**Algebra I Pacing Guide**

 MIST Platform, [TNCore.org Practice Assessments](http://tncore.org/math/assessment_tasks/grades/hs/alg1.aspx), [Florida Testing Portal](http://www.fsassessments.org/training-tests), [Utah Testing Portal](http://sageportal.org/training-tests/) , [MICA Platform](https://micatime.com)

★=Modeling. Modeling is a Conceptual Category and a Standard for Mathematical Practice.

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| Section and Topic | [Tennessee Standards](http://www.tn.gov/education/standards/math/std_math_algebra_I.pdf) | Essential Skills and Knowledge | [TNReady Blueprints](http://tennessee.gov/education/assessment/doc/tnready_blueprint_a1_math.pdf) | [ACT Standards](http://www.act.org/content/dam/act/unsecured/documents/CCRS-MathStandards.pdf) |
| Unit 1: Quantities and Modeling 14 Suggested Days |
| 1.1 Solving Equations | A.REI.1 | 1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. | Parts 1-3 | AF |
| 1.2 Modeling Quantities | N.Q.A1,2 | 1. Use units as a way to understand problems and to guide the solution of multistepproblems; choose and interpret units consistently in formulas; choose andinterpret the scale and the origin in graphs and data displays.2. Define appropriate quantities for the purpose of descriptive modeling | Parts 1-3 | NQ |
| 2.1 Modeling with Expressions | A.SSE.1a | 1. Interpret expressions that represent a quantity in terms of its context.★ a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r) n as the product of P and a factor not depending on P. | Parts 1-3 | AF |
| 2.2 Creating and Solving Equations | A.CED.A.1 | 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. | Parts 1-3 | AF |
| 2.3 Solving for a Variable | A.CED.A.4 | 4. Rearrange formulas to highlight a quantity of interest, using the same reasoning asin solving equations. For example, rearrange Ohm’s law V = IR to highlight resistance R | Parts 1-3 | AF |
| 2.4 Creating and Solving Inequalities | A.CED.A.3 | 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods | Parts 1-3 | AF |
| 2.5 Creating and Solving Compound Inequalities | A.CED.A.1 | 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. | Parts 1-3 | AF |
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| Unit 2: Understanding Functions 13 Suggested Days |
| 3.1 Graphing Relationships | F.IF.B.4 | 4. For a function that models a relationship between two quantities, interpret keyfeatures of graphs and tables in terms of the quantities, and sketch graphs showingkey features given a verbal description of the relationship. Key features include:intercepts; intervals where the function is increasing, decreasing, positive, ornegative; relative maximums and minimums;symmetries; end behavior; andperiodicity.★ | Parts 1-3 | AF |
| 3.2 Understanding Relations and Functions | F.IF.A.1 | 1. Understand that a function from one set (called the domain) to another set(called the range) assigns to each element of the domain exactly one element ofthe range. If f is a function and x is an element of its domain, then f(x) denotes theoutput of f corresponding to the input x. The graph of f is the graph of the equationy = f(x). | Parts 1-3 | AF |
| 3.3 Modeling with FunctIons | F.IF.A.2 | 2. Use function notation, evaluate functions for inputs in their domains, andInterpret statements that use function notation in terms of a context. | Parts 1-3 | AF |
| 3.4 Graphing Functions | F.IF.A.1 | 1. Understand that a function from one set (called the domain) to another set(called the range) assigns to each element of the domain exactly one element ofthe range. If f is a function and x is an element of its domain, then f(x) denotes theoutput of f corresponding to the input x. The graph of f is the graph of the equationy = f(x). | Parts 1-3 | AF |
| 4.1 Identifying and Graphing Sequences | F.IF.A.3 | 3. Recognize that sequences are functions, sometimes defined recursively, whosedomain is a subset of the integers. For example, the Fibonacci sequence is definedrecursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1. | Parts 1-3 | AF |
| 4.2 Constructing Arithmetic Sequences | F.LE.A.3 | 3. Observe using graphs and tablesthat a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. | Parts 1-3 | AF |
| 4.3 Modeling with Arithmetic Sequences | F.BF.A.1a | 1. Write a function that describes a relationship between two quantities.★a. Determine an explicit expression, a recursive process, or steps for calculationfrom a context | Parts 1-3 | AF |
