La Cañada High School Math Courses CCSS-M Standards Map

As of: 01/12/24

CCSS-M STANDARDS KEY: < Grade 7, Grade 7, Grade 8, Algebra 1, Geometry, Algebra 2, Pre-calculus
TEXTBOOK KEY: MiF2A: Math In Focus Acc 2A (2019), MiF3: Math In Focus Course 3A/B (2013), A1: Glencoe Algebra 1 (2012), A2: Glencoe Algebra 2 (2014), BIG: Big Ideas Geometry (2022), PC: Glencoe Precalculus (2014)

Math 8 Adv (Old)

Standards Covered:

Grade/Subject	#	%
< Grade 7	1	1.6%
Grade 7	0	0%
Grade 8	48	75%
Algebra 1	12	19%
Geometry	1	1.6%
Algebra 2	0	0%
Not in CCSS-M	2	3.1%
Total	64	100%

1ST SEMESTER:

Number System:

- MiF3: Identify Irrational Numbers (8.NS.1)
- Convert a repeating decimal to a fraction (8.NS.1)
- Recognize perfect squares (8.EE.2)
- Recognize perfect cubes (8.EE.2)
- Find approximations for rational #s (8.NS.2)

Expressions & Equations:
Radicals & Integer Exponents:

- Simplify and evaluate expressions (8.EE.1)
- Apply properties of exponents (8.EE.1)

Math 7/8 Adv (New)

Standards Covered:

Grade/Subject	#	%
< Grade 7	11	9.8%
Grade 7	55	49.1
Grade 8	42	37.5%
Algebra 1	2	1.8%
Geometry	1	0.9%
Algebra 2	0	0%
Not in CCSS-M	1	0.9%
Total	112	100%

1ST SEMESTER:

1. Real Number Systems:

- MiF2A: Represent rational numbers on a number line (7.NS.1)
- Write rational numbers as decimals (7.NS.2.d)
- Introduce irrational numbers (8.NS.1)
- Introduce the Real Number System (8.NS.1)
- Adding integers (7.NS.1)
- Subtracting integers (7.NS.1)
- Multiplying and dividing integers (7.NS.2)
- Order of operations with integers (5.OA.1, 7.NS.3)
- Operations with fractions and mixed numbers (4.NF.3-4, 5.NF.1-7, 6.NS.1, 7.NS.1-3)

LC Math 1

Standards Covered:

Grade/Subject	#	%
< Grade 7	0	0%
Grade 7	0	0%
Grade 8	0	0%
Algebra 1	104	99.0%
Geometry	0	0%
Algebra 2	1	1.0%
Pre-calculus	0	0%
Not in CCSS-M	0	0%
Total	105	100%

1ST SEMESTER:

1. Expressions, Equations and Functions:

- A1: 1-3 Properties of numbers (A.SSE.1.b, A.SSE.2)
- 1-4 The distributive property (A.SSE.1.b, A.SSE.2)
- 1-6 Relations (A.REI.10), F.IF.1)
- 1-7 Functions (F.IF.1)
- 1-8 Interpreting graphs of functions (F.IF.2)

2. Linear Equations:

- A1: 2-1 Writing equations (A.CED.1)
- 2-2 Solving one-step equations (A.REI.3)
- 2-3 Solving multi-step equations (A.REI.1, A.REI.3)

LC Math 1 Adv

Standards Covered:

Grade/Subject	#	%
< Grade 7	2	1.7%
Grade 7	0	0%
Grade 8	0	0%
Algebra 1	86	73.5%
Geometry	2	1.7%
Algebra 2	21	17.9%
Pre-calculus	2	1.7%
Not in CCSS-M	4	3.4%
Total	117	100%

1ST SEMESTER:

1. Equations and Inequalities:

- A2: 1-1 Expressions and formulas (A.SSE.1.a)
- 1-2 Properties of real numbers (A.N.RN.1)
- 1-3 Solving equations (A.REI.3)
- 1-4 Solving absolute value equations (A.REI.3.1)
- 1-5 Solving inequalities (A.REI.3)
- 1-6 Solving compound and absolute value inequalities (A.REI.3)

2. Linear Relations and Functions:

- A2: 2-1 Relations and functions (A.SSE.1.b, F.IF.1-4)
- 2-2 Linear relations and functions (F.IF.4, F.IF.9)

