able to use the concept of variable to simplify expressions and obtain solutions to equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, 3.11 week tested: 36.
- The learner will be able to explore alternate algorithms that illustrate the relationship of multiplication to addition.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to explore alternate algorithms that illustrate the relationship of division to subtraction.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to solve a system of two equations with two variables through substitution.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to justify the choice of a method for obtaining a solution to a system of equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.

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- The learner will be able to compare and differentiate between the least common multiple (LCM) and greatest common factor (GCF) of a set of algebraic expressions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to use the concept of rate of change to obtain solutions to real world problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to justify correct solutions of algebraic methods.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to investigate patterns in Pascal's Triangle.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to choose the algebraic notation that generalizes the pattern illustrated by data in a table.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.

Calculus and Pre-Calculus

The Calculus/Pre-Calculus Unit includes Competencies/Objectives which focus on calculus concepts. Students study limits, matrix algebra, functions, vectors, conic sections, mathematical induction, and sequence and series using graphical calculators, computers, and models.

- The learner will be able to describe the importance of the value of the determinant of a matrix.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to apply suitable technology to perform addition of matrices.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to apply suitable technology to perform subtraction of matrices.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.

- The learner will be able to apply suitable technology to perform scalar multiplication of matrices.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to apply matrices and technology to solve systems of equations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to apply matrices in real world problem solving using appropriate technology.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2.7 week tested: 36.

Data Interpretation

The Data Interpretation Unit includes Competencies/Objectives which focus on the study and use of graphical forms. Students collect and classify data, organize and display data, use logical reasoning, and problem solving.

- The learner will be able to draw and/or interpret graphs which model real world phenomena.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.12, 3.13 week tested: 36.
- The learner will be able to make interpretations of circle graphs that illustrate real world data.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 1 week tested: 36.
- The learner will be able to make interpretations of bar graphs that illustrate real world data.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 1 week tested: 36.
- The learner will be able to judge the choice of a graphical illustration which best explains specific data.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 2 week tested: 36.

Functions

The Functions Unit includes Competencies/Objectives which focus on exploring polynomial, rational, exponential, logarithmic, trigonometric, and circular functions.

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- The learner will be able to explain the domain and range of functions and describe restrictions imposed by either the operations or by the real world scenario which the functions illustrate.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.17 week tested: 36.
- The learner will be able to study graphs to explain the behavior of functions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.9 week tested: 36.
- The learner will be able to represent many different functions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.7 week tested: 36.
- The learner will be able to use functions (such as tables, graphs, and expressions) to model real world phenomena.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.13 week tested: 36.
- The learner will be able to identify relationships which can and cannot be illustrated by a function.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.15 week tested: 36.
- The learner will be able to identify many different functions.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.7 week tested: 36.
- The learner will be able to explain in writing the pattern for real world information entered in a function table.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,Teacher Level 1 week tested: 36.
- The learner will be able to find the domain and/or range of a function illustrated by the graph of a real world scenario.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,State Level 3 week tested: 36.
- The learner will be able to differentiate between a function and other relationships.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,Teacher Level 2 week tested: 36.

- The learner will be able to apply technology to investigate function families.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,Teacher Level 3 week tested: 36.

Geometry

The Geometry Unit includes Competencies/Objectives which focus on exploring geometric concepts from multiple perspectives. Students study properties and construction of figures, proofs and theorems, history of geometry, transformations, logic, and problem solving.

- The learner will be able to use geometric relationships, properties, and formulas to obtain solutions to real world problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5,5.1 week tested: 36.
- The learner will be able to apply learned geometry concepts in solving problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.5 week tested: 36.
- The learner will be able to find the height of an item that is hard to measure by applying the properties of similar triangles or the angle of elevation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5,Teacher Level 3 week tested: 36.
- The learner will be able to study, represent, and use geometric properties and relationships.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5 week tested: 36.
- The learner will be able to explain real world applications of geometric formulas and relationships.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5,Teacher Level 1 week tested: 36.
- The learner will be able to determine the length of an unknown side of a triangle using proportion and the concepts of similar triangles.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5,State Level 2 week tested: 36.