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| Unit 3: Linear Functions, Equations, and Inequalities 23 Suggested Days  |
| 5.1 Understanding Linear Functions | F.LE.A.1b | 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. | Parts 1-3 | AF |
| 5.2 Using Intercepts | F.IF.C.7a | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima. | Parts 1-3 | AF |
| 5.3 Interpreting Rate of Change and Slope | S.ID.7, F.IF.B.6 | 7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. 6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★ | Parts 1-3 | S, AF |
| 6.1 Slope-Intercept Form | F.IF.C.7a | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima. | Parts 1-3 | F |
| 6.2 Point-Slope Form | A.REI.D.10 | 10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). | Parts 1-3 | AF |
| 6.3 Standard Form | A.CED.A.2 | 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. | Parts 1-3 | AF |
| 6.4 Transforming Linear Functions | F.BF.B.3F.LE.5 | 3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), andf(x + k) for specific values of k (both positive and negative); find the value of k giventhe graphs. Experiment with cases and illustrate an explanation of the effects onthe graph using technology. Include recognizing even and odd functions from theirgraphs and algebraic expressions for them.5. Interpret the parameters in a linear or exponential function in terms of a context | Parts 1-3 | AF |
| 6.5 Comparing Properties of Linear Functions | F.IF.C.9 | 9. Compare properties of two functions each represented in a different way(algebraically, graphically, numerically in tables, or by verbal descriptions). Forexample, given a graph of one quadratic function and an algebraic expression foranother, say which has the larger maximum | Parts 1-3 | AF |
| 7.1 Modeling Linear Relationships | A.CED.A.3 | 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods | Parts 1-3 | AF |
| 7.2 Using Functions to Solve One-Variable Equations | A.REI.D.11 | 11. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. ★ | Parts 1-3 | AF |
| 7.3 Linear Inequalities in Two Variables | A.REI.D.12 | 12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. | Parts 1-3 | AF |
| 10.1 Scatter Plots and Trend Lines | S.ID.B.6c | 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. | Parts 1-3 | S |
| 10.2 Fitting a Linear Model to Data | S.ID.B.6b | 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. | Parts 1-3 | S |
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| Unit 5: Linear Systems and Piecewise-Defined Functions 17 Suggested Days  |
| 11.1 Solving Linear Systems by Graphing | A.REI.C.6 | 6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. | Parts 1-3 | AF |
| 11.2 Solving Linear Systems by Substitution | A.REI.C.6 | 6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. | Parts 1-3 | AF |
| 11.3 Solving Linear Systems by Adding and Subtracting | A.REI.C.6 | 6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. | Parts 1-3 | AF |
| 11.4 Solving Linear Systems by Multiplying First | A.REI.C.5 | 5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions | Parts 1-3 | AF |
| 12.1 Creating Systems of Linear Equations | A.CED.A.3 | 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods | Parts 1-3 | AF |
| 12.2 Graphing Systems of Linear Inequalities | A.REI.D.12 | 12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. | Parts 1-3 | AF |
| 12.3 Modeling with Linear Systems | A.CED.A.3 | 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods | Parts 1-3 | AF |
| 13.1 Understanding Piecewise-Defined Functions | F.IF.C.7b | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 13.2 Absolute Value Functions and Transformations | F.IF.C.7b | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 13.3 Solving Absolute Value Equations | A.REI.B.3 | 3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. | Parts 1-3 | AF |
| 13.4 Solving Absolute Value Inequalities | A.REI.B.3 | 3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. | Parts 1-3 | AF |
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| **Unit 6: Exponential Relationships 19 Suggested Days** |
| Module 14 - Bring in lessons from old textbook |  |  |  |  |
| Simplifying Radical Expressions | N.RN.3 | Explain why the sum or product of two rational numbers is rational; that the sumof a rational number and an irrational number is irrational; and that the product ofa nonzero rational number and an irrational number is irrational. | Parts 1-3 | N |
