Algebra 1 CPM Pacing Guide

Standards with an * denote Key Standards that are most heavily tested on CST

Homework Assignments are the Review & Preview problems.
Homework Assignments of optional lessons may be assigned as needed.
Homework Guide for student help is available online at www.cpm.org

Chapter Tests on power standards are recommended. District question bank is available for this purpose, contact Research and Development.

Technology CPM Textbook and Smart Board Files:

http://www.cpm.org/students/technology/algebra/index.html

2011-2012

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

CPM Text-Book	Standards * indicates key standards	Lessons in Order of Teaching	Week of
Chapter 1 **Problem Solving** **1.1 Intro Problems** **(Optional)** **1.2 Solving Problems**	1.1 Students use properties of numbers to demonstrate whether assertions are true or false. **(optional)** **Standard 5*** Introduction to the Standard by using Guess and Check Tables **Standard 5***: **<u>Students solve multistep problems, including word problems, involving linear equations</u>** and linear inequalities **<u>in one variable and provide justification for each step.</u>** **<u>CPM Textbook and Smart Board Files:</u>** http://www.cpm.org/students/technology/algebra/index.html	1.2.1 Solving Pr with Guess and Check 1.2.2 More Guess and Check 1.2.3 More Guess and Check Check for understanding: Quiz on Guess and Check Table **Optional lessons do not cover power standards** 1.1.1 Graphs **(Optional)** 1.1.2 Coordinate Plane **(Optional)** 1.1.3 Newton's Revenge **(Optional)** 1.1.4 Finding and Generalizing Patterns **(Optional)**	Week1 Begins 8/29

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 2 **Variables and Proportions** **2.1 Intro to Variables and Solving Equations** **2.2 Proportions**	**Standard 2***: **Students understand and use such operations as taking the opposite**, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents. **Standard 4***: **Students simplify expressions prior to solving linear equations and inequalities in one variable, such as 3(2x-5) + 4(x-2) = 12**. **Standard 5***: **Students solve multistep problems, including word problems, involving linear equations** and linear inequalities **in one variable and provide justification for each step.** **Standard 10*: Students add, subtract**, multiply, and divide **monomials and polynomials.** Students solve multistep problems, including word problems, by using these techniques.	2.1.1 Exploring Variables and Comb Like T 2.1.2 Simplifying Expressions by Comb Like T 2.1.3 Writing Algebraic Expressions 2.1.4 Using Zero to Simplify Algebraic Expressions. 2.1.5 Using Algebra Tiles to Simplify Alg. Expressions 2.1.6 Using Algebra Tiles to Compare Expressions 2.1.8 Using Algebra Tiles to Solve for x 2.1.9 More Solving Equations 2.2.1 Solving with Proportional Intuition 2.2.2 Sharing Proportion-Organizing Strategies 2.2.3 Using Proportional Relationships **Supplement Needed: Standard 4*** **Distributive Property** **Solving Equations with Distributive Property** **Factoring Out Greatest Common Factor** Chapter Closure Chapter Assessment - Power Standards **Required Materials:** Algebra Tiles, CPM Algebra Mats **Optional lessons do not cover power standards** 2.1.7 Simplifying and Recording Work **(Optional)**	Week 2 Week 3 Week 4
	Benchmark 1 Window: Week 5 September 26th –September 30th 2011		

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

CPM Text-Book	Standards * indicates key standards	Lessons in Order of Teaching	Week of
Chapter 3 **Graphs and Equations** **3.1 Graphing** **3.2 Solving Equations**	**Standard 6*: <u>Students graph a linear equation</u>** and compute the x- and **<u>y- intercepts</u>** (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$). **Standard 5***: **<u>Students solve multistep problems, including word problems, involving linear equations</u>** and linear inequalities **<u>in one variable and provide justification for each step.</u>**	3.1.1 Extending Patterns and Finding Rules 3.1.2 Tables, Graphs, Rules to Make Prediction 3.1.4 Completing Tables and Drawing Graphs 3.1.5 Graphs, Tables, and Rules 3.1.6 Complete Graphs 3.2.2 Determining Number of Solutions 3-80 Required 3.2.3 Solving Equations to Solve Problems 3.2.4 More Solving Equations to Solve Problems Chapter Closure Chapter Assessment-- Power Standards **Optional lessons do not cover power standards** 3.1.3 Using Graph. Calc., Identifying Solutions (optional) 3.1.7 Identifying Common Graphing Errors (optional) 3.2.1 Solving Eqt & Testing the Solution (optional)	Week 5 Starts 9/26 Week 6