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- The learner will be able to show the Pythagorean theorem by measuring the length, width, and diagonals of rectangles.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to represent the Pythagorean theorem by creating area models.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to solve a real world problem modeled by a diagram using the Pythagorean Theorem (no radicals in answer).
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 2 week tested: 36.
- The learner will be able to apply techniques of inductive reasoning to formulate a conjecture.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, 5.2 week tested: 36.
- The learner will be able to describe the way to determine whether a triangle is a right triangle when given the lengths of all three sides.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to use right triangle relationships including the Pythagorean Theorem, distance formula and/or trigonometric ratios.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, 5.3 week tested: 36.
- The learner will be able to create a concept map illustrating connections between polygons.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, Teacher Level 2 week tested: 36.

Integers

The Integers Unit includes Competencies/Objectives which focus on number sense and operations with integers. Students compare integers, perform operations with integers, convert integers to other number forms, use manipulatives to demonstrate integers, and solve problems with integers in real world contexts.

- The learner will be able to connect various real world scenarios to integers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to use the order of operations when completing computations with integers that apply no more than two sets of grouping symbols and exponents 1 and 2.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 1 week tested: 36.

Mathematics Processes

The Mathematics Processes Unit includes Competencies/Objectives which focus on mathematical connections. Students communicate and model concepts and procedures.

- The learner will be able to apply real world scenarios and physical representations to model operations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 2 week tested: 36.

Measurement

The Measurement Unit includes Competencies/Objectives which focus on measurement concepts, applications, and analysis. Students study length, area, circumference, perimeter, volume, weight, formulas, distance, calendar, money, tools, accuracy, units, constructions, patterns, and problem solving.

- The learner will be able to use measurement ideas and relationships in algebraic problem solving scenarios.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, 2.5 week tested: 36.
- The learner will be able to use measurement ideas and relationships in geometric problem solving situations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, 2.5 week tested: 36.
- The learner will be able to apply the ideas of length, area, surface area, and volume to approximate and solve real world problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, 2.4 week tested: 36.

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- The learner will be able to apply manipulatives to generalize area formulas for a parallelogram, a triangle, and a trapezoid.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to develop and describe formulas for calculating area.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to find the area or perimeter of a rectangle using the given formula.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 1 week tested: 36.
- The learner will be able to explain the resulting changes in perimeter, area, and volume when a geometric object has its dimensions changed.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to defend approximations of the perimeter and/or area of rectangles and triangles.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to develop and describe formulas for calculating volume.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to describe the concepts and methods applied in estimation, measurement, and computation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2,2 week tested: 36.
- The learner will be able to apply suitable units of measurement.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2 week tested: 36.
- The learner will be able to formulate a justification for choosing a unit of measure in a specific situation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to explain the method for finding the area of a composite figure in a real world scenario.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to talk about issues associated with estimating areas of irregular-shaped figures for real world applications.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, Teacher Level 1 week tested: 36.
- The learner will be able to make estimates of the areas of irregular figures with the use of grids or rulers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 1 week tested: 36.
- The learner will be able to determine the dimensions of a rectangle when presented its area and the relationship between two adjoining sides.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to determine the circumference of a circle using a given formula.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 2 week tested: 36.
- The learner will be able to calculate the area of a circle using a given formula.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 2 week tested: 36.
- The learner will be able to compare the volume of a container to its shape.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to justify an approximation for the volume of a container.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to use a formula to determine the volume of a rectangular prism.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 2 week tested: 36.

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- The learner will be able to use the concept of rate of change.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3.3.8 week tested: 36.
- The learner will be able to use suitable measurement instruments.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2 week tested: 36.

Number Theory

The Number Theory Unit includes Competencies/Objectives which focus on manipulating number forms and classifications. Students make connections between number forms and their real world applications.

