

Common Core State Standards

Algebra I

Traditional Pathway



Program Overview



This program was developed and reviewed by experienced math educators who have both academic and professional backgrounds in mathematics. This ensures: freedom from mathematical errors, grade level appropriateness, freedom from bias, and freedom from unnecessary language complexity.

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Special thanks to all the math educators who taught with or reviewed an earlier edition of these materials and provided feedback and suggestions. Your input has been invaluable.

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1 2 3 4 5 6 7 8 9 10

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BW Walch
South Portland, ME 04106
bwwalch.com
Printed in the United States of America



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Table of Contents for Instructional Units

Unit 1: Relationships Between Quantities

Topic A: Interpreting Structure in Expressions

Identifying Terms, Factors, and Coefficients
Interpreting Linear and Exponential Expressions

Topic B: Creating Equations and Inequalities in One Variable

Creating Linear Equations in One Variable
Creating Linear Inequalities in One Variable
Creating Exponential Equations

Conceptual Activities

Desmos. “Polygraph: Linear Inequalities.”
GeoGebra. “Simple Logic?”
GeoGebra. “Verbal to Algebraic!”
GeoGebra. “Linear Inequality Generator (1A).”

Conceptual Task

A Wing of a Deal, Parts 1 and 2

Topic C: Creating and Graphing Equations in Two Variables

Creating and Graphing Linear Equations in Two Variables
Creating and Graphing Exponential Equations

Conceptual Activities

Desmos. “Function Carnival, Part 2.”
Desmos. “Put the Point on the Line.”
GeoGebra. “Rise & Run (Revamped).”
GeoGebra. “Equation of a Line: Dynamic Illustrator.”

Conceptual Task

Weighing Job Offers, Parts 1 and 2

Topic D: Rearranging Formulas

Rearranging Formulas

Topic E: Solving Equations and Inequalities

Properties of Equality
Solving Linear Equations
Solving Linear Inequalities
Solving Exponential Equations

Conceptual Activities

Desmos. “Solutions to Systems of Linear Equations.”
Desmos. “Systems of Two Linear Equations.”

Conceptual Task

Inventory Indecision, Parts 1 and 2

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Topic F: Representing Constraints

Representing Constraints

Unit 1 Assessment

Station Activities

Set 1: Ratios and Proportions

Set 2: Solving Inequalities

Set 3: Solving Equations

Unit 2: Linear and Exponential Relationships

Topic A: Working with Rational Exponents

Working With Rational Exponents

Conceptual Activities

GeoGebra. “Classifying Rational Numbers.”

GeoGebra. “Rational Exponents.”

Conceptual Tasks

Illustrative Mathematics. “Computations with Complex Numbers,”
worksheets and teacher guide

Rational Decisions, Parts 1 and 2

Topic B: Graphs As Solution Sets and Function Notation

Graphing the Set of All Solutions

Intersecting Graphs

Domain and Range

Function Notation and Evaluating Functions

Conceptual Activities

Desmos. “Card Sort: Functions.”

Desmos. “Function Carnival, Part 2.”

GeoGebra. “Systems of Equations on a Graph.”

GeoGebra. “Domain and Range.”

Topic C: Solving Systems of Linear Equations

Solving Systems of Linear Equations by Substitution and Elimination

Solving Systems of Linear Equations by Graphing

Conceptual Activities

Desmos. “The Intersection.”

GeoGebra. “Solving a System of Equations by Elimination.”

GeoGebra. “Solving Systems Using Substitution.”

GeoGebra. “Solving Linear Systems Graphically.”

Conceptual Task

Boxing Match, Parts 1 and 2

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Tables of Contents for Instructional Units

Topic D: Solving Linear Inequalities in Two Variables and Systems of Inequalities

Solving Linear Inequalities in Two Variables

Solving Systems of Linear Inequalities

Conceptual Activity

GeoGebra. “System of Inequalities.”

Conceptual Task

Book Cover Hustle, Parts 1 and 2

Topic E: Sequences As Functions

Sequences As Functions

Conceptual Activities

GeoGebra. “Sequences (Dynamic Illustrator).”

GeoGebra. “Graphs of arithmetic sequences on a coordinate plane.”