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 4 **Multiple Representations** **4.1 Multiple Representations** **4.2 Systems of Equations**	**Standard 6*: <u>Students graph a linear equation and compute</u>** the x- and **<u>y- intercepts</u>** (e.g., graph 2x + 6y = 4). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by 2x + 6y < 4). **Standard 9*: <u>Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically.</u>** Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	4.1.2 Seeing Growth Different Representations 4.1.3 Connecting Linear Rules and Graphs 4.1.4 **y = mx+b** 4.1.5 Checking the Connections 4.1.6 Graphing Without and x→y Table 4.2.1 Intro to Systems of Equations 4.2.2 Writing Rules from Word Problems 4.2.3 Solving Systems Algebraically **<u>Supplement Needed:</u>** Indentify and compute the x-intercept Chapter Closure Chapter Assessment-- Power Standards **Optional lessons do not cover power standards** 4.1.1 Finding Connections b/n Representations (optional) 4.1.7 Completing the Web (optional) 4.2.4 Extending the Web to other Linear Situations (optional)	Week 7 Starts 10/10 Week 8 Week 9

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

CPM Text-Book	Standards * indicates key standards	Lessons in Order of Teaching	Week of
Chapter 5 Multiplication and Proportions **5.1 Solving Equations** **5.2 Proportions**	**Standard 4*: <u>Students simplify expressions prior to solving linear equations and inequalities in one variable, such as 3(2x-5) + 4(x-2) = 12</u>**. **Standard 5*: <u>Students solve multistep problems, including word problems, involving linear equations</u>** and linear inequalities **<u>in one variable and provide justification for each step.</u>** **Standard 10*:** Students add, subtract, **<u>multiply</u>**, and divide **<u>monomials and polynomials.</u>** Students solve multistep problems, including word problems, by using these techniques.	5.1.1 Exploring an Area Model 5.1.2 Multiplying Binomials and the Distributive Property 5.1.3 Using Generic Rectangle to Multiply 5.1.4 Solving Equations with Multiplication 5.1.5 Working with Multi-Variable Equations 5.1.6 Solving Equations with Manipulative Solve for y= mx+b problems only Chapter Closure Chapter Assessment-- Power Standards **Required Materials:** Algebra Tiles Highly Recommended **Optional lessons do not cover power standards** 5.2.1 Setting Up and Solving Proportions (optional) 5.2.2 Practice with Proportions (optional) 5.2.3 Applying Proportions (optional)	1.5 weeks Week 10 Starts 10/31 Week 11
	Benchmark 2: Week 12 **November 14 – November 18, 2011**		

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 6 **Systems of Equations** **6.1 Writing Equations** **6.2. Systems of Equations** **6.3 Pulling it All Together**	**Standard 5*: <u>Students solve multistep problems, including word problems, involving linear equations</u>** and linear inequalities **<u>in one variable and provide justification for each step.</u>** **Standard 7*: <u>Students verify that a point lies on a line, given an equation of the line.</u>** Students are able to derive linear equations using the point-slope formula. **Standard 9***: **<u>Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically.</u>** Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	6.1.1 Mathematical Sentences 6.1.2 Solving Word Problems by Writing Equations 6.1.3 Solving Problems by Writing Equations 6.2.1 Solving Systems Using Substitution 6.2.2 Connections: Systems, Solutions, and Graphs 6.2.3 Solving Systems Using Eliminations 6.2.4 More Eliminations 6.2.5 Choosing a Strategy for Solving Systems **Supplement:** **Coin Problems, Mixture Problems** 6.3.1 Pulling it All Together Chapter Closure Chapter Assessment-- Power Standards	Week 12 Starts 11/12 Week 13 Week 14

