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Chapter 1 Basics of Algebra

Lesson	Topic	IAS
1-1 Classifying Numbers	A) Identifying Types of Numbers	AI.NE.1
	B) Number Sets	
1-2 Order of Operations	A) Expressions with Exponents	8.C.1
	B) Expressions with Grouping Symbols	
1-3 Parts of Algebraic Expressions	A) Variables	
	B) Terms	
	C) Coefficients	
1-4 Expressions and Equations	A) Identifying Expressions and Equations	
	B) Writing Expressions and Equations	
1-5 Simplifying Expressions	A) Like Terms	7.AF.1
	B) Multiplying Terms with Different Variables	
1-6 Distributive Property	A) Distributive Property to Simplify Expressions	7.AF.1
	B) Order of Operations with Variable Expressions	
1-7 Relations	A) Identifying Relations	AI.F.3
	B) Domain	
	C) Range	
1-8 Functions	A) Identifying Functions	AI.F.1
	B) Identifying Inputs and Outputs of Functions	
1-9 Function Notation	A) Writing Function Notation	AI.F.1, AI.F.2
	B) Input and Output in Function Notation	
	C) Evaluating Equations Written in Function Notation	

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Chapter 2 Solving Equations

Lesson	Topic	IAS
2-1 One-Step and Two-Step Equations	A) Solutions of One-Variable Equations	AI.L.1
	B) Solving One-Step Equations	
	C) Solving Two-Step Equations	
2-2 Multi-Step Equations	A) Solving Multi-Step Equations	AI.L.1
	B) Equations with Zero, One, or Many Solutions	
2-3 Equations with Rational Numbers	A) Solving Equations with Rational Coefficients	AI.L.1
	B) Solving Equations with Grouping Symbols	
2-4 Proportions	A) Writing Proportions	AI.L.1
	B) Solving Proportions	
	C) Proportions with Zero, One, or Many Solutions	
2-5 Literal Equations	A) Solving One-Step Literal Equations	AI.L.7
	B) Solving Two-Step Literal Equations	
	C) Solving Multi-Step Literal Equations	
2-6 Absolute Value Equations	A) Solving Absolute Value Equations with Single Variable Inside Absolute Value	AII.PR.4
	B) Solving Absolute Value Equations with Linear Expression Inside Absolute Value	
	C) Writing Absolute Value Equations	

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Chapter 3 Linear Functions

Lesson	Topic	IAS
3-1 Direct Variation	A) Graphs and Tables of Direct Variation	AI.L.3, AI.L.4, AI.QE.1
	B) Writing and Graphing Equations of Direct Variation	
3-2 Standard Form	A) Solutions of Two-Variable Equations	AI.F.4, AI.L.3, AI.L.4, AI.L.5, AI.L.7, AI.QE.1
	B) Linear Equations in Standard Form	
	C) x- and y-Intercepts	
3-3 Rate of Change	A) Rate of Change Equations	AI.QE.1
	B) Finding Rate of Change	
3-4 Slope	A) Classifying Slopes of Lines	AI.F.4, AI.QE.1
	B) Slopes of Lines from Graphs	
	C) Slopes of Lines from Points	
3-5 Point-Slope Form	A) Linear Equations in Point-Slope Form	AI.L.3, AI.L.4, AI.L.5
	B) Writing Equations in Point-Slope Form	
	C) Graphing Equations in Point-Slope Form	
3-6 Slope-Intercept Form	A) Linear Equations in Slope-Intercept Form	AI.L.3, AI.L.4, AI.L.5, AI.L.7
	B) Identifying the Slope and y-Intercept from Equations in Slope-Intercept Form	
	C) Writing and Graphing Equations in Slope-Intercept Form	
	D) Point-Slope and Slope-Intercept Forms	
3-7 Horizontal and Vertical Lines	A) Slopes of Horizontal and Vertical Lines	AI.L.3, AI.L.4, AI.L.5
	B) Graphing Equations of Horizontal and Vertical Lines	
	C) Writing Equations of Horizontal and Vertical Lines	
3-8 Parallel and Perpendicular Lines	A) Slopes of Parallel Lines	AI.L.3, AI.L.4
	B) Equations of Parallel Lines Through Given Points	
	C) Slopes of Perpendicular Lines	
	D) Equations of Perpendicular Lines Through Given Points	
3-9 Scatter Plots and Lines of Fit	A) Scatter Plots	AI.DS.3, AI.L.4
	B) Lines of Fit	
	C) Making Predictions with Lines of Fit	

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Chapter 3 Linear Functions (cont.)