Topic F: Interpreting Graphs of Functions

Identifying Key Features of Linear and Exponential Graphs

Average Rate of Change

Recognizing Average Rate of Change

Conceptual Activities

Desmos. “Polygraph: Exponentials.”

GeoGebra. “Average Rate of Change.”

Conceptual Task

Infectious Dilemma, Parts 1 and 2

Topic G: Analyzing Linear and Exponential Functions

Graphing Linear Functions

Graphing Exponential Functions

Conceptual Activities

Desmos. “Card Sort: Linear Functions.”

Desmos. “Match My Line.”

Desmos. “What Comes Next?”

GeoGebra. “Explore exponential vs. linear functions.”

Topic H: Comparing Functions

Comparing Linear Functions

Comparing Exponential Functions

Comparing Linear to Exponential Functions

Conceptual Activities

Desmos. “Avi and Benita’s Repair Shop.”

Desmos. “Game, Set, Flat.”

Conceptual Task

Saving for a Boat, Parts 1 and 2

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Topic I: Building Functions

Building Functions from Context

Constructing Functions from Graphs and Tables

Conceptual Task

Jumping Jamal, Parts 1 and 2

Topic J: Operating on Functions and Transformations

Operating on Functions

Transformations of Linear and Exponential Functions

Conceptual Activities

Desmos. “Marbleslides: Exponentials.”

GeoGebra. “Function Transformations.”

GeoGebra. “All operations on functions.”

Topic K: Arithmetic and Geometric Sequences

Arithmetic Sequences

Geometric Sequences

Topic L: Interpreting Parameters

Interpreting Parameters

Conceptual Activity

GeoGebra. “Parameters of a Linear Equation.”

Unit 2 Assessment

Station Activities

Comparing Linear Models

Relations Versus Functions/Domain and Range

Comparing Exponential Models

Interpreting Exponential Functions

Sequences

Solving Systems by Substitution and Elimination

Solving Systems by Graphing

Using Systems in Applications

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Tables of Contents for Instructional Units

Unit 3: Descriptive Statistics

Topic A: Working with a Single Measurement Variable

Representing Data Sets

Comparing Data Sets

Interpreting Data Sets

Conceptual Activities

Desmos. “LEGO Prices.”

Desmos. “Polygraph: Histograms.”

GeoGebra. “Lotto Tickets Simulation.”

GeoGebra. “Dot Plot Maker.”

GeoGebra. “Measures of Center.”

GeoGebra. “Visualize Measures of Center and Spread.”

GeoGebra. “Outlier Influence.”

Topic B: Working with Two Categorical and Quantitative Variables

Summarizing Data Using Two-Way Frequency Tables

Solving Problems Given Functions Fitted to Data

Analyzing Residuals

Fitting Linear Functions to Data

Conceptual Activity

Desmos. “Predicting Movie Ticket Prices.”

Conceptual Task

Time to Print in 3D, Parts 1 and 2

Topic C: Interpreting Linear Models

Interpreting Slope and y -intercept

Calculating and Interpreting the Correlation Coefficient

Distinguishing Between Correlation and Causation

Conceptual Activities

GeoGebra. “Correlation Experimentation.”

GeoGebra. “Correlation Sliders.”

Conceptual Task

Smartphone Surge, Parts 1 and 2

Unit 3 Assessment

Station Activities

Displaying and Interpreting Data

Line of Best Fit

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Unit 4: Expressions and Equations

Topic A: Interpreting Structure in Expressions

Interpreting Parts of an Expression

Interpreting Quadratic and Exponential Expressions

Conceptual Activity

GeoGebra. “Algebraic Expressions.”

Topic B: Operating with Polynomials

Adding and Subtracting Polynomials

Multiplying Polynomials

Conceptual Activity

GeoGebra. “Operations on Polynomials.”

Topic C: Writing Exponential Expressions in Equivalent Forms

Writing Exponential Expressions in Equivalent Forms

Conceptual Activity

GeoGebra. “Exponential Growth & Decay (Illustrated Meaning).”

