

INTRODUCTION TO ALGEBRA

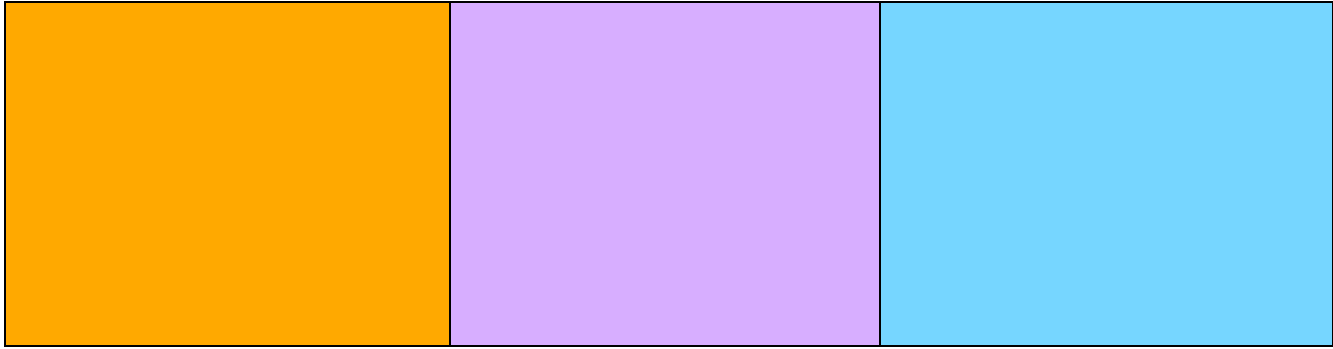
an algebra readiness program
for California's students



- Designed by California mathematics educators
- Written by experienced California teachers
- Edited by California university mathematicians
- Piloted in California middle schools
- Supported with professional development by the California Mathematics Project

LESSON CLUSTER MAP

| WHOLE NUMBERS | RATIONAL NUMBERS | SYMBOLIC ALGEBRA |
|---|---|--|
| 0.3 Whole Numbers: Vocabulary, Addition, and Subtraction 1.1 Whole Numbers: Using an Area Model to Explain Multiplication 1.2 Whole Numbers: Estimating Quotients 1.3 Whole Numbers: Place Value and Rounding 2.2 Whole Numbers: Using a Division Algorithm 2.3 Whole Numbers: Expanded Form and Divisibility 5.3 Factorization | 5.1 Fractions: Parts and Wholes 6.1 Fractions: Equivalence 1 6.3 Fractions: Renaming 7.1 Fractions: Equivalence 2 7.2 Number Line: Fractions 7.3 Decimals: Place Value, Rounding, and Expanded Form 8.1 Fractions: Equivalence 3 8.2 Number Line: Rational Numbers 8.3 Decimals: Ordering, Addition and Subtraction 9.2 Fractions: Addition and Subtraction 1 9.3 Fractions: Addition and Subtraction 2 10.3 Fractions: Addition and Subtraction 3 11.3 Fractions: Addition and Subtraction 4 12.3 Fractions: Multiplication 13.3 Fractions: Division 14.3 Decimals: Multiplication 15.3 Decimals: Division | 9.1 Numerical Expressions and Equations 10.1 Algebraic Expressions and Equations 10.2 Balance Puzzles 1 11.1 Balance Puzzles 2 11.2 Solving Equations 1 25.1 Simplifying Expressions 1 25.2 Using Algebra to Prove Conjectures 25.3 Order of Operations 26.1 Solving Equations 2 26.2 Word Problems 1: Geometry Problems 26.3 Simplifying Expressions 2 27.1 Solving Equations 3 27.2 Word Problems 2: Number Problems 27.3 Solving Equations 4 28.1 Inequalities 28.2 Word Problems 3: Train Problems 28.3 Word Problems 4: More Problems 29.3 Properties of Arithmetic and Equality 31.2 Using Two Variables to Solve Problems |
| INTEGERS | RATIO, PROPORTION, PERCENT | LINEAR FUNCTIONS |
| 2.1 Integers: Introduction 3.1 Integers: Addition and Subtraction 1 3.3 Integers: Addition and Subtraction 2 4.1 Integers: Multiplication and Division 1 4.3 Integers: Multiplication and Division 2 | 17.1 Proportional Reasoning 17.2 Understanding Percents 17.3 Ratios, Rates, and Proportions 18.1 Percent Increase and Decrease 18.2 Simple Interest 18.3 Percent Problems 19.1 Linking Percents and Proportions 19.3 Dimensional Analysis 20.1 Solving Proportions 1 20.3 Solving Proportions 2 | 3.2 Fourfold Way: Words, Tables, and Graphs 4.2 Fourfold Way: Words, Tables, Graphs and Symbols 5.2 Fourfold Way: Growing Shapes 6.2 Fourfold Way: Fraction Graphs 12.1 Inputs and Outputs 1 12.2 Conversion Graphs 29.1 Time-Distance Graphs 29.2 Introduction to Slope 30.1 Rate Graphs 30.2 Inputs and Outputs 2 30.3 Introduction to Lines 31.1 Finding Slopes of Lines 31.3 Introduction to Systems of Equations 32.1 Writing Equations of Lines 32.2 Stacking Cups Lefty-Righty Experiment |
| EXPONENTS AND ROOTS | PROBABILITY AND STATISTICS | GEOMETRY |
| 21.2 Squares and Square Roots 21.3 Defining Exponents 22.1 Conjectures About Exponents 1 22.3 Rules for Exponents 1 23.1 Conjectures About Exponents 2 23.3 Rules for Exponents 2 | 00.1 Statistics: Analyzing Name Scores 00.2 Statistics: Data Displays 19.2 Probability: Spinner Puzzles 20.2 Probability: Flip and Roll 23.2 Probability: Fair Games 24.3 Statistics: Measures of Center | 13.1 Rectangles: Fixed Area 13.2 Rectangles: Fixed Perimeter 14.1 Circles: Circumference 14.2 Circles: Area 15.1 Rectangular Prisms: Volume and Surface Area 15.2 Rectangular Prisms: The Juice Box Problem 16.1 Cylinders: Volume and Surface Area 16.2 The Soda Can Problem 21.1 Areas of Polygons 24.1 The Pythagorean Theorem 24.2 Applications of the Pythagorean Theorem |



