CPM Algebra 1 Objective Roadmap

Students will have the opportunity to:

Unit 0 — Day 6 Getting Started: Working in Teams (GS)

- Investigate basic probability. (**Basic Probability**)
  Problems: GS-13, GS-19, GS-20, GS-21, GS-22, GS-23, GS-24, GS-26
- Explore area and perimeter. (**Basic Area and Perimeter**)
  Problems: GS-7, GS-8, GS-11, GS-14

Unit 1 — Day 16 Difference of Squares: Organizing Data (SQ)

- Understand the rules for doing arithmetic with integers. (**Integer Arithmetic**)
  Problems: SQ-8, SQ-9, SQ-10, SQ-11, SQ-12, SQ-15, SQ-16, SQ-18, SQ-28, SQ-29, SQ-30, SQ-39
- Combine algebraic terms using addition and subtraction. (**Combining Like Terms**)
  Problems: SQ-65, SQ-66, SQ-67, SQ-68, SQ-69, SQ-70, SQ-71, SQ-72, SQ-73, KF-8
- Interpret graphs. (**Graph Interpretation**)
  Problems: GS-4, GS-16, SQ-1, SQ-2, SQ-3, SQ-4, SQ-6, SQ-21, SQ-23, SQ-36
- Investigate patterns and use them to predict outcomes. (**Patterns and Predictions**)
  Problems: GS-18, SQ-55, SQ-57, SQ-58, SQ-59, SQ-60, SQ-61
- Solve word problems using the "Guess and Check" strategy as a preparation to write and solve equations. (**Guess and Check**)
  Problems: SQ-45, SQ-46, SQ-47, SQ-48, SQ-49, SQ-63, SQ-64, SQ-76, SQ-77, SQ-78, SQ-79

Unit 2 — Day 26 Tiling the Kitchen Floor: Area and Subproblems (KF)

- Learn how to break large problems into smaller parts that you know how to solve. (**Subproblems**)
  Problems: KF-1, KF-11, KF-22, KF-24, KF-26, KF-28, KF-29, KF-33, KF-34, KF-35, KF-45, KF-46, KF-106
- Review and consolidate the Order of Operations with integers, decimals, and fractions. (**Order of Operations**)
  Problems: SQ-13, KF-10, KF-17, KF-93, KF-94, KF-95, KF-101, KF-109, KF-118, KF-126
- Continue working with Algebra Tiles to learn the Distributive Property. (**Distributive Property**)
  Problems: KF-53, KF-54, KF-55, KF-56, KF-57, KF-58, KF-68, KF-69, KF-70, KF-71, KF-75, KF-78
- Explore your scientific calculator to manage large numbers. (**Scientific Notation**)
  Problems: SQ-19, SQ-56, KF-96, KF-97, KF-98, KF-99, KF-121

Unit 3 — Day 38 The Burning Candle: Patterns and Graphs (BC)

- Use patterns and organized data tables to draw graphs and solve problems. (**Tables and Graphing**)
  Problems: BC-1, BC-3, BC-8, BC-9, BC-10, BC-11, BC-12, BC-19, BC-20, BC-21, BC-22
- Explore families of equations and their graphs, with a primary focus on linear and quadratic functions. (**Linear and Quadratic Graphs**)
  Problems: BC-45, BC-46, BC-47, BC-51, BC-56, BC-57, BC-59, BC-60, BC-66, BC-67, BC-68, BC-69, BC-70, BC-71
- Begin writing algebraic expressions to describe the rule that governs tables of input and output values. (**Writing Expressions**)
  Problems: BC-13, BC-28, BC-29, BC-30, BC-33, BC-34, BC-37, BC-42, BC-43
- Learn how to graph linear equations using the slope-intercept method ($y = mx + b$). (**Slope-Intercept Graphing**)
  Problems: *Note: This is a Unit 7 objective that's best done at the end of Unit 3. You will be given worksheets for this objective.*

Unit 4 — Day 47 Choosing a Phone Plan: Writing and Solving Equations (CP)

- Represent word problems with algebraic equations. (**Writing Equations**)
  Problems: CP-1, CP-2, CP-3, CP-4, CP-5, CP-6, CP-7, CP-8, CP-9, CP-10, CP-15, CP-16, CP-17, CP-20
- Learn to solve linear equations with manipulatives and the fundamental laws of algebra. (**Solving Equations**)
  Problems: CP-27, CP-38, CP-41, CP-44, CP-50, CP-58, CP-60, CP-65, CP-77, CP-78, CP-79, CP-80, CP-81, CP-83
- Continue your examination of inverses by "undoing" mathematical operations; you will begin monomial factoring as "undoing" the Distributive Property. (**Common Term Factoring**)
  Problems: KF-83, KF-84, CP-51, CP-52, CP-117
- Continue developing your ability to work with variables by solving literal equations. (**Solving Literal Equations**)
  Problems: CP-99, CP-100, CP-101, CP-110, CP-119

Unit 5 — Day 56 Estimating Fish Populations: Numerical, Geometric, and Algebraic Ratios (EF)

- Compare ratios of sides, perimeters, and areas for plane figures. (**Geometric Ratios**)
  Problems: EF-6, EF-7, EF-8, EF-9, EF-18, EF-19, EF-20, EF-21, EF-30, EF-31, EF-32, EF-44, EF-45, EF-46, EF-47, EF-55, EF-56, EF-57, EF-59, EF-60
- Explore percent as a ratio. (**Percent Ratios**)
  Problems: EF-70, EF-71, EF-73, EF-96, EF-97, EF-98
- Write and solve equations that involve ratios, including proportions. (**Ratio Equations**)
  Problems: EF-33, EF-72, EF-81, EF-82, EF-83, EF-84, EF-90, EF-91, EF-93, EF-94