Topic D: Creating and Solving Quadratic Equations in One Variable

Taking the Square Root of Both Sides

Factoring Expressions by the Greatest Common Factor

Factoring Expressions with $a = 1$

Factoring Expressions with $a > 1$

Solving Quadratic Equations by Factoring

Completing the Square

Applying the Quadratic Formula

Solving Quadratic Inequalities

Conceptual Activities

Desmos. “Build a Bigger Field.”

GeoGebra. “Factoring Expressions Using Algebra Tiles (1).”

Conceptual Task

Solution Squabble, Parts 1 and 2

Topic E: Creating Quadratic Equations in Two or More Variables

Creating and Graphing Equations Using Standard Form

Creating and Graphing Equations Using the x -intercepts

Creating and Graphing Equations Using Vertex Form

Rearranging Formulas Involving Quadratics

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Conceptual Activities

Desmos. “Match My Parabola.”

Desmos. “Penny Circle.”

GeoGebra. “The 3 forms of Quadratic functions.”

Conceptual Task

Toss Up, Parts 1 and 2

Topic F: Solving Systems of Linear and Quadratic Equations

Solving Systems Graphically

Solving Systems Algebraically

Conceptual Activity

GeoGebra. “The Evil Stepbrother.”

Unit 4 Assessment

Station Activities

Factoring

Solving Quadratics

Operations with Polynomials

Unit 5: Quadratic Functions and Modeling

Topic A: Working with the Number System

Rational and Irrational Numbers and Their Properties

Topic B: Interpreting Quadratic Functions

Interpreting Key Features of Quadratic Functions

Identifying the Domain of a Quadratic Function

Identifying the Average Rate of Change

Conceptual Activities

Desmos. “Domain and Range Introduction.”

Desmos. “Free-Range Functions.”

GeoGebra. “Average Rate of Change.”

GeoGebra. “Average Rate of Change Intervals.”

GeoGebra. “Quadratic in Vertex form with Key Features.”

Conceptual Task

Firework Celebration, Parts 1 and 2

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Topic A: Analyzing Quadratic Functions

Graphing Quadratic Functions

Interpreting Various Forms of Quadratic Functions

Conceptual Activities

Desmos. “Card Sort: Parabolas.”

GeoGebra. “The 3 forms of Quadratic functions.”

GeoGebra. “Graphing Quadratic Equations.”

Conceptual Task

Production Profit, Parts 1 and 2

Topic D: Building Functions

Building Functions from Context

Function Operations

Conceptual Activity

GeoGebra. “Building Functions Graphically.”

Conceptual Task

Coffee Compensation, Parts 1 and 2

Topic E: Transforming Functions

Replacing $f(x)$ with $f(x) + k$ and $f(x + k)$

Replacing $f(x)$ with $k \cdot f(x)$ and $f(k \cdot x)$

Conceptual Activities

Desmos. “Polygraph: Absolute Value.”

GeoGebra. “Function Transformations.”

Conceptual Task

This Curve You Can Change, Parts 1 and 2

Topic F: Graphing Other Functions

Square Root and Cube Root Functions

Absolute Value and Step Functions

Piecewise Functions

Conceptual Activities

Desmos. “Polygraph: Piecewise Functions.”

GeoGebra. “IRS Tax Function (2016) for Tax Payers Filing Single.”

GeoGebra. “Square Root Function.”

GeoGebra. “Step function explorer all parameters.”

Conceptual Task

Desmos. “Polygraph: Square Root Functions.”

PROGRAM OVERVIEW

Tables of Contents for Instructional Units

Topic E: Analyzing Functions

Analyzing Exponential Functions

Comparing Properties of Functions Given in Different Forms

Conceptual Activities

GeoGebra. “Exponential Functions: Graphs.”

GeoGebra. “Fastest Growing Function?”

Topic G: Finding Inverse Functions

Finding Inverse Functions

Conceptual Activity

GeoGebra. “Inverse functions.”

Unit 5 Assessment

Station Activities

Graphing Quadratic Equations

Quadratic Transformations in Vertex Form

PROGRAM OVERVIEW

Introduction

The *Common Core State Standards Traditional Pathway: Algebra I Program* is a complete set of materials developed around the Common Core State Standards, the CCSS curriculum map in Appendix A, and the Algebra I course descriptions. The components are designed to support students in meeting and exceeding the standards encompassed by the Algebra I course. The program realizes the benefits of exploratory and investigative learning, and employs a variety of instructional models to meet the needs of students across the range of learning styles.