1ST SEMESTER (EMPHASIS ON FOUNDATIONAL SKILLS AND CONCEPTS)

| | Week | Lesson 1 | Lesson 2 | Lesson 3 (Skill Builders) | Highlighted Review |
|-------------------------|--|--|--|---|---|
| | 0 | Getting to Know You | Pre-Assessment 1 | Whole Numbers: Vocabulary, Addition and Subtraction | |
| 1 st Quarter | UNIT 1: INTEGERS | | | | |
| | 1 | Whole Numbers: Using An Area Model to Explain Multiplication | Whole Numbers: Estimating Quotients | Whole Numbers: Place Value and Rounding | |
| | 2 | Integers: Introduction | Whole Numbers: Using a Division Algorithm | Whole Numbers: Expanded Form and Divisibility | Whole Numbers: Addition and Subtraction, Properties of Addition |
| | 3 | Integers: Addition and Subtraction 1 | Fourfold Way: Words, Tables, and Graphs | Integers: Addition and Subtraction 2 | Whole Numbers: Place Value, Rounding, and Expanded Form |
| | 4 | Integers: Multiplication and Division 1 | Fourfold Way: Words, Tables, Graphs, and Symbols | Integers: Multiplication and Division 2 | Whole Numbers: Multiplication, Properties of Multiplication |
| | UNIT 2: RATIONAL NUMBER CONCEPTS | | | | |
| | 5 | Fractions: Parts and Wholes | Fourfold Way: Growing Shapes | Factorization | Whole Numbers: Division |
| | 6 | Fractions: Equivalence 1 | Fourfold Way: Fraction Graphs | Fractions: Renaming | Integers: Addition and Subtraction |
| 7 | Fractions: Equivalence 2 | Number Lines: Fractions | Decimals: Place Value, Rounding, and Expanded Form | Integers: Multiplication and Division | |
| 8 | Fractions: Equivalence 3 | Number Lines: Rational Numbers | Decimals: Ordering, Addition and Subtraction | Multiple Representations or Quarter 1 Assessment | |
| 2 nd Quarter | UNIT 3: EXPRESSIONS AND EQUATIONS | | | | |
| | 9 | Numerical Expressions and Equations | Fractions: Addition and Subtraction 1 | Fractions: Addition and Subtraction 2 | Fractions: Concepts and Equivalence |
| | 10 | Algebraic Expressions and Equations | Balance Puzzles 1 | Fractions: Addition and Subtraction 3 | Decimals: Place Value, Rounding, and Expanded Form or Trimester 1 Assessment |
| | 11 | Balance Puzzles 2 | Solving Equations 1 | Fractions: Addition and Subtraction 4 | Ordering Rational Numbers |
| | 12 | Inputs and Outputs 1 | Conversion Graphs | Fractions: Multiplication | Factorization |
| | UNIT 4: LENGTH, AREA, AND VOLUME | | | | |
| | 13 | Rectangles: Fixed Area | Rectangles: Fixed Perimeter | Fractions: Division | Decimals: Comparison, Addition and Subtraction |
| | 14 | Circles: Circumference | Circles: Area | Decimals: Multiplication | Fractions: Addition and Subtraction |
| 15 | Rectangular Prisms: Volume and Surface Area | Rectangular Prisms: The Juice Box Problem | Decimals: Division | Evaluating Algebraic Expressions | |
| 16 | Cylinders: Volume and Surface Area | Cylinders: The Soda Can Problem | Review 1 | Solving Equations or Quarter 2 Assessment | |