- Convert between standard and scientific notation (8.EE.4)
- Use sci. notation to compare sizes (8.EE.4)
- Perform operations in sci. notation (+, –, ×, ÷) (8.EE.4)
- Use sci. notation to solve problems (8.EE.4)

Rational exponents:

- Extend properties of integer exponents to rational (fractional/decimal) exponents (N.RN.1)
- Write expressions w rational exponents as equivalent expressions in radical form (N.RN.2)

Proportional relationships, lines and linear equations:

- Graph proportional relationships interpreting unit rate as the slope (8.EE.5)
- Graph lines (8.F.1)
- Given a graph of a line, a table, or two points, write the equation of a line in slope-intercept form (8.EE.6)
- Compare relationships represented in different ways (i.e. tables, equations, graphs, etc.) (8.F.4)
- Use similar triangles to explain why the slope m is the same between any two points on a line. (8.EE.6)

- Operations with decimals. (5.NBT.7, 6.NS.3, 7.NS.1-3)

2. Algebraic Expressions:

- Adding algebraic terms. (7.EE.1, 7.EE.4a)
- Subtracting algebraic terms. (7.EE.1, 7.EE.4a)
- Simplifying algebraic expressions. (7.EE.1, 7.EE.2, 8.EE.1)
- Expanding algebraic expressions. (7.EE.1, 7.EE.2, 8.EE.1)
- Factoring algebraic expressions. (7.EE.1, 7.EE.2)
- Writing algebraic expressions. (7.EE.2-4)
- Real-world problems: Algebraic reasoning (7.EE-3-4)

3. Algebraic Equations and Inequalities:

- Identifying equivalent equations. (7.EE.1-2)
- Solving algebraic equations. (7.EE.3)
- Real-world problems: Algebraic equations. (7.EE.4)
- Solving algebraic inequalities. (7.EE.4)
- Real-world problems: Algebraic inequalities. (7.EE.4.b)

4. Linear Equations and Inequalities:

- Solving linear equations with one variable. (7.EE.3)

- 2-4 Solving equations with a variable on each side (A.REI.1, A.REI.3)
- 2-5 Solving equations involving absolute value (A.REI.1, A.REI.3)
- 2-6 Ratios and Proportions (A.REI.1, A.REI.3)

3. Linear Functions:

- A1: 3-1 Graphing linear equations (F.IF.4, F.IF.7.a)
- 3-3 Rate of change and slope (F.IF.6, F.LE.1.a)
- 3-4 Direct variation (A.REI.10, F.IF.7a)
- 3-5 Arithmetic sequences as linear functions (F.BF.2, F.LE.2)

4. Equations of Linear Functions:

- A1: 4-1 Graphing equations in slope-intercept form (F.IF.7.a, S.ID.7)
- 4-2 Writing equations in slope-intercept form (F.BF.1, F.LE.2)
- 4-3 Writing equations in point-slope form (F.IF.2, F.LE.2)
- 4-4 Parallels and perpendicular lines (F.LE.2, S.ID.7)
- 4-5 Scatter plots and lines of fit (S.ID.6.a, S.ID.6.c)

5. Linear inequalities:

- A1: 5-1 Solving inequalities by addition and subtraction (A.CED.1, A.REI.3)

- 2-3 Rate of change and slope (F.IF.4, F.IF.6)
- 2-4 Writing linear equations (A.SSE.1.b, A.CED.2)
- 2-6 Special functions (F.IF.4, F.IF.7.b)
- 2-7 Parent functions and transformations (F.IF.4, F.BF.3)
- 2-8 Graphing linear and absolute value inequalities (A.CED.3)

3. Systems of Equations and Inequalities:

- A2: 3-1 Solving systems of equations (A.CED.3)
- 3-2 Solving systems of inequalities by graphing (A.CED.3, A.REI.12)
- 3-3 Optimizations with linear programming (A.CED.3)
- 3-4 Systems of equations in three variables (A.CED.3)
- 3-5 Operations with matrices (N.VM.6, N.VM.8)
- 3-6 Multiplying matrices (N.VM.9)
- 3-7 Solving systems of equations using Cramer's rule (Not in CCSS-M, taught in some Algebra 2 & Precalculus courses, N.VM.12)
- 3-8 Solving systems of equations using inverse matrices (Not in CCSS-M, taught in some Algebra 2 & Precalculus courses , A.CED.3)