This program realizes the benefits of exploratory and investigative learning and employs a variety of instructional models to meet the learning needs of students with a range of abilities.

The *Common Core State Standards Traditional Pathway: Algebra I Program* includes components that support problem-based learning, instruct and coach as needed, provide practice, and assess students' skills. Instructional tools and strategies are embedded throughout.

The set of unit materials or digital version of the program includes:

- More than 150 hours of lessons, addressing the five units of CCSS TP: Algebra I
- Essential Questions for each instructional topic
- Vocabulary
- Instruction and Guided Practice
- Problem-based Tasks and Coaching questions
- Step-by-step graphing calculator instructions for the TI-Nspire and the TI-83/84
- Station activities to promote collaborative learning and problem-solving skills

Purpose of Materials

The *Common Core State Standards Traditional Pathway: Algebra I Program* has been organized to coordinate with the CCSS Traditional Pathway: Algebra I content map and specifications from Appendix A of the Common Core State Standards.

Each lesson includes activities that offer opportunities for exploration and investigation. These activities incorporate concept and skill development and guided practice, then move on to the application of new skills and concepts in problem-solving situations. Throughout the lessons and activities, problems are contextualized to enhance rigor and relevance.

PROGRAM OVERVIEW

Introduction to the Program

This program includes all the topics addressed in the CCSS Traditional Pathway: Algebra I content map. These include:

- Relationships Between Quantities
- Linear and Exponential Relationships
- Descriptive Statistics
- Expressions and Equations
- Quadratic Functions and Modeling

The eight Mathematical Practices described in the Common Core are infused throughout and are as follows:

- CCSS.MP.1: Make sense of problems and persevere in solving them.
- CCSS.MP.2: Reason abstractly and quantitatively.
- CCSS.MP.3: Construct viable arguments and critique the reasoning of others.
- CCSS.MP.4: Model with mathematics.
- CCSS.MP.5: Use appropriate tools strategically.
- CCSS.MP.6: Attend to precision.
- CCSS.MP.7: Look for and make use of structure.
- CCSS.MP.8: Look for and express regularity in repeated reasoning.

Structure of the Teacher Resource

The *CCSS Traditional Pathway: Algebra I Program* is provided as a collection of unit books and an overview book, or in binder format. The materials are completely reproducible. You may also have purchased the *CCSS Traditional Pathway: Algebra I Teacher Resource* in digital format. In this case, electronic “bookmarks” allow you to access the sections quickly and easily. The digital format also facilitates printing and copying student pages.

The Program Overview is the first section. Written for you, this section helps you to navigate the materials, offers several graphic organizers and suggested strategies for their use, and shows how the lessons correlate to the Common Core State Standards and the CCSS Traditional Pathway: Algebra I content map found in Appendix A of the Common Core State Standards.

The remaining materials focus on content, knowledge, and application of the units in the CCSS Traditional Pathway: Algebra I curriculum: Relationships Between Quantities, Linear and Exponential Relationships, Descriptive Statistics, Expressions and Equations, and Quadratic

PROGRAM OVERVIEW

Introduction to the Program

Functions and Modeling. The units in the *CCSS Traditional Pathway: Algebra I Program* are designed to be flexible so that you can mix and match activities as the needs of your students and your instructional style dictate.

The Station Activities correspond to the content in the units and provide students with the opportunity to apply concepts and skills, while you have a chance to circulate, observe, speak to individuals and small groups, and informally assess and plan.

Each lesson begins with a pre-assessment and ends with a progress assessment. These allow you to assess students' progress as you move from lesson to lesson, enabling you to gauge how well students have understood the material and to differentiate as appropriate.

Glossary

The Glossary contains vocabulary terms and formulas from throughout the program, organized alphabetically. Each listing provides the term and the definition in both English and Spanish.

PROGRAM OVERVIEW

Unit Structure

All of the instructional units have common features. Each unit begins with a list of all the standards addressed in the topics and a list of one or more conceptual activities. Each unit also begins with a pre-assessment. Each topic begins with an overview of the standards addressed in the topic; Essential Questions; vocabulary (titled “Words to Know”); and a list of recommended websites to be used as additional resources.

