### Chapter 1: Foundations

#### 1.1 Use the Language of Algebra
- Prime Factorizations, Algebraic Symbols, and Order of Operations
  - Find factors, prime factorizations, and least common multiples (20)
  - Use algebraic symbols and variables (20)
  - Simplify expressions with grouping symbols and exponents using order of operations
- Simplifying and Rewriting Algebraic Expressions
  - Evaluate an expression involving exponents and order of operations
  - Identify and combine like terms
  - Translate an English phrase and word problems into an algebraic expression (40)

#### 1.2 Integers
- Absolute Value and Operations on Integers
  - Understand absolute value and simplify expressions involving absolute value with order of operations (40)
  - Add and subtract integers (40)
  - Multiply and divide integers (40)
- Algebraic Expressions with Integers
  - Simplify expressions with integers
  - Evaluate variable expressions with integers (20)
  - Translate an English phrase and word problems involving integers into an algebraic expression (39)

#### 1.3 Fractions
- Operations on Fractions
  - Simplify fractions
  - Multiply and divide fractions (20, 20)
  - Add and subtract fractions
- Algebraic Expressions with Fractions
  - Evaluate variable expressions involving fractions
  - Use the order of operations to simplify fractions

#### 1.4 Decimals
- Operations on Decimals and Understanding Percents
  - Name and round decimals (20, 20)
  - Evaluate expressions by adding and subtracting decimals (40)
  - Multiply and divide decimals (20, 20)
  - Convert between decimals, fractions, and percents
- Square Roots and the Real Number System
  - Evaluate square roots - IA
  - Identify integers, rational numbers, irrational numbers, and real numbers (20)
  - Locate fractions and decimals on the number line

#### 1.5 Properties of Real Numbers
- Using the Properties of Real Numbers
• Understand and use the commutative and associative properties
• Use the properties of identity, inverse, and zero (40)
• Simplify an expression using the distributive property (40)

Chapter 2: Solving Linear Equations

2.1 Use a General Strategy to Solve Linear Equations
• Solving Linear Equations in One Variable
  • Determine if a value is the solution to an equation (20)
  • Use a general strategy to solve a linear equation (20)
  • Determine if an equation is a contradiction, identity, or conditional equation (40)
• Solving Linear Equations with Fraction and Decimal Coefficients
  • Solve an equation with fractional coefficients (20)
  • Solve an equation with decimal coefficients (20)

2.2 Use a Problem Solving Strategy
• An Introduction to Problem Solving
  • Develop a problem-solving strategy for word problems
  • Solve number word problems (20)
• Literal Equations and Using Formulas with Geometry
  • Solve a formula for a specified variable
  • Use a formula to solve a geometric application
  • Use the Pythagorean theorem - IA

2.3 Solve Linear Inequalities
• Solving Linear Inequalities
  • Graph an inequality on a number line and use interval notation
  • Solve a linear inequality that requires only one step
  • Solve a linear inequality that requires multiple steps to solve
  • Translate words to an inequality and solve applications with linear inequalities

2.4 Solve Compound Inequalities
• Solving Compound Inequalities
  • Solve a compound inequality involving intersections
  • Solve a compound inequality involving unions
  • Solve applications with compound inequalities

2.5 Solve Absolute Value Inequalities
• Solving Absolute Value Equations and Inequalities
  • Solve an absolute value equation (20)
  • Solve an absolute value inequality involving "less than" (40)
  • Solve an absolute value inequality involving "greater than"
  • Solve applications with absolute value (5)