Lesson	Topic	IAS
3-10 Residuals and Correlation	A) Residuals and Residual Plots	AI.DS.3, AI.DS.4
	B) Correlation Coefficients	
	C) Correlation and Causation	
3-11 Inverse Relations	A) Finding the Inverse of Sets of Points	AII.F.2, AII.F.3
	B) Graphing Inverses	
	C) Inverses in Function Notation	

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Chapter 4 Solving Inequalities

Lesson	Topic	IAS
4-1 One-Step and Two-Step Inequalities	A) Solutions of One-Variable Inequalities	AI.L.1
	B) Solving One-Step Inequalities	
	C) Solving Two-Step Inequalities	
4-2 Multi-Step Inequalities	A) Solving Multi-Step Inequalities	AI.L.1
	B) Inequalities with Zero, Many, or Infinite Solutions	
	C) Graphing Solutions of Multi-Step Inequalities	
4-3 Inequalities with Rational Numbers	A) Solving Inequalities with Rational Coefficients	AI.L.1
	B) Solving Inequalities with Grouping Symbols	
4-4 Graphing and Writing Compound Inequalities	A) Graphing Compound Inequalities	AI.L.2
	B) Writing Compound Inequalities from Graphs	
	C) Graphing Special Cases of Compound Inequalities	
4-5 Solving Compound Inequalities	A) Solutions of Compound Inequalities	AI.L.2
	B) Solving Compound Inequalities	
	C) Graphing Solutions of Compound Inequalities	
4-6 Absolute Value Inequalities	A) Solutions of Absolute Value Inequalities	AII.PR.4
	B) Writing Absolute Value Inequalities as Compound Inequalities	
	C) Solving Absolute Value Inequalities by Writing Them as Compound Inequalities	
	D) Graphing Absolute Value Inequalities by Writing Them as Compound Inequalities	
4-7 Solving Absolute Value Inequalities	A) Solving Absolute Value Inequalities with Single Variable Inside Absolute Value	AII.PR.4
	B) Solving Absolute Value Inequalities with Linear Expression Inside Absolute Value	
4-8 Linear Inequalities	A) Solutions of Two-Variable Inequalities	AI.L.6
	B) Graphing Linear Inequalities	
	C) Writing Linear Inequalities	

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Chapter 5 Systems of Linear Equations and Inequalities

Lesson	Topic	IAS
5-1 Solutions of Systems of Equations	A) Solutions of Systems of Linear Equations	AI.SEI.1
	B) Graphs of Systems of Equations and the Number of Solutions	
5-2 Graphing to Solve Systems of Equations	A) Graphing Systems of Linear Equations	AI.SEI.1, AI.SEI.3
	B) Graphing to Solve Systems of Linear Equations	
5-3 Using Substitution to Solve Systems of Equations	A) Substitution to Solve Systems of Linear Equations with One Variable Isolated	AI.SEI.2, AI.SEI.3
	B) Substitution to Solve Systems of Linear Equations After Isolating a Variable	
5-4 Using Elimination to Solve Systems of Equations	A) Addition or Subtraction Property of Equality to Eliminate a Variable	AI.SEI.2, AI.SEI.3
	B) Multiplication and Addition or Subtraction Property of Equality to Eliminate a Variable	
5-5 Systems of Linear Inequalities	A) Solutions of Systems of Linear Inequalities	AI.SEI.4
	B) Graphing Systems of Linear Inequalities	
	C) Writing Systems of Linear Inequalities	

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Chapter 6 Exponents and Exponential Functions