Each lesson begins with a list of identified prerequisite skills that students need to have mastered in order to be successful with the new material in the upcoming lesson. This is followed by an introduction, key concepts, common errors/misconceptions, scaffolded practice problems, guided practice examples, a problem-based task with coaching questions and sample responses, a closure activity, and practice. Each topic ends with a progress assessment to evaluate students’ learning.

All of the components are described below and on the following pages for your reference.

Pre-Assessment

This can be used to gauge students’ prior knowledge and to inform instructional planning.

Common Core State Standards for the Topic

All standards that are addressed in the entire topic are listed.

Essential Questions

These are intended to guide students’ thinking as they proceed through the topic. By the end of each topic, students should be able to respond to the questions.

Words to Know

Vocabulary terms and formulas are provided as background information for instruction or to review key concepts that are addressed in the topic.

Recommended Resources

This is a list of websites that can be used as additional resources. Some websites are games; others provide additional examples and/or explanations. (*Note:* Links will be monitored and repaired or replaced as necessary.) Each Recommended Resource is also accessible through Walch’s cloud-based Curriculum Engine Learning Object Repository as a separate learning object that can be assigned to students.

PROGRAM OVERVIEW

Unit Structure

Conceptual Activities

Conceptual understanding serves as the foundation on which to build deeper understanding of mathematics. In an effort to build conceptual understanding of mathematical ideas and to provide more than procedural fluency and application, links to interactive open education and Desmos resources are included. (*Note:* These website links will be monitored and repaired or replaced as necessary.) These and many other open educational resources (OERs) are also accessible through the Learning Object Repository as separate objects that can be assigned to students.

Warm-Up

Each warm-up takes approximately 5 minutes and addresses either prerequisite and critical-thinking skills or previously taught math concepts.

Common Core State Standards for the Lesson

When topics are broken down into lessons, the specific standard or standards that are addressed are presented at the beginning of the instructional portion of the lesson.

Warm-Up Debrief

Each debrief provides the answers to the warm-up questions, and offers suggestions for situations in which students might have difficulties. A section titled Connection to the Lesson is also included in the debrief to help answer students' questions about the relevance of the particular warm-up activity to the upcoming instruction. Warm-Ups with debriefs are also provided in PowerPoint presentations.

Identified Prerequisite Skills

This list cites the skills necessary to be successful with the new material.

Introduction

This brief paragraph gives a description of the concepts about to be presented and often contains some Words to Know.

Key Concepts

Provided in bulleted form, this instruction highlights the important ideas and/or processes for meeting the standard.

Graphing Calculator Directions

Step-by-step instructions for using a TI-Nspire and a TI-83/84 are provided whenever graphing calculators are referenced.

PROGRAM OVERVIEW

Unit Structure

Common Errors/Misconceptions

This is a list of the common errors students make when applying Key Concepts. This list suggests what to watch for when students arrive at an incorrect answer or are struggling with solving the problems.

Scaffolded Practice (Printable Practice)

This set of 10 printable practice problems provides introductory level skill practice for the lesson. This practice set can be used during instruction time.

Guided Practice

This section provides step-by-step examples of applying the Key Concepts. The three to five examples are intended to aid during initial instruction, but are also for individuals needing additional instruction and/or for use during review and test preparation.

Enhanced Instructional PowerPoint (Presentation)

Each lesson includes an instructional PowerPoint presentation with the following components: Warm-Up, Key Concepts, and Guided Practice. Selected Guided Practice examples include GeoGebra applets. These instructional PowerPoints are downloadable and editable.

Problem-Based Task

This activity can serve as the centerpiece of a problem-based lesson, or it can be used to walk students through the application of the standard, prior to traditional instruction or at the end of instruction. The task makes use of critical-thinking skills.

Optional Problem-Based Task Coaching Questions with Sample Responses

These questions scaffold the task and guide students to solving the problem(s) presented in the task. They should be used at the discretion of the teacher for students requiring additional support. The Coaching Questions are followed by answers and suggested appropriate responses to the coaching questions. In some cases answers may vary, but a sample answer is given for each question.