Unit 6 — Day 65 World Records: Graphing and Systems of Linear Equations (WR)

- Solve problems that use linear equations to model two simultaneous situations by applying graphing, problem solving and algebraic skills. (**Systems of Equations**) *Note: Substitution, an algebraic method of solving a system of equations, is normally taught in both Unit 6 and 7. We will learn both parts in Unit 6.*
  Problems: WR-3, WR-39, WR-40, WR-41, WR-42, WR-51, WR-52, WR-59, WR-60, WR-61, WR-62, WR-95
- Use tiles to extend the Distributive Property to multiplying binomials. (**Multiplying Binomials**)
  Problems: WR-70, WR-71, WR-72, WR-73, WR-81, WR-82, WR-83, WR-84, WR-96

Unit 7 The Big Race: Slopes and Rates of Change (BR)

- *The Unit 7 Objectives, Slope-Intercept Graphing and Substitution, will be moved to Unit 3 and Unit 6, respectively*

Unit 8 — Day 74 The Amusement Park: Factoring Quadratics (AP)

- Learn how to "undo" multiplying binomials by factoring trinomials. (**Factoring Trinomials**)
  Problems: AP-2, AP-3, AP-4, AP-10, AP-11, AP-18, AP-19, AP-20, AP-21, AP-25, AP-28
- Explore how to factor special products, such as differences of squares and perfect square trinomials. (**Factoring Special Products**)
  Problems: AP-50, AP-51, AP-57, AP-58, AP-63, AP-70
- Solve factorable quadratic equations algebraically using the Zero Product Property. (**Zero Product Property**)
  Problems: AP-40, AP-41, AP-42, AP-43, AP-44, AP-46, AP-61
- Study quadratic equations in relation to their graphs. (**Quadratic Graphs**)
  Problems: AP-60, AP-73, AP-93

Unit 9 — Day 83 The Birthday Party Pinata: Using Diagrams to Write Equations (BP)

- Apply the Pythagorean Theorem to calculate the distance between two points. (**Pythagorean Theorem**)
  Problems: BP-1, BP-2, BP-3, BP-4, BP-11, BP-12, BP-13, BP-14, BP-16, BP-24, BP-25, BP-26, BP-33
- Solve equations that involve fractions. (**Fraction Busters**)
  Problems: BP-46, BP-47, BP-50, BP-63, BP-80
- Solve equations that involve square roots. (**Radicals**)
  Problems: BP-57, BP-58, BP-59, BP-64, BP-69, BP-70, BP-71, BP-72, BP-73, BP-81, BP-96
- Write the equation of a line given the coordinates to two points on the line. (**Writing Equations from Two Points**)
  Problems: BP-62, BP-83, BP-84, BP-85, BP-86, BP-104

Unit 10 — Day 92 Yearbook Sales: Exponents and Quadratics (YS)

- Extend your ability to factor trinomials to cases where the coefficient of x^2 is not 1. (**Factoring When $a \neq 1$**)
  Problems: YS-1, YS-2, YS-3, YS-5, YS-13, YS-23, YS-31, YS-56
- Explore exponents to develop basic procedures for working with positive, negative and zero exponents. (**Properties of Exponents**)
  Problems: YS-8, YS-24, YS-25, YS-26, YS-27, YS-28, YS-29, YS-30, YS-38, YS-39, YS-40, YS-41, YS-42, YS-43, YS-47, YS-70
- Simplify elementary rational expressions in preparation for more complicated cases in Units 11 and 12. (**Simplifying Rational Expressions**)
  Problems: YS-52, YS-53, YS-54, YS-55, YS-63, YS-64, YS-69, YS-73, YS-84, YS-102
- Learn how to solve quadratic equations using the Quadratic Formula. (**Quadratic Formula**)
  Problems: YS-74, YS-75, YS-76, YS-77, YS-86, YS-87, YS-88, YS-95, YS-96, YS-100

Unit 11 — Day 101 The Cola Machine: Functions and Equality (CM)

- Explore the nature of relations and functions. (**Relations and Functions**)
  Problems:
- Add the Elimination (Addition) Method to your list of strategies to solve systems of linear equations. (**Elimination**)
  Problems:
- Solve equations with absolute value and square roots. (**Absolute Value and Square Root Equations**)
  Problems:
- Extend your work with rational expressions to include multiplying and dividing them. (**Multiplying and Dividing Rational Expressions**)
  Problems:
- Explore the properties of real numbers and identify them in the context of algebraic expressions. (**Algebraic Properties**)
  Problems:

Unit 12 — Day 110 The Grazing Goat: Problem Solving and Inequality (GG)

- Extend your study of solving equations to solving inequalities. (**Solving Inequalities**)
  Problems:
- Extend your study of linear systems to linear inequalities. (**Systems of Inequalities**)
  Problems:
- Add and Subtract rational expressions. (**Adding and Subtracting Rational Expressions**)
  Problems:

Unit 13 — Day 119 The Rocket Show: More About Quadratic Equations (RS)

- Work backwards from the x-intercepts of a parabola to write its equation and sketch its graph. (**Finding Parabola Equations**)
  Problems:
- Use Algebra Tiles to learn the technique known as Completing the Square. (**Completing the Square**)
  Problems:
- Examine the shape, location, and direction of parabolas. (**Parabola Family**)
  Problems:
- Consider data points and trends for straight lines and parabolas. (**Line of Best Fit**)
  Problems:
- Derive the Quadratic Formula using several of the skills you have learned this semester. (**Deriving the Quadratic Formula**)
  Problems: