

PROGRAM OVERVIEW

Table of Contents

Unit 1: Extending the Number System

Lesson 1: Working with the Number System	U1-1
Lesson 1.1.1: Defining, Rewriting, and Evaluating Rational Exponents	U1-4
Lesson 1.1.2: Rational and Irrational Numbers and Their Properties	U1-19
Lesson 2: Operating with Complex Numbers	U1-38
Lesson 1.2.1: Defining Complex Numbers, i , and i^2	U1-41
Lesson 1.2.2: Adding and Subtracting Complex Numbers	U1-54
Lesson 1.2.3: Multiplying Complex Numbers	U1-67
Lesson 3: Operating with Polynomials	U1-82
Lesson 1.3.1: Adding and Subtracting Polynomials	U1-84
Lesson 1.3.2: Multiplying Polynomials	U1-98
Unit 1 Assessment	U1-114
Answer Key	
Teacher Resource/Student Workbook	U1-117
Station Activities	
Set 1: Operations with Complex Numbers	U1-121
Set 2: Operations with Polynomials	U1-128

Unit 2: Quadratic Functions and Modeling

Lesson 1: Interpreting Quadratic Functions	U2-1
Lesson 2.1.1: Interpreting Key Features of Quadratic Functions	U2-5
Lesson 2.1.2: Identifying the Domain of a Quadratic Function	U2-29
Lesson 2.1.3: Identifying the Average Rate of Change	U2-46
Lesson 2: Analyzing Quadratic Functions	U2-67
Lesson 2.2.1: Graphing Quadratic Functions	U2-70
Lesson 2.2.2: Interpreting Various Forms of Quadratic Functions	U2-94
Lesson 3: Graphing Other Functions	U2-120
Lesson 2.3.1: Square Root and Cube Root Functions	U2-126
Lesson 2.3.2: Absolute Value and Step Functions	U2-162
Lesson 2.3.3: Piecewise Functions	U2-193
Lesson 4: Analyzing Functions	U2-224
Lesson 2.4.1: Analyzing Exponential Functions	U2-230
Lesson 2.4.2: Comparing Properties of Functions Given in Different Forms	U2-246
Lesson 5: Building Functions	U2-271
Lesson 2.5.1: Building Functions from Context	U2-274
Lesson 2.5.2: Operating on Functions	U2-296

PROGRAM OVERVIEW

Table of Contents

Lesson 6: Transforming Functions	U2-315
Lesson 2.6.1: Replacing $f(x)$ with $f(x) + k$ and $f(x + k)$	U2-319
Lesson 2.6.2: Replacing $f(x)$ with $k \cdot f(x)$ and $f(k \cdot x)$	U2-341
Lesson 7: Finding Inverse Functions	U2-372
Lesson 2.7.1: Finding Inverse Functions	U2-375
Unit 2 Assessment	U2-395
Answer Key	
Teacher Resource/Student Workbook	U2-399
Station Activities	
Set 1: Graphing Quadratic Equations	U2-427

Unit 3: Expressions and Equations

Lesson 1: Interpreting Structure in Expressions	U3-1
Lesson 3.1.1: Identifying Terms, Factors, and Coefficients	U3-4
Lesson 3.1.2: Interpreting Complicated Expressions	U3-19
Lesson 2: Creating and Solving Quadratic Equations in One Variable	U3-36
Lesson 3.2.1: Taking the Square Root of Both Sides	U3-41
Lesson 3.2.2: Factoring Expressions by the Greatest Common Factor	U3-53
Lesson 3.2.3: Factoring Expressions with $a = 1$	U3-70
Lesson 3.2.4: Factoring Expressions with $a > 1$	U3-92
Lesson 3.2.5: Solving Quadratic Equations by Factoring	U3-115
Lesson 3.2.6: Completing the Square	U3-133
Lesson 3.2.7: Applying the Quadratic Formula	U3-146
Lesson 3.2.8: Solving Quadratic Inequalities	U3-161
Lesson 3: Creating Quadratic Equations in Two or More Variables	U3-179
Lesson 3.3.1: Creating and Graphing Equations Using Standard Form	U3-183
Lesson 3.3.2: Creating and Graphing Equations Using the x -intercepts	U3-213
Lesson 3.3.3: Creating and Graphing Equations Using Vertex Form	U3-233
Lesson 3.3.4: Rearranging Formulas	U3-248
Lesson 4: Fundamental Theorem of Algebra	U3-266
Lesson 3.4.1: Extending Polynomial Identities to Include Complex Numbers	U3-269
Lesson 3.4.2: Solving Quadratic Equations with Complex Solutions	U3-293
Lesson 5: Rational Equations	U3-323
Lesson 3.5.1: Creating Rational Equations	U3-330
Lesson 3.5.2: Graphing Rational Equations	U3-354
Lesson 3.5.3: Creating Rational Inequalities	U3-389
Lesson 6: Writing Exponential Expressions in Equivalent Forms	U3-436
Lesson 3.6.1: Writing Exponential Expressions in Equivalent Forms	U3-441

PROGRAM OVERVIEW

Table of Contents

Lesson 7: Solving Systems of Equations	U3-471
Lesson 3.7.1: Solving Systems Graphically	U3-475
Lesson 3.7.2: Solving Systems Algebraically	U3-498
Unit 3 Assessment	U3-525
Answer Key	
Teacher Resource/Student Workbook	U3-529
Station Activities	
Set 1: Factoring	U3-549
Set 2: Solving Quadratics	U3-557
Set 3: Quadratic Transformations in Vertex Form	U3-566
Unit 4: Applications of Probability	
Lesson 1: Events	U4-1
Lesson 4.1.1: Describing Events	U4-6
Lesson 4.1.2: The Addition Rule	U4-36
Lesson 4.1.3: Understanding Independent Events	U4-54
Lesson 2: Conditional Probability	U4-83
Lesson 4.2.1: Introducing Conditional Probability	U4-87
Lesson 4.2.2: Using Two-Way Frequency Tables	U4-114
Lesson 4.2.3: The Multiplication Rule	U4-140
Lesson 3: Combinatorics	U4-168
Lesson 4.3.1: Combinations and Permutations	U4-171
Lesson 4.3.2: Probability with Combinatorics	U4-193
Lesson 4: Making and Analyzing Decisions	U4-214
Lesson 4.4.1: Making Decisions	U4-218
Lesson 4.4.2: Analyzing Decisions	U4-240
Unit 4 Assessment	U4-269
Answer Key	
Teacher Resource/Student Workbook	U4-275
Station Activities	
Set 1: Probability	U4-283

PROGRAM OVERVIEW

Table of Contents

Unit 5: Similarity, Right Triangle Trigonometry, and Proof

Lesson 1: Investigating Properties of Dilations	U5-1
Lesson 5.1.1: Investigating Properties of Parallelism and the Center	U5-7
Lesson 5.1.2: Investigating Scale Factors	U5-34
Lesson 2: Defining and Applying Similarity	U5-54
Lesson 5.2.1: Defining Similarity	U5-59
Lesson 5.2.2: Applying Similarity Using the Angle-Angle (AA) Criterion	U5-87
Lesson 3: Proving Theorems About Lines and Angles	U5-114
Lesson 5.3.1: Proving the Vertical Angles Theorem	U5-120
Lesson 5.3.2: Proving Theorems About Angles in Parallel Lines Cut by a Transversal.....	U5-153
Lesson 4: Proving Theorems About Triangles	U5-193
Lesson 5.4.1: Proving the Interior Angle Sum Theorem	U5-198
Lesson 5.4.2: Proving Theorems About Isosceles Triangles	U5-223
Lesson 5.4.3: Proving the Midsegment of a Triangle.....	U5-247
Lesson 5.4.4: Proving Centers of Triangles	U5-280
Lesson 5: Proving Theorems About Parallelograms	U5-328
Lesson 5.5.1: Proving Properties of Parallelograms	U5-331
Lesson 5.5.2: Proving Properties of Special Quadrilaterals.....	U5-361
Lesson 6: Proving Similarity	U5-401
Lesson 5.6.1: Proving Triangle Similarity Using Side-Angle-Side (SAS) and Side-Side-Side (SSS) Similarity	U5-405
Lesson 5.6.2: Working with Ratio Segments	U5-426
Lesson 5.6.3: Proving the Pythagorean Theorem Using Similarity	U5-450
Lesson 5.6.4: Solving Problems Using Similarity and Congruence	U5-475
Lesson 7: Line Segments	U5-510
Lesson 5.7.1: Midpoints and Other Points on Line Segments	U5-512
Lesson 8: Exploring Trigonometric Ratios	U5-539
Lesson 5.8.1: Defining Trigonometric Ratios	U5-544
Lesson 5.8.2: Exploring Sine and Cosine As Complements	U5-575
Lesson 9: Applying Trigonometric Ratios	U5-599
Lesson 5.9.1: Calculating Sine, Cosine, and Tangent	U5-604
Lesson 5.9.2: Calculating Cosecant, Secant, and Cotangent	U5-630
Lesson 5.9.3: Problem Solving with the Pythagorean Theorem and Trigonometry	U5-652
Lesson 5.9.4: Proving the Fundamental Pythagorean Identity	U5-675
Unit 5 Assessment	U5-699
Answer Key	
Teacher Resource/Student Workbook	U5-707

PROGRAM OVERVIEW

Table of Contents

Station Activities

Set 1: Similarity and Scale Factor	U5-725
Set 2: Parallel Lines and Transversals	U5-738
Set 3: Rhombi, Squares, Kites, and Trapezoids.	U5-750
Set 4: Sine, Cosine, and Tangent Ratios, and Angles of Elevation and Depression	U5-761

Unit 6: Circles With and Without Coordinates

Lesson 1: Introducing Circles.	U6-1
Lesson 6.1.1: Similar Circles and Central and Inscribed Angles.	U6-5
Lesson 6.1.2: Chord Central Angles Conjecture	U6-30
Lesson 6.1.3: Properties of Tangents of a Circle.	U6-47
Lesson 2: Inscribed Polygons and Circumscribed Triangles.	U6-76
Lesson 6.2.1: Constructing Inscribed Circles.	U6-79
Lesson 6.2.2: Constructing Circumscribed Circles	U6-108
Lesson 6.2.3: Proving Properties of Inscribed Quadrilaterals	U6-128
Lesson 3: Constructing Tangent Lines.	U6-150
Lesson 6.3.1: Constructing Tangent Lines	U6-154
Lesson 4: Finding Arc Lengths and Areas of Sectors	U6-187
Lesson 6.4.1: Defining Radians	U6-190
Lesson 6.4.2: Deriving the Formula for the Area of a Sector	U6-204
Lesson 5: Deriving Equations.	U6-219
Lesson 6.5.1: Deriving the Equation of a Circle	U6-223
Lesson 6.5.2: Deriving the Equation of a Parabola.	U6-251
Lesson 6: Using Coordinates to Prove Geometric Theorems	
About Circles and Parabolas	U6-285
Lesson 6.6.1: Using Coordinates to Prove Geometric Theorems	
About Circles and Parabolas.	U6-289
Lesson 7: Explaining and Applying Area and Volume Formulas	U6-321
Lesson 6.7.1: Circumference and Area of a Circle.	U6-325
Lesson 6.7.2: Volumes of Cylinders, Pyramids, Cones, and Spheres	U6-349
Unit 6 Assessment	U6-376
Answer Key	
Teacher Resource/Student Workbook	U6-383
Station Activities	
Set 1: Circumference, Angles, Arcs, Chords, and Inscribed Angles.	U6-395
Set 2: Special Segments, Angle Measurements, and Equations of Circles	U6-408
Set 3: Circumcenter, Incenter, Orthocenter, and Centroid	U6-420