4. Exponential Functions:

- A1: 7-1 Multiplication properties of Exponents (8.EE.1 N.RN.1-2, F.IF.8b)

- Recognize and create equations of parallel and perpendicular lines. (G.GPE.5)
- Write the equation of a line in point-slope form and standard form. Translate between the two forms. (Not in CCSS-M)

Analyze and solve linear equations:

- Solve linear equations by writing equivalent forms (i.e. simplifying by collecting like terms, etc.) (8.EE.7.b)
- Identify or write equations w/ 0, 1, and infinitely many solutions (8.EE.7.a)
- Simplify and solve linear equations with rational coefficients (8.EE.7.a)
- Solve literal equations/formulas for a given variable (e.g. solving a linear equation for y to put into slope-intercept form.) (8.EE.7.b)

Analyze and solve simultaneous pairs of linear equations:

- Identify a solution to a pair of linear equations as the point of intersection on a graph. (8.EE.8.a)
- Solve a system of two linear equations algebraically (e.g. using substitution or elimination.) (8.EE.8.b)
- Explain what it means for a system to have no solution or
- Identifying the # of solutions to a linear equation. (8.EE.7.a)
- Understanding linear equations with two variables. (8.EE.7)
- Solving for a variable in a two-variable linear equation. (8.EE.7)
- Solving linear inequalities with one variable. (A.REI.3.1)

5. Lines and Linear Equations:

- Finding and interpreting slopes of lines. (8.EE.5)
- Understanding slope-intercept form. (8.EE.6)
- Writing linear equations. (8.EE.7)
- Sketching graphs of linear equations. (8.EE.5)
- Real-world problems: Linear equations. (8.EE.7.b)

6. Functions:

- Understanding relations and functions. (8.F.1)
- Representing functions. (8.F.2-4)
- Understanding linear and nonlinear functions. (8.F.5)
- Comparing two functions. (8.F.2)

7. Exponents:

- Exponential notation. (6.EE.1, 8.EE.1)
- The product and the quotient of powers. (8.EE.1)
- 5-2 Solving inequalities by multiplication and division (A.CED.1, A.REI.3)
- 5-3 Solving multi-step inequalities (A.CED.1, A.REI.3)
- 5-4 Solving compound inequalities (A.CED.1, A.REI.3)
- 5-5 Inequalities involving absolute value (A.CED.1, A.REI.3)
- 5-6 Graphing inequalities in two variables (A.CED.2, A.REI.12)

6. Systems of linear equations and inequalities:

- A1: 6-1 Graphing systems of equations (A.CED.3, A.REI.6)
- 6-2 Solving systems of equations by substitution (A.REI.6)
- 6-3 Solving systems of equations by elimination using addition and subtraction (A.REI.6)
- 6-4 Solving systems of equations by elimination using multiplication (A.REI.5-6)
- 6-5 Applying systems of linear equations (A.REI.6)
- 6-6 Solving systems on inequalities (A.REI.12)

2nd SEMESTER:

7. Exponents and Exponential Equations:

- A1: 7-1 Multiplication properties of exponents (A.SSE.2, F.IF.8.b)
- 7-2 Division properties of exponents (A.SSE.2, F.IF.8.b)
- 7-2 Division properties of Exponents (8.EE.1 N.RN.1-2, F.IF.8b)
- 7-3 Rational exponents (N.RN.1-2)
- A2: 7-1 Graphing exponential functions (F.IF.7.e)
- 7-6 Growth and decay (F.IF.8.b, F.LE.1.c, F.LE.2)

5. Quadratic Expressions & Equations:

- A1: 8-1 Adding and subtracting polynomials (A.APR.1)
- 8-2 Multiplying a polynomial by a monomial (A.APR.1)
- 8-3 Multiplying polynomials (A.APR.1)
- 8-4 Special products (A.SSE.2, A.SSE.3, A.APR.1)
- 8-5 Using the distributive property (A.SSE.2, A.SSE.3)
- 8-8 Differences of squares (A.SSE.2, A.SSE.3.a, A.REI.4.b)
- 8-9 Perfect squares (A.SSE.3, A.REI.1, A.REI.4.a)
- 8-6 Solving $x^2 + bx + c = 0$ (A.SSE.3.a, A.REI.4.b)
- 8-7 Solving $ax^2 + bx + c = 0$ (A.SSE.3.a, A.REI.4.b)