Lesson	Topic	IAS
6-1 Integer Exponents	A) Numerical Expressions with Nonpositive Integer Exponents	AI.NE.2
	B) Variable Expressions with Nonpositive Integer Exponents	
6-2 Product of Powers Property	A) Expanding Expressions to Show the Product of Powers Property	AI.NE.2
	B) Simplify Expressions with the Product of Powers Property	
6-3 Quotient of Powers Property	A) Expanding Expressions to Show the Quotient of Powers Property	AI.NE.2
	B) Simplifying Expressions with the Quotient of Powers Property	
6-4 Combining Product and Quotient of Powers Properties	A) Simplifying Products with the Product and Quotient of Power Properties	AI.NE.2
	B) Simplifying Quotients with the Product and Quotient of Power Properties	
6-5 Power of Power Property	A) Expanding Expressions to Show the Power of Power Property	AI.NE.2
	B) Simplifying Expressions with the Power of Power Property	
6-6 Power of Product Property	A) Expanding Expressions to Show the Power of Product Property	AI.NE.2
	B) Simplifying Expressions with the Power of Product Property	
6-7 Power of Quotient Property	A) Expanding Expressions to Show the Power of Quotient Property	AI.NE.2
	B) Simplifying Expressions with the Power of Quotient Property	
6-8 Combining All Exponent Properties	A) Simplifying Expressions Using Two to Three Exponent Properties	AI.NE.2
	B) Simplifying Expressions Using Three to Four Exponent Properties	
	C) Simplifying Expressions Using All Exponent Properties	

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Chapter 6 Exponents and Exponential Functions (cont.)

Lesson	Topic	IAS
6-9 Solving Exponential Equations	A) Solutions of Exponential Equations	AII.EL.5
	B) Exponential Equations with Equivalent Bases	
	C) Exponential Equations with Different Bases	

Chapter 7 Arithmetic and Geometric Sequences

Lesson	Topic	IAS
7-1 Introduction to Sequences	A) Sequences	
	B) Terms of Sequences	
	C) Types of Sequences	
7-2 Arithmetic Sequences	A) Finding Common Differences from Terms of Arithmetic Sequences	AI.QE.1
	B) Extending Arithmetic Sequences	
	C) Writing Terms of Arithmetic Sequences from Terms and Common Differences	
7-3 Recursive Formulas of Arithmetic Sequences	A) Parts of Recursive Formulas of Arithmetic Sequences	AI.QE.1
	B) Writing Terms of Arithmetic Sequences from Recursive Formulas	
	C) Writing Recursive Formulas for Arithmetic Sequences	
7-4 Explicit Formulas of Arithmetic Sequences	A) Parts of Explicit Formulas of Arithmetic Sequences	AI.QE.1
	B) Writing and Evaluating Explicit Formulas of Arithmetic Sequences	
	C) Converting Between Explicit and Recursive Formulas of Arithmetic Sequences	
7-5 Geometric Sequences	A) Finding Common Ratios from Terms of Geometric Sequences	AI.QE.1
	B) Extending Geometric Sequences	
	C) Writing Terms of Geometric Sequences from Terms and Common Ratios	

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Chapter 7 Arithmetic and Geometric Sequences (cont.)

Lesson	Topic	IAS
7-6 Recursive Formulas of Geometric Sequences	A) Parts of Recursive Formulas of Geometric Sequences	AI.QE.1
	B) Writing Terms of Geometric Sequences from Recursive Formulas	
	C) Writing Recursive Formulas for Geometric Sequences	
7-7 Explicit Formulas of Geometric Sequences	A) Parts of Explicit Formulas of Geometric Sequences	AI.QE.1
	B) Writing and Evaluating Explicit Formulas of Geometric Sequences	
	C) Converting Between Explicit and Recursive Formulas of Geometric Sequences	
7-8 Exponential Functions	A) Solutions of Exponential Functions	AI.F.4, AI.QE.1, AI.QE.2, AI.QE.6
	B) Equations of Exponential Functions	
	C) Graphs of Exponential Functions	
7-9 Exponential Growth and Decay	A) Classifying Graphs and Equations as Exponential Growth or Decay	AI.F.4, AI.QE.1, AI.QE.2
	B) Equations of Exponential Growth or Decay	
	C) Writing and Evaluating Exponential Growth and Decay Equations	

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Chapter 8 Roots and Square Root Functions

