

Algebra 1 Common Core (CCSS-Alg1) Content

Module 1: Relationships Between Quantities and Reasoning with Equations and Their Graphs

Topic A: Introduction to Functions Studied this Year—Graphing Stories

- Lesson 1: Graphs of Piecewise Linear Functions
- Lesson 2: Graphs of Quadratic Functions
- Lesson 3: Graphs of Exponential Functions
- Lesson 4: Analyzing Graphs—Water Usage During a Typical Day at School
- Lesson 5: Two Graphing Stories

Topic B: The Structure of Expressions

- Lesson 6: Algebraic Expressions—The Distributive Property
- Lesson 7: Algebraic Expressions—The Commutative and Associative Properties
- Lesson 8: Adding and Subtracting Polynomials
- Lesson 9: Multiplying Polynomials

Mid-Module Assessment

Topic C: Solving Equations and Inequalities

- Lesson 10: True and False Equations
- Lesson 11: Solution Sets for Equations and Inequalities
- Lesson 12: Solving Equations
- Lesson 13: Some Potential Dangers when Solving Equations
- Lesson 14: Solving Inequalities
- Lesson 15: Solution Sets of Two or More Equations (or Inequalities) Joined by “And” or “Or”
- Lesson 16: Solving and Graphing Inequalities Joined by “And” or “Or”
- Lesson 17: Equations Involving Factored Expressions
- Lesson 18: Equations Involving a Variable Expression in the Denominator
- Lesson 19: Rearranging Formulas
- Lessons 20-21: Solution Sets to Equations and Inequalities with Two Variables
- Lessons 22-23: Solution Sets to Simultaneous Equations
- Lesson 24: Applications of Systems of Equations and Inequalities

Topic D: Creating Equations to Solve Problems

- Lesson 25: Solving Problems in Two Ways—Rates and Algebra
- Lessons 26-27: Recursive Challenge Problem—The Double and Add 5 Game

Lesson 28: Federal Income Tax
End-of-Module Assessment

Module 2: Descriptive Statistics

Topic A: Shapes and Centers of Distributions

- Lesson 1: Distributions and Their Shapes
- Lesson 2: Describing the Center of a Distribution
- Lesson 3: Estimating Centers and Interpreting the Mean as a Balance Point

Topic B: Describing Variability and Comparing Distributions

- Lesson 4: Summarizing Deviations from the Mean
- Lesson 5: Measuring Variability for Symmetrical Distributions
- Lesson 6: Interpreting the Standard Deviation
- Lesson 7: Measuring Variability for Skewed Distributions (Interquartile Range)
- Lesson 8: Comparing Distributions

Mid-Module Assessment

Topic C: Categorical Data on Two Variables

- Lesson 9: Summarizing Bivariate Categorical Data
- Lesson 10: Summarizing Bivariate Categorical Data with Relative Frequencies
- Lesson 11: Conditional Relative Frequencies and Association

Topic D: Numerical Data on Two Variables

- Lessons 12–13: Relationships Between Two Numerical Variables
- Lesson 14: Modeling Relationships with a Line
- Lesson 15: Interpreting Residuals from a Line
- Lesson 16: More on Modeling Relationships with a Line
- Lessons 17–18: Analyzing Residuals
- Lesson 19: Interpreting Correlation
- Lesson 20: Analyzing Data Collected on Two Variables

End-of-Module Assessment

Module 3: Linear and Exponential Functions

Topic A: Linear and Exponential Sequences

- Lesson 1: Integer Sequences—Should You Believe in Patterns?
- Lesson 2: Recursive Formulas for Sequences
- Lesson 3: Arithmetic and Geometric Sequences

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Lesson 4: Why Do Banks Pay YOU to Provide Their Services?
Lesson 5: The Power of Exponential Growth
Lesson 6: Exponential Growth—U.S. Population and World Population
Lesson 7: Exponential Decay

Topic B: Functions and Their Graphs

Lesson 8: Why Stay with Whole Numbers?
Lessons 9–10: Representing, Naming, and Evaluating Functions
Lesson 11: The Graph of a Function
Lesson 12: The Graph of the Equation $y = f(x)$
Lesson 13: Interpreting the Graph of a Function
Lesson 14: Linear and Exponential Models—Comparing Growth Rates

Mid-Module Assessment

Topic C: Transformations of Functions

Lesson 15: Piecewise Functions
Lesson 16: Graphs Can Solve Equations Too
Lessons 17–20: Four Interesting Transformations of Functions
Topic D: Using Functions and Graphs to Solve Problems
Lesson 21: Comparing Linear and Exponential Models Again
Lesson 22: Modeling an Invasive Species Population
Lesson 23: Newton’s Law of Cooling
Lesson 24: Piecewise and Step Functions in Context

End-of-Module Assessment

Module 4: Polynomial and Quadratic Expressions, Equations, and Functions

Topic A: Quadratic Expressions, Equations, Functions, and Their Connection to Rectangles

Lessons 1–2: Multiplying and Factoring Polynomial Expressions
Lessons 3–4: Advanced Factoring Strategies for Quadratic Expressions
Lesson 5: The Zero Product Property
Lesson 6: Solving Basic One-Variable Quadratic Equations
Lesson 7: Creating and Solving Quadratic Equations in One Variable
Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions

Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$

Lesson 10: Interpreting Quadratic Functions from Graphs and Tables

Mid-Module Assessment

Topic B: Using Different Forms for Quadratic Functions

Lessons 11–12: Completing the Square
Lesson 13: Solving Quadratic Equations by Completing the Square
Lesson 14: Deriving the Quadratic Formula
Lesson 15: Using the Quadratic Formula
Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$
Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$

Topic C: Function Transformations and Modeling

Lesson 18: Graphing Cubic, Square Root, and Cube Root Functions
Lesson 19: Translating Functions
Lesson 20: Stretching and Shrinking Graphs of Functions
Lesson 21: Transformations of the Quadratic Parent Function, $f(x) = x^2$
Lesson 22: Comparing Quadratic, Square Root, and Cube Root Functions Represented in Different Ways
Lessons 23–24: Modeling with Quadratic Functions

End-of-Module Assessment

Module 5: A Synthesis of Modeling with Equations and Functions

Topic A: Elements of Modeling

Lesson 1: Analyzing a Graph
Lesson 2: Analyzing a Data Set
Lesson 3: Analyzing a Verbal Description

Topic B: Completing the Modeling Cycle

Lesson 4: Modeling a Context from a Graph
Lesson 5: Modeling from a Sequence
Lessons 6–7: Modeling a Context from Data
Lessons 8–9: Modeling a Context from a Verbal Description

End-of-Module Assessment

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