Recommended Closure Activity

Students are given the opportunity to synthesize and reflect on the lesson through a journal entry or discussion of one or more of the Essential Questions.

PROGRAM OVERVIEW

Unit Structure

Problem-Based Task Implementation Guide

This instructional overview, found with selected Problem-Based Tasks in each unit, highlights connections between the task and the lesson's key concepts and Mathematical Practices. The Implementation Guide also offers suggestions for facilitating and monitoring, and provides alternative solutions.

Printable Practice (Sets A and B) and Interactive Practice (Set A)

Each lesson includes two sets of practice problems to support students' achievement of the learning objectives. They can be used in any combination of teacher-led instruction, cooperative learning, or independent application of knowledge. Each Practice A is also available as an interactive Learnosity activity with Technology-Enhanced Items.

Progress Assessment

Each lesson ends with 10 multiple-choice questions, as well as one extended-response question that incorporates critical thinking and writing components. This can be used to document the extent to which students grasp the concepts and skills addressed during instruction.

Unit Assessment

Each unit ends with 12 multiple-choice questions and three extended-response questions that incorporate critical thinking and writing components. This can be used to document the extent to which students grasped the concepts and skills of each unit.

Answer Key

Answers for all of the Warm-Ups and practice problems are provided at the end of each unit.

Station Activities

Most units include a collection of station-based activities to provide students with opportunities to practice, reinforce, and apply mathematical skills and concepts. The debriefing discussions after each set of activities provide an important opportunity to help students reflect on their experiences and synthesize their thinking.

Conceptual Tasks

These engaging tasks provide opportunities for students to deepen their understanding and develop their conceptual knowledge of math concepts. These tasks provide multiple entry points and are accessible for ALL learners.

PROGRAM OVERVIEW

Standards Correlations

Each lesson in the *CCSS Algebra I* program was written specifically to address the Common Core State Standards. Each lesson lists the standards covered in all the lessons, and each lesson lists the standards addressed in that particular section. In this section, you'll find a comprehensive list mapping the lessons to the CCSS.

Guide to Common Core State Standards Annotation

As you use this program, you will come across a symbol included with the Common Core standards for some of the lessons and activities. The description of the star symbol is found below, taken verbatim from the Common Core State Standards Initiative website, at www.corestandards.org.

Symbol: ★

Denotes: Modeling Standards

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. Specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

From <http://www.walch.com/CCSS/00006>

Symbol: (+)

Denotes: College and Career Readiness Standards

Advanced mathematics standards that are required in higher-level courses such as advanced statistics may also be included in lower-level courses. These additional standards are denoted by (+). According to the Common Core State Standards Initiative, “the evidence concerning college and career readiness shows clearly that the knowledge, skills, and practices important for readiness include a great deal of mathematics prior to the boundary defined by (+) symbols in these standards. Indeed, some of the highest priority content for college and career readiness comes from Grades 6–8.”

From <http://www.walch.com/CCSS/00004>

Connections to Future Courses

This section provides a map between topics introduced in each unit of this course and subsequent courses where each topic is revisited and built upon.

PROGRAM OVERVIEW

Standards Correlations

Lesson	Lesson number	Title	Standard(s)
Unit 1: Relationships Between Quantities and Reasoning with Equations			
Topic A	Interpreting Structure in Expressions		
	1.1	Identifying Terms, Factors, and Coefficients	A.SSE.A.1a*
	1.2	Interpreting Linear and Exponential Expressions	A.SSE.A.1b*
Topic B	Creating Equations and Inequalities in One Variable		
	1.3	Creating Linear Equations in One Variable	A.CED.A.1* N.Q.A.2* N.Q.A.3*
	1.4	Creating Linear Inequalities in One Variable	A.CED.A.1*
	1.5	Creating Exponential Equations	A.CED.A.1*
Topic C	Creating and Graphing Equations in Two Variables		
	1.6	Creating and Graphing Linear Equations in Two Variables	A.CED.A.2* N.Q.A.1*
	1.7	Creating and Graphing Exponential Equations	A.CED.A.2* N.Q.A.1*
Topic D	Rearranging Formulas		
	1.8	Rearranging Formulas	A.CED.A.4*
Topic E	Solving Equations and Inequalities		
	1.9	Properties of Equality	A.REI.A.1
	1.10	Solving Linear Equations	A.REI.B.3
	1.11	Solving Linear Inequalities	A.REI.B.3
	Representing Constraints		
Topic F	1.12	Representing Constraints	A.CED.A.3*
Unit 2: Linear and Exponential Relationships			
Topic A	Working with Rational Exponents		
	2.1	Working with Rational Exponents	N.RN.A.1 N.RN.A.2
Topic B	Graphs As Solution Sets and Function Notation		
	2.2	Graphing the Set of All Solutions	A.REI.D.10
	2.3	Intersecting Graphs	A.REI.D.11*
	2.4	Domain and Range	F.IF.A.1
	2.5	Function Notation and Evaluating Functions	F.IF.A.2