2nd SEMESTER:

6. Quadratic Functions & Equations:

- A1: 9-1 Graphing quadratic functions (F.IF.4, F.IF.7.a)
- 9-3 Transformations of quadratic functions (A.SSE.3.b, F.IF.7.a)

infinitely many solutions. (8.EE.7.a)

Solve equations and inequalities in one variable:

- Create and solve inequalities and compound inequalities. (A.REI.3)
- Represent the solution sets to inequalities on a number line. (A.REI.3.1)

Represent and solve equations and inequalities graphically:

- Graph the solution set to a linear inequality in two variables. (A.REI.10)
- Graph the solution set to a system of two linear inequalities as the intersection of the corresponding half-planes. (A.REI.12)

Solve equations and inequalities in one variable, including ones with absolute value:

- Solve equations with absolute value. (A.CED.1)
- Graph absolute value functions. (F.IF.7.b)
- Solve inequalities with absolute value and graph the solution sets. (A.CED.2)

Functions:
Define, evaluate, and compare functions:

- The power of a power. (8.EE.1)
- The power of a product and the power of a quotient. (8.EE.1)
- Zero and negative exponents. (8.EE.1)
- Squares, square roots, cubes, and cube roots. (8.EE.2)

8. Scientific Notation:

- Understanding scientific notation. (8.EE.4)
- Adding and subtracting in scientific notation. (8.EE.4)
- Multiplying and dividing in scientific notation. (8.EE.4)

Supplemental Topics:

- Percentages. (6.RP.3c, 7.RP.3)
- Simple interest. (7.RP.3)

2nd SEMESTER:

9. Proportions and Percent of Change:

- Identifying direct proportion (7.RP.2)
- Representing direct proportion graphically. (7.RP.2)
- Real-world problems: Direct proportion. (7.RP.2)
- Identifying inverse proportion. (7.RP.2)
- Percent increase and decrease. (7.RP.3)
- Real-world problems: Percent increase and decrease. (7.RP.3)

- 7-3 Rational exponents (N.RN.1, N.RN.2)
- 7-5 Exponential functions (F.IF.7.e, F.LE.2)
- 7-6 Exponential growth and decay (F.IF.8.b, F.LE.1.c, F.LE.2)

8. Quadratic Expressions and Equations:

- A1: 8-1 Adding and subtracting polynomials (A.APR.1))
- 8-2 Multiplying a polynomial by a monomial (A.APR.1)
- 8-3 Multiplying polynomials (A.APR.1)
- 8-4 Special products (A.SSE.2, A.SSE.3, A.APR.1)
- 8-5 Using the distributive property (A.SSE.2, A.SSE.3)
- 8-6 Solving $x^2 + bx + c = 0$ (A.SSE.3.a, A.REI.4.b)
- 8-7 Solving $ax^2 + bx + c = 0$ (A.SSE.3.a, A.REI.4.b)
- 8-8 Differences of squares (A.SSE.2, A.SSE.3.a, A.REI.4.b)
- 8-9 Perfect squares (A.SSE.3, A.REI.1, A.REI.4.a)

9. Quadratic Functions and Equations:

- A1: 9-1 Graphing quadratic functions (F.IF.4, F.IF.7.a)
- 9-2 Solving quadratic equations by graphing (A.REI.4.b, F.IF.7.a)
- 9-3 Transformations of quadratic functions (A.SSE.3.b, F.IF.7.a)

- 9-2 Solving quadratic functions by graphing (A.REI.4.b, F.IF.7.a)
- 10-1 Square root functions (F.IF.7b)
- 10-2 Simplifying radical expressions (A.REI.4.a)
- 10-3 Operations with radical expressions (N.RN.2)
- 10-4 Radical equations (A.REI.2)
- The Square Root Property (N.RN.2)
- A2: 4-4 Complex numbers (N.CN1-2)
- 4-5 Completing the square (F.IF.8.a, N.CN.7)
- 4-7 Transformations of quadratic graphs (A.REI.4.a, F.BF.3)
- 4-6: The quadratic formula and the discriminant (A.REI.4, A.SSE.1.b)