- The learner will be able to illustrate an understanding of the relative size of rational and irrational numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1.1.2 week tested: 36.
- The learner will be able to compare and differentiate between the least common multiple (LCM) and greatest common factor (GCF) of a set of numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to identify, illustrate, represent, and use real numbers and operations verbally, physically, symbolically, and graphically.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1 week tested: 36.
- The learner will be able to illustrate a comprehension of the subsets, elements, properties, and operations of the real number system.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1.1.1 week tested: 36.
- The learner will be able to recognize the reciprocal of a rational number.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to apply mathematical notations appropriately.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1.1.8 week tested: 36.
- The learner will be able to choose ratios and proportions to illustrate real world problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to investigate the applications of prime numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 3 week tested: 36.
- The learner will be able to investigate the history of prime numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 3 week tested: 36.
- The learner will be able to study prime and composite numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to find the square root of a perfect square number that is less than 169.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to use number theory concepts in mathematical problem scenarios.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1.1.5 week tested: 36.
- The learner will be able to use number theory concepts to solve problems.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3.3.5 week tested: 36.
- The learner will be able to use real numbers to illustrate real world applications.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1.1.7 week tested: 36.

Numeration

The Numeration Unit includes Competencies/Objectives which focus on exploring ordinality, identifying and extending number patterns, comparing numbers, and demonstrating number relationships.

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- The learner will be able to study mathematical patterns associated with algebra and geometry in real world problem solving situations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.2 week tested: 36.
- The learner will be able to explain, continue, study, and develop a large variety of patterns and functions applying suitable materials and illustrations in real world problem solving.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3 week tested: 36.
- The learner will be able to create effective approximation and computation strategies for determining reasonable results.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2 week tested: 36.
- The learner will be able to clarify strategies for approximating whole numbers, fractions, and percentages.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,Teacher Level 1 week tested: 36.
- The learner will be able to identify, continue, and/or make spatial patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1 week tested: 36.
- The learner will be able to apply algebraic thought processes to generalize a pattern by expressing the pattern in function notation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.3 week tested: 36.
- The learner will be able to identify number patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1 week tested: 36.
- The learner will be able to create patterns using numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1 week tested: 36.
- The learner will be able to extend patterns of numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1, State Level 1 week tested: 36.
- The learner will be able to identify geometric patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1 week tested: 36.
- The learner will be able to continue geometric patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,State Level 1 week tested: 36.
- The learner will be able to extend and make geometric patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.1 week tested: 36.
- The learner will be able to investigate patterns in a Fibonacci sequence.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3,Teacher Level 2 week tested: 36.
- The learner will be able to find a suitable solution for a tedious mathematical calculation using estimation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,State Level 2 week tested: 36.
- The learner will be able to choose the best approximation for the position of a particular rational number on a number line.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1,State Level 1 week tested: 36.
- The learner will be able to compute answers by applying appropriate instruments.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2 week tested: 36.
- The learner will be able to apply estimation strategies to forecast computational results.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2.8 week tested: 36.

Perspective/Role in Society

The Perspective/Role in Society Unit includes Competencies/Objectives which focus on real world mathematics. Students study the mathematics of society and the role of mathematics in personal finance and careers.

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- The learner will be able to find the best buy by computing rates involving cost per unit (up to three samples).

Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 1 week tested: 36.

Probability/Statistics

The Probability/Statistics Unit includes Competencies/Objectives which focus on data analysis and probability concepts. Students collect, analyze, and make sense of real world data (including overlapping data, inconclusive data, etc.).

- The learner will be able to gather, illustrate and explain linear and nonlinear data sets formulated from the real world.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.1 week tested: 36.

- The learner will be able to gather and organize real world information.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 1 week tested: 36.

- The learner will be able to use the counting principles of permutations or combinations in real world scenarios.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 3 week tested: 36.

- The learner will be able to gather, organize, illustrate, and interpret data; formulate, present, and evaluate inferences and predictions; present and evaluate arguments based on analysis of data; and model situations to find theoretical and experimental probabilities.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4 week tested: 36.

- The learner will be able to use the ideas of probability and statistics in many different problem solving contexts.

Source: TN: Gateway Test, 1999, Algebra I, Std. 3,3.5 week tested: 36.