Chapter 3: Graphs and Functions

3.1 Graph Linear Equations in Two Variables
• The Rectangular Coordinate System and Graphing Linear Equations
  • Plot points on the rectangular coordinate system and identify the quadrants of points
- Understand the relationship between solutions to an equation and points on a graph
- Graph linear equations by plotting points
- Graph horizontal and vertical lines
- Graphing Linear Equations with Intercepts
  - Find the intercepts of a line from a graph or an equation (20)
  - Graph a line using intercepts
- 3.2 Slope of a Line
  - The Slope of a Line
    - Find the slope of a line using the relationship between rise and run
    - Find the slope of a line given two points on the line (20)
  - Graphing Linear Equations with Slope
    - Graph a line given the slope and a point
    - Identify the slope and intercept of a line from its equation and use it to graph the line
    - Graph a linear equation using a variety of methods
  - Applications of Slope and Parallel and Perpendicular Lines
    - Interpret applications using graphs and slope
    - Determine if two lines are parallel or perpendicular by comparing slopes (20, 20)
- 3.3 Find the Equation of a Line
  - Equations of Lines
    - Find the equation of a line given the y-intercept and the slope (20)
    - Find the equation of a line given a point on the line and the slope (20)
    - Find the equation of a line given two points on the line (20)
  - Equations of Parallel and Perpendicular Lines
    - Find the equation of a line parallel to a given line (20)
    - Find the equation of a line perpendicular to a given line (20)
- 3.4 Graph Linear Inequalities in Two Variables
  - Graphing Linear Inequalities
    - Verify that a given point is a solution to an inequality in two variables (20)
    - Write a linear inequality given its graph
    - Graph a linear inequality in two variables
    - Solve applications using linear inequalities in two variables (20)
- 3.5 Relations and Functions
  - Introduction to Functions
    - Find the domain and range of a relation (20)
    - Determine if a relation is a function given a set of ordered pairs or a mapping (20)
    - Determine if a relation is a function given an equation (20)
  - Function Notation
    - Use function notation to find the value of a function given a number (20)
    - Use function notation to find the value of a function given a variable expression (20)
- 3.6 Function Graphs and Transformations
  - The Vertical Line Test and Graphs of Functions
    - Use the vertical line test to determine if a graph represents a function
    - Identify graphs of basic functions
    - Read information from the graph of a function
Transformations of Functions
- Graph functions using vertical and horizontal shifts (5)
- Graph functions using reflections about the x-axis and the y-axis (5)
- Graph functions using compressions and stretches (5)
- Combine transformations (6)

Chapter 4: Systems of Linear Equations
4.1 Solve Systems of Linear Equations with Two Variables
- Solving Systems of Linear Equations in Two Variables by Graphing
  - Determine if an ordered pair is a solution of a system of linear equations
  - Solve systems of linear equations by graphing
  - Identify inconsistent and dependent systems of equations with two variables (20)
- Solving Systems of Linear Equations in Two Variables Algebraically
  - Solve a system of linear equations using the substitution method
  - Solve a system of linear equations using the elimination method
  - Choose the most convenient method to solve a system of linear equations (20)
4.2 Solve Applications with Systems of Equations
- Systems of Linear Equations in Two Variables and Problem Solving
  - Solve applications of uniform motion using systems of equations
  - Solve geometric application problems using systems of equations
  - Solve word problems and applications using a system of linear equations
4.3 Graphing Systems of Linear Inequalities
- Solving Systems of Linear Inequalities
  - Determine if an ordered pair is a solution of a system of linear inequalities
  - Solve systems of linear inequalities by graphing
  - Solve an application using systems of linear inequalities

Chapter 5: Polynomials and Polynomial Functions
5.1 Add and Subtract Polynomials
- Adding and Subtracting Polynomials and Polynomial Functions
  - Determine the degree and type of a given polynomial and write it in standard form (20, 20)
  - Add or subtract polynomial expressions (20)
  - Evaluate a polynomial function for a given value (20)
- Add or subtract polynomial functions (20)
5.2 Properties of Exponents and Scientific Notation
- Simplifying Expressions with Properties of Exponents and Negative Exponents
  - Use the product property of exponents to simplify expressions (20)
  - Use the quotient property and the zero property of exponents to simplify expressions (20)
  - Rewrite expressions with positive exponents using the definition of negative exponents (40)
  - Use the power property for exponents and extensions to products and quotients to simplify expressions (40)
  - Simplify exponential expressions by combining all properties (40)
- Scientific Notation
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- Convert between decimal notation and scientific notation (20, 20)
- Multiply and divide expressions given in scientific notation (20, 20)

5.3 Multiplying Polynomials
- Multiplying Polynomials
  - Multiply monomials and multiply a polynomial by a monomial (20, 20)
  - Multiply two binomials (20)
  - Multiply a polynomial by a polynomial (20)
- Special Products of Binomials and Multiplying Polynomial Functions
  - Use the binomial squares pattern to square a binomial (20)
  - Use the conjugate pairs pattern to multiply conjugates (20)
  - Multiply polynomial functions (20)

5.4 Greatest Common Factor and Factor by Grouping
- The Greatest Common Factor and Factoring by Grouping
  - Find the greatest common factor of monomial expressions (20)
  - Factor the greatest common factor from polynomial expressions (20)
  - Factor polynomials by grouping (20)