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 7 **Linear Relations** **7.1 Steepness and Slope** **7.2 Slope as Rate** **7.3 y = mx + b**	**Standard 6*: <u>Students graph a linear equation and compute the x- and y- intercepts (e.g., graph 2x + 6y = 4).</u>** They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by 2x + 6y < 4). **Standard 7*: <u>Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations using the point-slope formula.</u>** **Standard 8: <u>Students understand the concepts of parallel lines</u>** and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. (**optional)** **Standard 15*:** Students apply algebraic techniques to **<u>solve rate problems</u>**, work problems, and percent mixture problems.	7.1.1 y = mx + b 7.1.2 Using Equations to Make Predictions 7.1.3 Measuring Steepness: Intro to slope 7.1.4 Comparing Δy and Δx 7.1.5 More on Slope 7.2.1 Equation of a Line in Context 7.2.2 Slope as a Measurement of Rate 7.2.3 Rates of Change 7.3.1 Finding an Equation Given a Slope and a Point 7.3.2 Slopes of Parallel and Perpendicular Lines 7.3.3 Finding an Equation of a Line Through Two Points **Supplement: Include point-slope formula examples** Chapter 7 Closure Very Important Chapter Assessment-- Power Standards **Optional lessons do not cover power standards** 7.3.4 Applying y = mx + b to find Equations from Graphs (optional)	Week 15 is the week before Winter Recess Week 16 Starts 1/9 Week 17

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 8 **8.1 Factoring** **8.2 Quadratic Representation** **12.1.1 Factoring Shortcuts** **10.3 Completing the Square** **12.3 Deriving the Quad F-la** **8.3 Quadratic Formula**	**Standard 2*:** Students understand and use such operations as taking the opposite, finding the reciprocal, **taking a root**, and raising to a fractional power. They understand and use the rules of exponents. **Standard 14*: Students solve a quadratic equation by factoring or completing the square.** **Standard 19*: Students know the quadratic formula and are familiar with its proof by completing the square.** **Standard 20*: Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations**. **Benchmark 3: Week 21** **February 14 – February 17, 2011** **Standard 21*: Students graph quadratic functions and know that their roots are the *x*-intercepts.** **Standard 23*: Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.**	8.1.1 Intro to Factoring Quadratics 8.1.2 Factoring with Generic Rectangle 8.1.3 Factoring with Special Cases 8.1.4 Factoring Completely **Supplement:** **Factor Out Greatest Common Factor** 8.2.1 Investigating a Parabola 8.2.2 Multiple Representations for Quadratics 8.2.3 Zero Product Property 8.2.4 Solving Quad Equations by Factoring 8.2.5 Completing the Quadratic Web Direct Teach Quadratic Formula (song) 8.3.1 Intro to Quadratic Formula 8.3.2 More Solving Quadratic Equations 8.3.3 Choosing a Strategy Direct Teach Completing the Square 10.3.1 Completing the Squares 10.3.2 More Completing the Square Factoring Practice: 12.1.1 Factoring Shortcuts (teacher discretion to show short cut or continue with generic rectangle) **Supplement:** **Simplifying square roots (sqrt of 12)** 12.3.1 Deriving the Quadratic Formula **Supplement Power Standard 23 :** **Motion problems, application to quadratics** **Choose multiple choice problems and substitute in A,B, C, D and find true statement (correct answer)** Chapter Closure Chapter Assessment-- Power Standards **Required Materials:** Algebra Tiles, CPM Mat	Week 18 End of the First Semester 2nd Semester Starts 1/31 Week 19 Week 20 Week 21 Week 22

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

Chapter 9 **Inequalities** **9.1 Solving Inequalities** **9.2 Graphing Inequalities** **9.3 Systems of Inequalities**	**Standard 5*: <u>Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.</u>** **Standard 9***: **<u>Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.</u>** **Standard 3:** Students solve equations and inequalities involving absolute values. **(optional)**	9.1.2 More Solving Inequalities 9.2.1 Graphing Two-Variable Inequalities 9.2.2 Graphing Linear and Non-linear Inequalities 9.3.1 Systems of Inequalities (Linear only) 9.3.3 Applying Inequalities to Solve Problems Chapter Closure Chapter Assessment-- Power Standards **Optional lessons do not cover power standards** 9.1.1 Solving Linear , One-Variable Inequalities (optional) 9.2.3 Introduction to Absolute Value (Optional) 9.3.2 More Systems of Inequalities (optional)	Week 23 Starts 2/27 Starts 3/5 Week 24