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Standards Correlations

Lesson	Lesson number	Title	Standard(s)
Topic C	Solving Systems of Linear Equations		
	2.6	Solving Systems of Linear Equations by Substitution and Elimination	A.REI.C.5 A.REI.C.6
	2.7	Solving Systems of Linear Equations by Graphing	A.REI.C.6
Topic D	Solving Linear Inequalities in Two Variables and Systems of Inequalities		
	2.8	Solving Linear Inequalities in Two Variables	A.REI.D.12
	2.9	Solving Systems of Linear Inequalities	A.REI.D.12
Topic E	Sequences As Functions		
	2.10	Sequences As Functions	F.IF.A.3
Topic F	Interpreting Graphs of Functions		
	2.11	Identifying Key Features of Linear and Exponential Graphs	F.IF.B.4★ F.IF.B.5★
	2.12	Average Rate of Change	F.IF.B.6★ F.LE.A.1a★
	2.13	Recognizing Average Rate of Change	F.IF.B.6★ F.LE.A.1b★ F.LE.A.1c★
Topic G	Analyzing Linear and Exponential Functions		
	2.14	Graphing Linear Functions	F.IF.C.7a★
	2.15	Graphing Exponential Functions	F.IF.C.7e★
Topic H	Comparing Functions		
	2.16	Comparing Linear Functions	F.IF.C.9
	2.17	Comparing Exponential Functions	F.IF.C.9
	2.18	Comparing Linear to Exponential Functions	F.LE.A.3★
Topic I	Building Functions		
	2.19	Building Functions from Context	F.BF.Aa★
	2.20	Constructing Functions from Graphs and Tables	F.LE.A.2★
Topic J	Operating on Functions and Transformations		
	2.21	Operating on Functions	F.BF.A.1b★
	2.22	Transformations of Linear and Exponential Functions	F.BF.B.3
Topic K	Arithmetic and Geometric Sequences		
	2.23	Arithmetic Sequences	F.BF.A.2★
	2.24	Geometric Sequences	F.BF.A.2★
Topic L	Interpreting Parameters		
	2.25	Interpreting Parameters	F.LE.B.5★

PROGRAM OVERVIEW

Standards Correlations

Unit 3: Descriptive Statistics			
Lesson	Lesson number	Title	Standard(s)
Topic A	Working with a Single Measurement Variable		
	3.1	Representing Data Sets	S.ID.A.1★
	3.2	Comparing Data Sets	S.ID.A.2★
	3.3	Interpreting Data Sets	S.ID.A.3★
Topic B	Working with Two Categorical and Quantitative Variables		
	3.4	Summarizing Data Using Two-Way Frequency Tables	S.ID.B.5★
	3.5	Solving Problems Given Functions Fitted to Data	S.ID.B.6a★
	3.6	Analyzing Residuals	S.ID.B.6b★
	3.7	Fitting Linear Functions to Data	S.ID.B.6c★
Topic C	Interpreting Linear Models		
	3.8	Interpreting Slope and y -intercept	S.ID.C.7★
	3.9	Calculating and Interpreting the Correlation Coefficient	S.ID.C.8★
	3.10	Distinguishing Between Correlation and Causation	S.ID.C.9★
Unit 4: Expressions and Equations			
Lesson	Lesson number	Title	Standard(s)
Topic A	Interpreting Structure in Expressions		
	4.1	Interpreting Parts of an Expression	A.SSE.A.1a★
	4.2	Interpreting Quadratic and Exponential Expressions	A.SSE.A.1b★
Topic B	Operating with Polynomials		
	4.3	Adding and Subtracting Polynomials	A.APR.A.1
	4.4	Multiplying Polynomials	A.APR.A.1
Topic C	Writing Exponential Expressions in Equivalent Forms		
	4.5	Writing Exponential Expressions in Equivalent Forms	A.SSE.B.3c★