5.5 Factor Trinomials
- Factoring Trinomials
  - Factor a trinomial with a leading coefficient of 1 (20)
  - Factor a trinomial with a leading coefficient of greater than 1 using trial and error (20)
  - Factor a trinomial with a leading coefficient of greater than 1 using the 'ac' method (20)
  - Factor a trinomial in a quadratic form using substitution (40)

5.6 Factor Special Products
- Factoring Special Products
  - Factor polynomials using a perfect squares binomial pattern (20)
  - Factor polynomials using a difference of squares pattern (20)
  - Factor a sum or a difference of cubes (20, 20)
  - Factor polynomials by combining the difference of squares and perfect square trinomial patterns

5.7 General Strategy for Factoring Polynomials
- Choosing a Factoring Strategy
  - Use a general strategy for factoring polynomials (40)

5.8 Polynomial Equations
- Solving Polynomial Equations by Factoring
  - Use the zero product property to solve a factored polynomial equation (20)
  - Solve polynomial equations by factoring (20)
  - Find zeros and intercepts of a polynomial function by factoring (40)
  - Use factoring to solve application problems involving polynomial equations (40)

Chapter 6: Rational Expressions and Functions

6.1 Multiply and Divide Rational Expressions
- Domain of Rational Expressions and Simplifying Rational Expressions
  - Determine which values make a rational expression undefined (20)
● Simplify rational expressions - IA
● Multiplying and Dividing Rational Expressions
  ● Multiply two rational expressions
  ● Divide rational expressions, including those written as complex fractions
  ● Multiply and divide rational functions

6.2 Add and Subtract Rational Expressions
● Adding and Subtracting Rational Expressions
  ● Add or subtract rational expressions with a common denominator or with denominators that are opposites
  ● Determine the least common denominator of rational expressions (20)
  ● Add or subtract rational expressions with unlike denominators (20)
  ● Add and subtract rational functions (20)

6.3 Simplify Complex Rational Expressions
● Simplifying Complex Rational Expressions
  ● Simplify complex rational expressions by writing the expression as division (20)
  ● Simplify complex rational expressions by using the least common denominator

6.4 Solve Rational Equations
● Solving Rational Equations and Using Rational Functions
  ● Solve rational equations (40)
  ● Use rational equations to find points on the graph of a rational function (40)
  ● Rewrite a rational equation in terms of a specific variable (40)

6.5 Solve Applications with Rational Equations
● Proportions and Similar Figures with Rational Equations
  ● Solve problems involving proportions
  ● Solve application problems involving similar figures
● Uniform Motion, Work, and Problem Solving
  ● Use rational equations to solve uniform motion applications
  ● Use rational equations to solve problems involving rates of work
● Variation and Problem Solving
  ● Solve problems involving direct variation
  ● Solve problems involving inverse variation

6.6 Solve Rational Inequalities
● Solving Rational Inequalities
  ● Find the solution set of a rational inequality
  ● Solve an inequality with rational functions (40)

Chapter 7: Roots and Radicals
7.1 Simplify Expressions with Roots
● Understanding Radical Expressions
  ● Estimate and approximate roots (20)
  ● Simplify a variable expression with even or odd roots (20)
  ● Simplify a numerical expression with even or odd roots

7.2 Simplify Radical Expressions
• Simplifying Radical Expressions
  ● Use the product property to simplify radical expressions
  ● Use the quotient property to simplify radical expressions

7.3 Simplify Rational Exponents
• Rational Exponents
  ● Simplify an expression with rational exponents and a numerator of 1 (20)
  ● Simplify an expression with rational exponents and a numerator greater than 1 (20)
  ● Use the properties of exponents to simplify expressions with rational exponents (40)

7.4 Add, Subtract, and Multiply Radical Expressions
• Operations with Radical Expressions
  ● Add and subtract radical expressions
  ● Multiply radical expressions (40)
  ● Use polynomial multiplication to multiply radical expressions (20)
  ● Use special product formulas to multiply radical expressions (20, 20)

7.5 Divide Radical Expressions
• Dividing Radical Expressions and Rationalizing Denominators
  ● Divide radical expressions (20)
  ● Rationalize a denominator when the denominator is a monomial
  ● Rationalize a denominator when the denominator is a binomial (20)