| Operations with Radical Expression | N.RN.3 | Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. | Parts 1-3 | N |
| Radical Equations | A.SSE.2 | 2. Use the structure of an expression to identify ways to rewrite it. For example, see x 4 – y 4 as (x 2 ) 2 – (y 2 ) 2 , thus recognizing it as a difference of squares that can be factored as (x 2 – y 2 )(x 2 + y 2 ) | Parts 1-3 | AF |
| 15.1 Understanding Geometric Sequences | F.LE.A.2 | 2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). | Parts 1-3 | AF |
| 15.2 Constructing Geometric Sequences | F.BF.A.1a | 1. Write a function that describes a relationship between two quantities.★a. Determine an explicit expression, a recursive process, or steps for calculationfrom a context | Parts 1-3 | AF |
| 15.3 Constructing Exponential Functions | F.LE.A.2 | 2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). | Parts 1-3 | AF |
| 15.4 Graphing Exponential Functions | F.IF.C.7 | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima.b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 15.5 Transforming Exponential Functions | F.BF.B.3 | 3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), andf(x + k) for specific values of k (both positive and negative); find the value of k giventhe graphs. Experiment with cases and illustrate an explanation of the effects onthe graph using technology. Include recognizing even and odd functions from theirgraphs and algebraic expressions for them. | Parts 1-3 | AF |
| 16.1 Exponential Growth and Decay (word problems) | A.CED.A.1 | 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. | Parts 1-3 | AF |
| 16.2 Modeling Exponential Growth and Decay | F.IF.C.7 | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima.b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 16.3 Using Exponential Regressions Models | S.ID.B.6a | 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. | Parts 1-3 | S |
| 16.4 Comparing Linear and Exponential Models | F.LE.A.1.c | 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another | Parts 1-3 | AF |
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| Unit 7: Polynomial Operations 11 Suggested Days |
| 17.1 Understanding Polynomial Expressions | A.SSE.A.1a | 1. Interpret expressionsthat represent a quantity in terms of its context.★ a. Interpret parts of an expression, such asterms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r) n as the product of P and a factor not depending on P. | Parts 1-3 | AF |
| 17.2 & 17.3 Adding and Subtracting Polynomial Expressions | A.APR.A.1 | 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Parts 1-3 | AF |
| Negative and Zero Exponents | A.SSE.2 | 2. Use the structure of an expression to identify ways to rewrite it. For example, see x 4 – y 4 as (x 2 ) 2 – (y 2 ) 2 , thus recognizing it as a difference of squares that can be factored as (x 2 – y 2 )(x 2 + y 2 ) | Parts 1-3 | AF |
| 18.1 Multiplying Polynomial Expression by a Monomial | A.APR.A.1 | 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Parts 1-3 | AF |
| Dividing Polynomial Expressions | A.APR.A.1 | 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Parts 1-3 | AF |
| 18.2 Multiplying Polynomial Expressions | A.APR.A.1 | 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Parts 1-3 | AF |
| 18.3 Special Products of Binomials | A.APR.A.1 | 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. | Parts 1-3 | AF |
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| Unit 8: Quadratic Functions 13 Suggested Days |
| 19.1 Understanding Quadratic Functions | F.BF.B.3 | 3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), andf(x + k) for specific values of k (both positive and negative); find the value of k giventhe graphs. Experiment with cases and illustrate an explanation of the effects onthe graph using technology. Include recognizing even and odd functions from theirgraphs and algebraic expressions for them. | Parts 1-3 | AF |
| 19.2 Transforming Quadratic Functions | F.BF.B.3 | 3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), andf(x + k) for specific values of k (both positive and negative); find the value of k giventhe graphs. Experiment with cases and illustrate an explanation of the effects onthe graph using technology. Include recognizing even and odd functions from theirgraphs and algebraic expressions for them. | Parts 1-3 | AF |