PROGRAM OVERVIEW

Standards Correlations

Topic D	Creating and Solving Quadratic Equations in One Variable		
	4.6	Taking the Square Root of Both Sides	A.CED.A.1★ A.REI.B.4b
	4.7	Factoring Expressions by the Greatest Common Factor	A.SSE.A.2
	4.8	Factoring Expressions with $a = 1$	A.SSE.A.2
	4.9	Factoring Expressions with $a > 1$	A.SSE.A.2
	4.10	Solving Quadratic Equations by Factoring	A.SSE.A.2 A.CED.A.1★ A.REI.B.4b
	4.11	Completing the Square	A.SSE.A.2 A.CED.A.1★ A.REI.B.4a A.REI.B.4b
	4.12	Applying the Quadratic Formula	A.CED.A.1★ A.REI.B.4a A.REI.B.4b
4.13	Solving Quadratic Inequalities	A.SSE.A.2 A.CED.A.1★ A.REI.B.4b	
Topic E	Creating Quadratic Equations in Two or More Variables		
	4.14	Creating and Graphing Equations Using Standard Form	A.CED.A.2★ A.SSE.B.3a★
	4.15	Creating and Graphing Equations Using the x -intercepts	A.CED.A.2★ A.SSE.B.3a★
	4.16	Creating and Graphing Equations Using Vertex Form	A.CED.A.2★ A.SSE.B.3b★
4.17	Rearranging Formulas Involving Quadratics	A.CED.A.4★	
Topic F	Solving Systems of Linear and Quadratic Equations		
	4.18	Solving Systems Graphically	A.REI.C.7
4.19	Solving Systems Algebraically	A.REI.C.7	

PROGRAM OVERVIEW

Standards Correlations

Unit 5: Quadratic Functions and Modeling			
Lesson	Lesson number	Title	Standard(s)
Topic A	Working with the Number System		
	5.1	Rational and Irrational Numbers and Their Properties	N.RN.A.2 N.RN.B.3
Topic B	Interpreting Quadratic Functions		
	5.2	Interpreting Key Features of Quadratic Functions	F.IF.B.4★ F.IF.C.7a★
	5.3	Identifying the Domain of a Quadratic Function	F.IF.B.5★
	5.4	Identifying the Average Rate of Change	F.IF.B.6★
Topic C	Analyzing Quadratic Functions		
	5.5	Graphing Quadratic Functions	F.IF.C.7a★
	5.6	Interpreting Various Forms of Quadratic Functions	F.IF.C.7a★ F.IF.C.8a
Topic D	Building Functions		
	5.7	Building Quadratic Functions from Context	F.BF.A.1a★
	5.8	Function Operations	F.BF.A.1b★
Topic E	Transforming Functions		
	5.9	Replacing $f(x)$ with $f(x) + k$ and $f(x + k)$	F.BF.B.3
	5.10	Replacing $f(x)$ with $k \cdot f(x)$ and $f(k \cdot x)$	F.BF.B.3
Topic F	Graphing Other Functions		
	5.11	Square Root and Cube Root Functions	F.IF.C.7b★
	5.12	Absolute Value and Step Functions	F.IF.C.7b★
	5.13	Piecewise Functions	F.IF.C.7b★
Topic G	Analyzing and Comparing Functions		
	5.14	Analyzing Exponential Functions	F.IF.C.8b
	5.15	Comparing Properties of Functions Given in Different Forms	F.IF.C.9 F.LE.A.3★
Topic H	Finding Inverse Functions		
	5.16	Finding Inverse Functions	F.BF.B.4a