7. Polynomials & Polynomial Functions:

- A2: 5-2 Dividing polynomials (A.APR.6)
- 5-3 Polynomial functions (F.IF.4, F.IF.7.c)
- 5-4 Analyzing graphs of polynomial functions (F.IF.4, F.IF.7c)
- 5-5 Solving polynomial equations (A.CED.1)
- 5-6 The remainder and factor theorems (A.APR.2, F.IF.7c)
- 5-7 Roots and zeros (N.CN.7, A.APR.3)

- Understand that a function is a relation where every input has exactly one output. (8.F.1)
- Write a rule/equation to describe a function. (8.F.4)
- Graph a function from its input-output table. (8.F.1)
- Compare different representations of a function (i.e. tables, graphs equations, verbal descriptions, ordered pairs, mapping diagrams.) (8.F.2)

Use functions to model relationships between quantities:

- Identify a rate of change (slope) from a graph, a table, and description. (8.F.4)
- Identify the initial value (y-intercept) of a function from a graph, table and description. (8.F.4)
- Find the x-intercept too. (Not in CCSS-M)
- Write a function rule/equation from the rate of change and initial value (e.g. $y = mx + b$) (8.F.3)
- Analyze a graph to describe the relationship between the input/independent variable and the output/dependent variable. (6.EE.9)
- Sketch a graph from a verbal description of its features. (8.F.5)

Geometry:

10. Angle Properties and Straight Lines:

- Complementary, supplementary and adjacent angles. (7.G.5)
- Angles that share a vertex. (7.G.5)
- Alternate interior, alternate exterior, and corresponding angles. (8.G.5)
- Interior and exterior angles. (8.G.5)

11. Geometric Construction:

- Scale drawings and lengths. (7.G.1)
- Scale drawings and areas. (7.G.1)

12. Areas, Volume and Surface Areas:

- Radius, diameter and circumference of a circle. (7.G.4)
- Areas of circles. (7.G.4)
- Real-world problems: Circles. (7.G.4)
- Areas of composite figures. (7.G.5)
- Finding volume and surface areas of prisms. (7.G.6)
- Recognizing cylinders, cones, spheres, and pyramids. (K.G.1, 7.G.3 & 7.G.6)
- Finding volume and surface areas of cylinders. (8.G.9)

- 9-4 Solving quadratic equations by completing the square (A.REI.4.a, F.IF.8.a)
- 9-5 Solving quadratic equations by using the quadratic formula (A.REI.4)
- 9-7 Special functions (F.IF 4, F.IF 7.b)

10. Radical Functions:

- A1: 10-2 Simplifying radical expressions (A.REI.4.a)
- 10-3 Operations with radical expressions (N.RN.2)
- 10-4 Radical equations (N.RN.2, A.REI.2)

11. Rational Expressions:

- A1: 11-3 Simplifying rational expressions (N.SSE.1-2)
- 11-4 Multiplying and dividing rational expressions (A.SSE.1-2 , A.APR.1)
- 11-6 Adding and subtracting rational expressions (A.SSE.1-2, A.APR.1)

8. Rational Expressions & Equations:

- A1: 11-3 Simplifying rational expressions (A.SSE.1-2)
- 11-4 Multiplying and dividing rational expressions (A.SSE.1-2 , A.APR.1)
- 11-6 Adding and subtracting rational expressions (A.SSE.1-2, A.APR.1)
- 11-7 Mixed expressions and complex fractions (6.NS.1, A.SSE-1-2, A.APR.1)
- 11-8 Rational expressions and complex fractions (6.NS.1, A.CED.2)

9. Sequences and Series:

- A2: 10-1 Sequences as functions (F.IF.3, F.IF.4)
- 10-2 Arithmetic sequences and series (A.CED.4, F.BF.2, F.LE.2)
- 10-3 Geometric sequences and series (A.SSE.4, F.BF.2, F.LE.2)
- 10-4 Infinite geometric series, sigma notation (Not in CCSS-M)
- 10-5 Recursion and iteration (F.IF.3, F.BF.1-2)