TOPIC CLUSTERS

| | | |
|---------------|------------------|------------------|
| Whole Numbers | Rational Numbers | Symbolic Algebra |
|---------------|------------------|------------------|

| | | |
|---------------------|----------------------------|------------------|
| Integers | Ratio, Proportion, Percent | Linear Functions |
| Exponents and Roots | Probability and Statistics | Geometry |

2ND SEMESTER (EMPHASIS ALGEBRA READINESS STANDARDS)

| | Week | Lesson 1 | Lesson 2 | Lesson 3 (Skill Builders) | Highlighted Review |
|---------------------------------|---|---------------------------------------|---|---------------------------------------|--|
| | 00 | Statistics: Analyzing Name Scores | Statistics: Data Displays | Pre-Assessment 2 | |
| 3 rd Quarter | UNIT 5: RATIO, PROPORTION, AND PERCENT | | | | |
| | 17 | Proportional Reasoning | Understanding Percents | Ratios, Rates, and Proportions | Fractions: Multiplication and Division |
| | 18 | Percent Increase and Decrease | Simple Interest | Percent Problems | Decimals: Multiplication and Division |
| | 19 | Linking Percents and Proportions | Probability: Spinner Puzzles | Dimensional Analysis | Integers Revisited |
| | 20 | Solving Proportions 1 | Probability: Flip and Roll | Solving Proportions 2 | Fraction, Decimal, and Percent Equivalences or Trimester 2 Assessment |
| | UNIT 6: CONJECTURE AND JUSTIFICATION | | | | |
| | 21 | Areas of Polygons | Squares and Square Roots | Defining Exponents | Direct Variation |
| | 22 | Conjectures About Exponents 1 | Time-Distance Graphs | Rules for Exponents 1 | Percent Applications |
| | 23 | Conjectures About Exponents 2 | Probability: Fair Games | Rules for Exponents 2 | Ratio and Proportion |
| | 24 | The Pythagorean Theorem | Applications of the Pythagorean Theorem | Statistics: Measures of Center | Finding Lengths and Areas or Quarter 3 Assessment |
| | UNIT 7: SYMBOLIC ALGEBRA | | | | |
| | 25 | Simplifying Expressions 1 | Using Algebra to Prove Conjectures | Order of Operations | Exponents and Roots |
| 26 | Solving Equations 2 | Word Problems 1: Geometry Problems | Simplifying Expressions 2 | The Pythagorean Theorem | |
| 27 | Solving Equations 3 | Word Problems 2: Number Problems | Solving Equations 4 | Probability and Statistics | |
| 28 | Inequalities | Word Problems 3: Train Problems | Word Problems 4: More Problems | Writing Algebraic Expressions | |
| UNIT 8: LINEAR FUNCTIONS | | | | | |
| 4 th Quarter | 29 | Introduction to Slope | Rate Graphs | Properties of Arithmetic and Equality | Simplifying Expressions, Properties of Arithmetic |
| | 30 | Inputs and Outputs 2 | Introduction to Lines | Finding Slopes of Lines | Equations and Inequalities, Properties of Equality or Trimester 3 Assessment |
| | 31 | Introduction to Systems of Equations | Using Two Variables to Solve Problems | Writing Equations of Lines | Solving Word Problems |
| | 32 | Stacking Cups | Lefty-Righty Experiment | Review 2 | Slope or Quarter 4 Assessment |