7.6 Solve Radical Equations
• Solving Radical Expressions
  ● Solve square root equations containing a single radical (20)
  ● Solve a radical equation with a single radical or an equation with a rational exponent (20)
  ● Solve a radical equation with two radicals (20)
  ● Solve application problems involving radical equations

7.7 Use Radicals in Functions
• Radical Functions
  ● Evaluate a radical function - IA (20)
  ● Find the domain of a radical function
  ● Graph a radical function by plotting points and determine its range

7.8 Use the Complex Number System
• Introduction to Complex Numbers
  ● Evaluate the square root of a negative number and understand the complex number system (20)
  ● Add or subtract complex numbers (20)

• Multiplying and Dividing Complex Numbers and Powers of i
  ● Multiply complex numbers (20)
  ● Multiply two complex conjugates (20)
  ● Divide complex numbers (20)
  ● Simplify powers of i - IA (20)

Chapter 8: Quadratic Equations and Functions
8.1 Solve Quadratic Equations Using the Square Root Property
• Solving Quadratic Equations Using the Square Root Property
  ● Solve quadratic equations using the square root property (20)
  ● Solve quadratic equations with a binomial as the quadratic term using the square root property (20)

8.2 Solve Quadratic Equations by Completing the Square
• Solving Quadratic Equations by Completing the Square
  ● Find the term that completes the square of a quadratic expression (20)
  ● Solve quadratic equations with a leading coefficient of 1 by completing the square (20)
  ● Solve quadratic equations with a leading coefficient greater than 1 by completing the square (20)

8.3 Solve Quadratic Equations Using the Quadratic Formula
• Solving Quadratic Equations Using the Quadratic Formula
  ● Solve quadratic equations using the quadratic formula with two real solutions (20)
  ● Solve quadratic equations using the quadratic formula with one or no real solutions (20, 20)
  ● Determine the number and type of solutions of a quadratic equation by using the discriminant (20)

8.4 Solve Quadratic Equations in Quadratic Form
• Solving Equations by Using Quadratic Methods
  ● Solve an equation in quadratic form by using substitution (40)
  ● Solve an equation in quadratic form with rational or negative exponents by using substitution (40)

8.5 Solve Applications of Quadratic Equations
• Problem Solving with Quadratic Equations
  ● Solve an application problem modeled by a quadratic equation
  ● Solve a geometric application problem where the quadratic formula may be required

8.6 Graph Quadratic Functions Using Properties
• Parabolas and Their Properties
  ● Graph a quadratic function by plotting points and determine the direction a parabola opens
  ● Determine the axis of symmetry and vertex of a parabola given a function (20)
  ● Determine the intercepts of a parabola given a function (20)
• Graphing Quadratic Functions
  ● Graph a quadratic function by finding key points
  ● Determine the minimum or maximum of a quadratic function and use it in applications (40)

8.7 Graph Quadratic Functions Using Transformations
• Transformations of Parabolas
  ● Graph a quadratic function using a vertical translation
  ● Graph a quadratic function using a horizontal translation
  ● Graph a quadratic function by compression, stretching, or reflecting
• Graphing Quadratic Functions Using Transformations
  ● Rewrite a quadratic in vertex form and graph it using transformations
  ● Find a quadratic function given its graph

8.8 Solve Quadratic Inequalities
• Solving Quadratic Inequalities
Solve a quadratic inequality graphically
Solve a quadratic inequality algebraically (40)

Chapter 9: Inverse Functions, Distance and Midpoint Formulas, and Circles
9.1 Finding Composite and Inverse Functions
• Composite Functions
  • Perform a composition of functions (20)
  • Evaluate a composition of functions for a specific value (20)
• One-to-One Functions
  • Determine whether a function is one-to-one given a set of ordered pairs
  • Use the horizontal line test to determine whether a graph represents a one-to-one function
• Inverse Functions
  • Find the inverse of a function given a set of ordered pairs or a graph (40)
  • Verify that two functions are inverses of each other (40)
  • Find the inverse of a function algebraically (40)

9.2 Distance and Midpoint Formulas and Circles
• The Distance and Midpoint Formulas
  • Use the distance formula to find the distance between two points (20)
  • Use the midpoint formula to find the midpoint between two points
• The Equation of Circles
  • Write the standard form of the equation of a circle given its center and radius (20)
  • Write the standard form of the equation of a circle given its center and a point on the circle (20)
  • Graph a circle given its equation in standard form
  • Rewrite the equation of a circle given in general form by completing the square