10. Statistics and Probability:

- A1: 0-12: Measures of center variation and position (S.ID.1-3)
- 0-13 Representing data (S.ID.1)
- A1: 12-2 Statistics and parameters (S.ID.2)
- 12-3 Distributions of data (S.ID.2-3)
- 12-4 Comparing sets of data ()

Understand congruence & similarity: • Verify that the properties of rotations, reflections, and translations, and show that they maintain congruency. (8.G.1) • Describe the effects of dilations, translations, rotations, and reflections on 2-dimensional figures using coordinates. (8.G.3) • Describe a sequence that exhibits the similarity between two figures by a sequence of rotations, reflections, translations, and dilations. (8.G.4) • Understand facts about the angles of triangles and angles created when parallel lines are cut by a transversal. (8.G.5) <u>Understand and apply the Pythagorean Theorem:</u> • Explain a proof of the Pythagorean Theorem and its converse. (8.G.6) • Use the Pythagorean Theorem find the unknown side lengths in right triangles. (8.G.7) • Apply the PT in real-world and mathematical problems in two and three dimensions. (8.G.7) • Apply the PT to find the distance between two points on the coordinate plane. (8.G.8)	• Finding volume and surface areas of pyramids and cones. (8.G.9) • Finding volume and surface areas of spheres. (8.G.9) • Real-world problems: Composite solids. (G-GMD.3) <u>13. Geometric Transformations:</u> • Translations (8.G.1-4) • Reflections (8.G.1-4) • Rotations (8.G.1-4) • Dilations (8.G.1-4) • Comparing transformations (8.G.3) <u>14. Congruence and Similarity:</u> • Understanding and applying congruent figures (8.G.2) • Understanding and applying similar figures (8.G.4) • Relating congruent and similar figures to geometric transformations. (8.G.3) <u>15. Statistics & Probability:</u> • Random sampling methods (7.SP.1) • Making inferences about populations (7.SP.2) • Defining outcomes, events and sample space. (7.SP.5-7) • Finding probabilities of events. (7.SP.5) • Approximating probability and relative frequency. (7.SP.6-7)		• B&D2: 15-5 Fundamental counting principle (Not in CCSS-M) • 15-6 Permutations (S.CP.9) • 15-7 Combinations (S.CP.9)

<u>Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres:</u> • Know the formulas for the volumes of cones, cylinders, and spheres. (8.G.9) • Use the volume formulas to solve real-world and mathematical problems. (8.G.9) <u>Statistics & Probability:</u> Investigate patterns of association in bivariate data: • Construct and interpret scatter plots of bivariate data. (8.SP.1) • Describe patterns such as clustering, outliers, positive or negative association, linear and nonlinear association in scatter plots of bivariate data. (8.SP.1) • For scatter plots that suggest a linear association, write the equation of a line of best fit. (8.SP.2) • Informally assess the model fit by judging the closeness of the data points to the line (and find values of residuals.) (A1: S-ID.6) • Use the equation of a line of best fit to solve problems and interpret the meaning of the slope. (8.SP.3) • Use technology to compute and interpret the correlation coefficient (r) of a linear fit. (A1: S-ID.8) • Find a *residual*. (A1: S-ID.6.b)	• Developing probability models (7.SP.7) <u>16. Probability of Compound Events:</u> • Compound events (7.SP.8) • Probability of compound events (7.SP.8) • Independent events (7.SP.8) • Dependent events (7.SP.8) <u>Supplemental Topics:</u> • The Pythagorean Theorem (8.G.6-8) • Interpreting Quartiles and Interquartile Range (6.SP.5, A1: S-ID.2-3) • Stem-and-Leaf Plots (Not in CCSS-M grade K-11 standards. Mentioned briefly in AP Probability and Statistics Standards.) • Understanding Box Plots and Mean Absolute Deviation (6.SP.5.c) • Systems of linear equations (8.EE.8) • Scatter plots (8.SP.1-2) • Modeling linear associations (8.SP.3)		

• Understand the difference between *correlation* and *causation*. (A1: S-ID.9) • Understand what a *categorical* variable is. (8.SP.4) • Construct and interpret a two-way table summarizing data of two variables. (8.SP.4) • Calculate relative frequencies for rows and columns to describe associations between the two variables in a table. (8.SP.4)			