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

CPM Text-Book	Standards * indicates key standards	Lessons	Time Frame
Chapter 10 & 12.1 **Simplifying and Solving** **10.1 Simplifying Expressions** **10.2 Solving Equations** **12.1 Adding & Subtracting Rational Expressions**	**Standard 10*:** Students add, subtract, **multiply and divide monomials and polynomials.** **Students solve multistep problems**, including word problems, by using these techniques. **Standard 12*: Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.** **Standard 13*: Students add, subtract (COMMON DENOMINATORS ONLY), multiply, and divide rational expressions** and functions. **Students solve both computationally and conceptually challenging problems by using these techniques.** **Standard 11:** (Not a Key Standard) Students apply basic factoring techniques to second-and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials. **Standard 3:** (Not a Key Standard) Students solve equations and inequalities involving absolute values.	10.1.1 Simplifying Expressions 10.1.2 Multiplying and Dividing Rational Expressions 10.1.3 Solving by Rewriting 10.1.4 Fraction Bars 10.2.1 Multiple Methods for Solving Equations (Square Root Equations post CST) 12.1.2 Adding and Subtracting Rational Expressions (Common Denominators Focus Only) 12.1.3 More Adding and Subtracting Rational Expressions (Common Denominators Focus Only) Chapter Closure Chapter Assessment-- Power Standards **Optional lessons do not cover power standards** 10.4.1 Simplifying Exponential Expressions 10.4.2 Zero and Negative Exponents (0.5 day) 10.4.3 Fractional Exponents and Scientific Notation (optional only for scientific notation) (0.5 day) 10.2.2 Determining the Number of Solutions **(Abs. Value problems optional)** 10.2.3 More Solving and an Application **(optional)** 10.2.4 Solving Inequalities with Absolute Value **(optional)** 10.2.5 Solving Absolute Value and Quadratic Inequalities **(optional)**	Week 25 3/19 Week 26

SAUSD Algebra I CPM Pacing Guide 2011 – 2012 (June 2011)

CPM Text-Book	Standards * indicates key standards	Lessons	Time Frame
Chapter 11 **Functions and Relations** **11.1 Functions** **11.2 Intercepts and Intersections** **11.3 Relation Treasure Hunt**	**Standard 16:** Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions. **(Optional)** **Standard 17:** Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression. **(Optional)** **Standard 18:** Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion. **(Optional)** **Benchmark 4 Week 26:** **March 26th – March 28th, 2011**	11.1.2 Relation Machines 11.1.3 Functions 11.1.4 Domain and Range Chapter Closure **Optional lessons do not cover power standards** 11.1.1 Describing a graph **(optional)** 11.1.5 Investigating a New Relation **(optional)** 11.1.6 Transformation of a Function **(optional)** 11.2.1 Intercepts and Intersections **(optional)** 11.2.2 Pulling It All Together **(optional)** 11.3.1 Relation Treasure Hunt **(optional)**	Week 27 0.5 wks Spring Break
Chapter 12 **Algebraic Extensions** **12.2 Work and Mixture Problems**	**Standard 15*: <u>Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.</u>**	12.2.1 Solving Work Problems 12.2.2 Solving Percent Mixture Problems **Supplement: Distance = Rate x Time problems**	4/9 Week 28
CST's Algebra 1 Key Standards Review **Key Standards marked with * in the pacing guide are 2, 4, 5, 6, 7, 9, 10, 12, 13, 14, 15, 19, 20, 21, and 23**			Week 29

12.4 Course Closure Activities **California Additional Topics (ACT)** **Geometry Readiness**		12.4.1 Using Data and Trend Lines to Make a Predictions 12.4.2 Analyzing Non-Linear Tile Patterns 12.4.3 Investigating a Complex Function 12.4.4. Using Algebra to Find a Maximum ACT Topics Pythagorean Theorem, Angles, Area, Volume, Circles	Post CST Topics