Lesson	Topic	IAS
8-1 Square Roots of Whole Numbers	A) Square Roots of Perfect Squares	AI.NE.3
	B) Product Property of Square Roots	
	C) Square Roots of Whole Numbers Written in Prime Factored Form	
	D) Square Roots of Whole Numbers	
8-2 Square Roots of Variable Expressions	A) Square Roots of Single Variables Raised to Even Powers	AI.NE.3
	B) Square Roots of Single Variables Raised to Odd Powers	
	C) Square Roots of Monomial Expressions with Two or More Factors	
8-3 Adding and Subtracting Square Roots	A) Adding and Subtracting Simplified Square Roots	AI.NE.3
	B) Adding and Subtracting Square Roots After Simplifying	
8-4 Products of Square Roots	A) Simplifying a Product of Square Roots with Prime Factorized Radicands	AI.NE.3
	B) Simplifying a Product of Square Roots with Whole Number Radicands	
8-5 Quotients of Square Roots	A) Simplifying a Fraction with at Least One Square Root without Needing to Rationalize the Denominator	AI.NE.3
	B) Simplifying Square Roots of Fractions without Needing to Rationalize the Denominator	
	C) Simplifying a Fraction of Square Roots without Needing to Rationalize the Denominator	
	D) Simplifying Square Roots of Fractions and Fractions of Square Roots with Multipliers	
8-6 Rationalizing Square Roots	A) Finding the Value Needed to Rationalize a Denominator	AI.NE.3
	B) Simplifying a Fraction of Square Roots	
	C) Simplifying Square Roots of Fractions	
8-7 Rational Exponents and nth Roots	A) Writing Roots as Rational Exponents	AII.ASE.2
	B) Writing Rational Exponents as nth Roots	
8-8 Simplifying Rational Exponents and nth Roots	A) Evaluating Expressions with Rational Exponents	AII.ASE.2
	B) Evaluating Expressions with nth Roots	

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Chapter 9 Polynomials

Lesson	Topic	IAS
9-1 Introduction to Polynomials	A) Terms of Polynomials	
	B) Degree of Polynomials	
	C) Standard Form of Polynomials	
	D) Leading Coefficients	
9-2 Modeling Polynomial Addition and Subtraction	A) Using Algebra Tiles to Model Polynomials	AI.NE.5
	B) Using Algebra Tiles to Add Polynomials	
	C) Using Algebra Tiles to Subtract Polynomials	
9-3 Adding and Subtracting Polynomials	A) Adding Polynomials	AI.NE.5
	B) Subtracting Polynomials	
	C) Adding and Subtracting Polynomials	
9-4 Modeling Polynomial Multiplication	A) Using Algebra Tiles to Multiply a Monomial and Binomial	AI.NE.5
	B) Using Algebra Tiles to Multiply Two Binomials	
9-5 Using Tables to Multiply Polynomials	A) Completing Tables for Polynomial Multiplication	AI.NE.5
	B) Using a Table to Multiply a Monomial and Polynomial	
	C) Using a Table to Multiply Polynomials with Two or More Terms	
9-6 Multiplying Polynomials	A) Multiplying Two Polynomials	AI.NE.5
	B) Multiplying Three or More Polynomials	
9-7 Special Products	A) Squares of Sums	AI.NE.5
	B) Squares of Differences	
	C) Products of Binomial Conjugates	

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Chapter 10 Factoring

Lesson	Topic	IAS
10-1 Greatest Common Factors	A) Identifying Factors	AI.NE.4
	B) Finding Greatest Common Factors	
10-2 Using Greatest Common Factors to Factor	A) Using Algebra Tiles to Factor Common Factors from Polynomial Expressions	AI.NE.4
	B) Factoring Common Factors from Polynomial Expressions	
	C) Factoring -1 From Polynomial Expressions	
10-3 Factoring by Grouping	A) Using Algebra Tiles to Factor Polynomials with Four Terms	AI.NE.4
	B) Factoring Polynomials with Four Terms by Grouping	
10-4 Factoring Quadratics with Leading Coefficients of One	A) Using Algebra Tiles to Factor Quadratic Trinomials	AI.NE.4
	B) Factoring Quadratics with Leading Coefficients of One	
10-5 Factoring Trinomials with Leading Coefficients Not One	A) Factoring Quadratics with Leading Coefficients Not Equal to One	AI.NE.4
	B) Factoring a Polynomial into a Monomial and Two Binomial Factors	
	C) Determining if Quadratics are Factorable	
10-6 Special Cases in Factoring Polynomials	A) Factoring Differences of Squares	AI.NE.4
	B) Factoring Perfect Square Trinomials	

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Chapter 11 Quadratic Equations and Functions