- The learner will be able to select, create, and study suitable graphical illustrations for a set of data including pie charts, histograms, stem and leaf plots, scatterplots and/or box and whisker plots.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.4 week tested: 36.

- The learner will be able to find the median for a real world data set that contains an even number of data points.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 2 week tested: 36.

- The learner will be able to find the mean of a real world data set containing up to five two-digit numbers.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 1 week tested: 36.

- The learner will be able to use the Law of Large Numbers.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.5 week tested: 36.

- The learner will be able to logically argue about potential conclusions that can be supported by data.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 3 week tested: 36.

- The learner will be able to use lines of best fit to make predictions from a set of data.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.2 week tested: 36.

- The learner will be able to apply a line of best fit to formulate predictions from real world data.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 3 week tested: 36.

- The learner will be able to interpret a group of data using the suitable measure of central tendency.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.3 week tested: 36.

- The learner will be able to apply the idea of randomness in sampling.

Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.5 week tested: 36.

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- The learner will be able to justify the sampling method selected to perform a survey.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to use the counting principles of permutations and combinations applying suitable technology.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4,4.6 week tested: 36.
- The learner will be able to develop a strategy for gathering real world information for a scientific investigation.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 1 week tested: 36.
- The learner will be able to critique the validity of statements made in probability situations.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to use a variety of representations (bar graphs, line graphs, tables, etc.) to display real world data.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, Teacher Level 2 week tested: 36.

Problem Solving

The Problem Solving Unit includes Competencies/Objectives which focus on analyzing problems, evaluating solutions, exploring problems, and developing strategies for solving problems.

- The learner will be able to select an appropriate solution for a real world division problem involving a remainder that must be considered.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2, State Level 1 week tested: 36.
- The learner will be able to evaluate the reasonableness of a given solution.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2.1, 2.8 week tested: 36.

Rational and Irrational Numbers

The Rational and Irrational Numbers Unit includes Competencies/Objectives which focus on number concepts. Students manipulate, compare, and perform operations with rational and irrational numbers.

- The learner will be able to order a group of rational numbers in the appropriate sequence.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to recognize the opposite of a rational number.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to study rational number patterns.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, Teacher Level 1 week tested: 36.

Real Numbers and the Coordinate Plane

The Real Numbers and the Coordinate Plane Unit includes Competencies/Objectives which focus on graphing concepts. Students graph equations and make connections between algebraic concepts and their geometric correspondences.

- The learner will be able to choose and use an appropriate strategy for computing with real numbers.
Source: TN: Gateway Test, 1999, Algebra I, Std. 2,2.1 week tested: 36.
- The learner will be able to use the graph of a linear equation to determine the slope.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to use the graph of a real world linear data set to formulate a prediction.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 2 week tested: 36.
- The learner will be able to identify points on a coordinate plane.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 1 week tested: 36.

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- The learner will be able to choose the appropriate graphical illustration of a given linear inequality.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to find solutions to multi-step linear inequalities that illustrate real world scenarios.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 3 week tested: 36.
- The learner will be able to choose the nonlinear graph that represents the given real world scenario or vice versa.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to analyze estimated values of real numbers including pi and radical two.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 3 week tested: 36.
- The learner will be able to explore the relationships between a variety of subsets of the real number system.
Source: TN: Gateway Test, 1999, Algebra I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to graph inequalities on the coordinate plane.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3.3.16 week tested: 36.
- The learner will be able to select the matching linear graph when given a set of coordinate points.
Source: TN: Gateway Test, 1999, Algebra I, Std. 4, State Level 2 week tested: 36.
- The learner will be able to choose the graph that illustrates a linear function expressed in slope-intercept form.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to choose the linear graph that represents a given real world situation explained in a tabular set of data.
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to choose the linear graph that represents a given real world situation explained in a narrative (no data set given).
Source: TN: Gateway Test, 1999, Algebra I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to compute the distance between two points when given the Pythagorean Theorem.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 3 week tested: 36.
- The learner will be able to use the distance formula to find the distance between two coordinate points.
Source: TN: Gateway Test, 1999, Algebra I, Std. 5, State Level 3 week tested: 36.