COMPOSITION OF SKILL BUILDERS

| | ABOUT 25% | ABOUT 25% | ABOUT 25% | ABOUT 25% |
|-----------------|---------------------------------|--------------------|--|--------------------------|
| Skill Builder 1 | Skill Builder Topic of the Week | | | |
| Skill Builder 2 | Skill Builder Topic of the Week | | Highlighted Review | Past Skills and Concepts |
| Skill Builder 3 | Skill Builder Topic of the Week | Highlighted Review | Future Highlighted Reviews (next 3-4 weeks) | |

SUMMATIVE ASSESSMENT SCHEDULE FOR HIGHLIGHTED REVIEW TOPICS and CALIFORNIA STANDARDS CORRELATION

| Week | Highlighted Review Topics | Foundational Skills and Concepts | Algebra Readiness | General Math |
|------|---|----------------------------------|------------------------------------|----------------------------|
| 2 | Whole Numbers: Addition and Subtraction, Properties of Addition | Topic 2 | | |
| 3 | Whole Numbers: Place Value, Rounding, and Expanded Form | Topic 1 | | |
| 4 | Whole Numbers: Multiplication, Properties of Multiplication | Topic 2 | | |
| 5 | Whole Numbers: Division | Topic 2 | | |
| 12 | Factorization | Topic 3 | | |
| 6 | Integers: Addition and Subtraction | | NS 1.2 | |
| 7 | Integers: Multiplication and Division | | NS 1.2 | |
| 19 | Integers Revisited | | NS 1.2 | |
| 25 | Exponents and Roots | | NS 1.2, 2.1, AF 2.1, ALG 2.0 | (7) NS 2.3, 2.4 |
| 9 | Fractions: Concepts and Equivalence | Topic 3 | | |
| 10 | Decimals: Place Value, Rounding, and Expanded Form | Topic 3 | | |
| 11 | Ordering Rational Numbers | Topic 3 | NS 1.3 | (7) NS 2.5 |
| 13 | Decimals: Comparison, Addition and Subtraction | Topic 3 | NS 1.2 | |
| 14 | Fractions: Addition and Subtraction | Topics 3, 4 | NS 1.2 | (7) NS 2.2 |
| 17 | Fractions: Multiplication and Division | Topics 3, 4 | NS 1.2 | |
| 18 | Decimals: Multiplication and Division | | NS 1.2 | |
| 20 | Fraction, Decimal, and Percent Equivalences | | NS 1.3, 1.5 | |
| 22 | Percent Applications | | NS 1.3 | (7) NS 1.6, 1.7 |
| 23 | Ratio and Proportion | Topics 4, 6 | MG 1.3 AF 4.1, 4.2 | |
| 27 | Probability and Statistics | | NS 1.3 | (6) SDP 1.1, 3.1, 3.3, 3.5 |
| 15 | Evaluating Algebraic Expressions | Topic 5 | AF 1.3 | (7) AF 1.2 |
| 16 | Solving Equations | Topic 6 | | |
| 28 | Writing Algebraic Expressions | Topic 5 | AF 1.1 | |
| 29 | Simplifying Expressions, Properties of Arithmetic | | AF 1.3 | |
| 30 | Equations and Inequalities, Properties of Equality | Topic 6 | AF 4.1 ALG 2.0, 4.0, 5.0 | |
| 31 | Solving Word Problems | Topic 6 | AF 1.1, 4.1, 4.2 ALG 2.0, 4.0, 5.0 | |
| 8 | Multiple Representations | Topics 5, 7 | | (7) AF 1.5 |
| 21 | Direct Variation | Topics 5, 7, 8 | AF 3.4 | (7) AF 1.5 |
| 32 | Slope | Topic 8 | AF 3.3 | (7) AF 1.5 |
| 24 | Finding Lengths and Areas | Topics 5, 6 | AF 1.1 | (7) MG 2.1 |
| 26 | The Pythagorean Theorem | | MG 3.3 | |

for more information:

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