| 19.3 Interpreting Vertex and Standard Form | F.IF.B.4 | 4. For a function that models a relationship between two quantities, interpret keyfeatures of graphs and tables in terms of the quantities, and sketch graphs showingkey features given a verbal description of the relationship. Key features include:intercepts; intervals where the function is increasing, decreasing, positive, ornegative; relative maximums and minimums;symmetries; end behavior; andperiodicity.★ | Parts 1-3 | AF |
| 20.1 Connecting Intercepts and Zeros | F.IF.C.7a | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima. | Parts 1-3 | AF |
| 20.2 Connecting Intercepts and Linear Factors | A.APR.B.3 | 3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial | Parts 1-3 | AF |
| 20.3 Applying the Zero Product Property to Solve Equations | A.REI.B.4 | 4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. | Parts 1-3 | AF |
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| Unit 9: Quadratic Equations and Modeling 18 Suggested Days |
| 21.1 Solving Equations by Factoring x^2+bx+c | A.SSE.B.3a | 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. ★ a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as(1.151/12) 12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%. | Parts 1-3 | AF |
| 21.2 Solving Equations by Factoring ax^2+bx+c | A.REI.B.4b | 4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. | Parts 1-3 | AF |
| 21.3 Using Special Factors to Solve Equations | A.SSE.B.3a | 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. ★ a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as(1.151/12) 12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%. | Parts 1-3 | AF |
| 22.1 Solving Equations by Taking Square Roots | A.REI.B.4b | 4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. | Parts 1-3 | AF |
| 22.2 Solving Equations by Completing the Square | A.SSE.B.3b | 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. ★ a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as(1.151/12) 12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%. | Parts 1-3 | AF |
| 22.3 Using the Quadratic Formula to Solve Equations | A.REI.B.4a | 4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. | Parts 1-3 | AF |
| 22.4 Choosing a Method for Solving Quadratic Equations | A.REI.B.4b | 4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. | Parts 1-3 | AF |
| 22.5 Solving Nonlinear Systems | A.REI.C.7 | 6. Solve systems of linear equations exactly and approximately (e.g., with graphs),focusing on pairs of linear equations in two variables. | Parts 1-3 | AF |
| 23.1 Modeling with Quadratic Equations | A.CED.A.2 | 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. | Parts 1-3 | AF |
| 23.2 Comparing Linear, Exponential, and Quadratic Models | F.LE.A.1b | 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another | Parts 1-3 | AF |
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| Unit 10: Inverse Relationships 6 Suggested Days |
| 24.1 Graphing Polynomial Functions | F.IF.C.7 | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★a. Graph linear and quadratic functions and show intercepts, maxima, and minima.b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 24.3 Graphing Square Root Functions | F.IF.C.7b | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
| 24.4 Graphing Cube Root Functions | F.IF.C.7b | 7. Graph functions expressed symbolically and show key features of the graph, byhand in simple cases and using technology for more complicated cases.★b. Graph square root, cube root, and piecewise-defined functions, including stepfunctions and absolute value functions. | Parts 1-3 | AF |
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| Unit 4: Statistical Models 8 Suggested Days |
| 8.1 Two-Way Frequency Tables | S.ID.B.5 | 5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.  | Parts 1-3 | S |
| 8.2 Relative Frequency and Probability | S.ID.B.5 | 5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.  | Parts 1-3 | S |
| 9.1 Measures of Center and Spread | S.ID.A.2 | 2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points(outliers). | Parts 1-3 | S |
| 9.2 Data and Distributions and Outliers | S.ID.A.1 | 1. Represent data with plots on the real number line (dot plots, histograms, and box plots). | Parts 1-3 | S |
| 9.3 Histograms and Box Plots | S.ID.A.2 | 2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. | Parts 1-3 | S |
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