Lesson	Topic	IAS
11-1 Parabolas	A) Graphs of Quadratic Functions	AI.F.4, AI.QE.6
	B) Key Features of Parabolas	
	C) Relationship Between the Vertex and the x-Intercepts of Parabolas	
11-2 Standard Form of Quadratic Functions	A) Equations of Quadratic Functions in Standard Form	AI.F.4, AI.QE.6
	B) Key Features of Quadratic Functions from Equations	
	C) Graphing Quadratic Functions from Equations in Standard Form	
11-3 Solving Quadratic Equations by Graphing	A) Solutions of Quadratic Equations	AI.QE.4, AI.QE.7
	B) Connection Between Quadratic Functions and Their Related Equations	
	C) Solving Quadratic Equations by Graphing	
11-4 Solving Quadratic Equations by Factoring	A) Solving Factored Quadratic Equations	AI.L.7, AI.QE.4
	B) Solving Quadratic Equations in Standard Form by Factoring	
	C) Solving Quadratic Equations in Nonstandard Form by Factoring	
11-5 Using Square Roots to Solve Quadratic Equations	A) Solving Quadratic Equations with Squared Variable	AI.L.7, AI.QE.4
	B) Solving Quadratic Equations with Squared Linear Expressions	
11-6 Solving Quadratic Equations by Completing the Square	A) Perfect Square Trinomials	AI.L.7, AI.QE.4
	B) Solving Quadratic Equations by Completing the Square	
11-7 Using the Quadratic Formula to Solve Quadratic Equations	A) Writing the Quadratic Formula	AI.QE.4
	B) Solving Quadratic Equations in Standard Form with the Quadratic Formula	
	C) Solving Quadratic Equations in Nonstandard Form with the Quadratic Formula	
11-8 Discriminants of Quadratic Equations	A) Finding Discriminants	AI.QE.4
	B) Relationship Between Discriminants and Number of Real Solutions	
	C) Relationship Between Discriminants and Graphs of Quadratic Functions	

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Chapter 12 Functions and Transformations

Lesson	Topic	IAS
12-1 Piecewise Functions	A) Graphing Functions on a Given Domain	AII.PR.2.e
	B) Graphing Piecewise Functions	
	C) Writing Equations of Piecewise Functions	
12-2 Step Functions	A) Evaluating Floor and Ceiling Functions	AI.F.4
	B) Graphs of Step Functions	
12-3 Parent Functions	A) Graphing Parent Functions	AI.F.4
	B) Writing Equations of Parent Functions	
12-4 Translations	A) Identifying Vertical or Horizontal Translations of Parent Functions from Graphs and Equations	AI.F.4
	B) Identifying Translations of Parent Functions from Graphs and Equations	
	C) Graphing Translated Parent Functions from Equations	
	D) Writing Equations of Translated Parent Functions from Graphs	
12-5 Reflections	A) Graphing Reflected Parent Functions	AI.F.4
	B) Writing Equations of Reflected Parent Functions	
12-6 Dilations	A) Identifying Vertical Dilation Factors from Graphs and Equations	AI.F.4
	B) Identifying Horizontal Dilation Factors from Graphs and Equations	
	C) Graphing Dilated Quadratic and Absolute Value Functions	
	D) Comparing Dilation Factors	
12-7 Transformations and Vertex Form	A) Graphing and Writing Equations of Transformed Quadratic and Absolute Value Functions	AI.F.4
	B) Relationship Between the Vertices of Quadratic and Absolute Value Functions and Their Equations	
	C) Vertex Form of Quadratic Equations	

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Chapter 13 Statistics and Probability

Lesson	Topic	IAS
13-1 Measures of Center	A) Mean	7.DSP.3
	B) Median	
13-2 Measures of Spread	A) Range	7.DSP.3
	B) Standard Deviation	
	C) IQR	
13-3 Outliers	A) Effects of Outliers	7.DSP.4
	B) Identifying Outliers	
	C) Identifying a Box Plot from a Data Set	
13-4 Distributions of Data	A) Shapes of Data Displays	6.DS.4.e
	B) Shape and Measures of Center	
	C) Effects of Changes in Data Set on Values of Measures of Center and Spread	
	D) Using Shapes of Data Displays to Compare Measures of Center	
13-5 Two-Way Tables	A) Parts of Two-Way Tables	AI.DS.5
	B) Reading Two-Way Tables	
	C) Finding Missing Joint and Marginal Frequencies	
13-6 Relative and Conditional Frequency	A) Identifying Types of Frequency Tables	AI.DS.5
	B) Using Two-Way Tables to Calculate Probabilities	
	C) Finding Missing Conditional and Relative Frequencies	