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Chapter 1 Basics of Geometry

Lesson	Topic	AZ Standards
1-1 Undefined Terms	A) Points, Lines, and Planes	G.G.CO.1
	B) Line Segments	
	C) Rays	
1-2 Segments	A) Distance	G.G.CO.1, G.G.CO.12
	B) Segment Addition Postulate	
	C) Congruent Segments	
1-3 Distance and Midpoint	A) Distance and the Distance Formula	G.G.CO.1, G.G.CO.12, G.G.GPE.4
	B) Midpoint and the Midpoint Formula	
	C) Segment Bisectors	
1-4 Angles	A) Naming Angles	G.G.CO.1, G.G.CO.12
	B) Measuring and Classifying Angles	
	C) Angle Addition Postulate	
1-5 Angle Relationships	A) Complementary and Supplementary Angles	7.G.5
	B) Linear Pairs and Vertical Angles	
	C) Angle Bisectors	
1-6 Perimeter and Area	A) Perimeter of Squares, Rectangles, and Triangles	G.G.GPE.7, G.G.MG.3
	B) Area of Squares, Rectangles, and Triangles	
	C) Circumference and Area of Circles	

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Chapter 2 Reasoning and Proof

Lesson	Topic	AZ Standards
2-1 Conditional and Biconditional Statements	A) Conditional and Biconditional Statements	
	B) Counterexamples	
	C) Inverses, Converses, and Contrapositives	
2-2 Algebraic Proofs	A) Properties of Equality	A1.A.REI.1
	B) Distributive Property	
	C) Algebraic Proof	
2-3 Introduction to Geometric Proof	A) Properties of Segment Congruence	
	B) Properties of Angle Congruence	
	C) Proving Segments and Angles Congruent	
2-4 Proof and Angle Relationships	A) Postulates and Theorems	G.G.CO.9
	B) Right Angle and Vertical Angle Theorems	
	C) Congruent Complements and Supplements Theorems	

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Chapter 3 Parallel and Perpendicular Lines

Lesson	Topic	AZ Standards
3-1 Parallel Lines and Transversals	A) Parallel and Skew Lines	G.G.CO.12
	B) Transversals and Angle Relationships	
3-2 Parallel Lines and Angle Pairs	A) Corresponding Angles Postulate	G.CO.9
	B) Alternate Interior, Alternate Exterior, and Consecutive Interior Angles Theorems	
3-3 Proving Lines Parallel	A) Converse of Corresponding Angles Postulate	G.CO.9
	B) Converse of Alternate Interior, Alternate Exterior, and Consecutive Interior Angles Theorems	
3-4 Parallel and Perpendicular Lines	A) Perpendicular Lines	G.G.CO.1, G.G.CO.9, G.G.CO.12
	B) Parallel and Perpendicular Line Theorems	
	C) Perpendicular Bisectors	
3-5 Equations of Lines	A) Slope	G.G.GPE.4
	B) Slope-Intercept Form	
	C) Point-Slope Form	
3-6 Slopes of Parallel and Perpendicular Lines	A) Lines with Undefined and Zero Slope	G.G.CO.1, G.G.GPE.4, G.G.GPE.5
	B) Slopes of Parallel and Perpendicular Lines	
	C) Equations of Parallel and Perpendicular Lines	

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Chapter 4 Congruent Triangles

Lesson	Topic	AZ Standards
4-1 Angles of Triangles	A) Triangle-Angle Sum Theorem	G.G.CO.10
	B) Interior and Exterior Angles of Triangles	
	C) Triangle Exterior Angle Theorem	
4-2 Classifying Triangles	A) Triangle Notation	G.G.CO.12, G.G.CO.13
	B) Classifying Triangles by their Angles	
	C) Classifying Triangles by their Sides	
4-3 Properties of Isosceles and Equilateral Triangles	A) Components of Isosceles Triangles	G.G.CO.10
	B) Properties of Isosceles and Equilateral Triangles	
4-4 Congruent Figures	A) Congruent Polygons	G.G.CO.6, G.G.CO.7, G.G.CO.8, G.G.SRT.5
	B) Congruence Statements	
	C) Third Angle Theorem and Corresponding Parts of Congruent Triangles	
4-5 Proving Triangle Congruence	A) Side-Side-Side, Side-Angle-Side, and Angle-Side-Angle Congruence Postulates	G.G.CO.6, G.G.CO.7, G.G.CO.8, G.G.SRT.5
	B) Angle-Angle-Side and Hypotenuse-Leg Congruence Theorems	
	C) Identifying Reasons for Triangle Congruence	

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Chapter 5 Relationships in Triangles

Lesson	Topic	AZ Standards
5-1 Bisectors	A) Distance from a Point to a Line	G.G.CO.9, G.G.CO.12
	B) Angle Bisector Theorem and Its Converse	
	C) Perpendicular Bisector Theorem and Its Converse	
5-2 Perpendicular and Angle Bisectors in Triangles	A) Perpendicular Bisectors of Triangles and Circumcenters	G.G.CO.10, G.G.CO.13, G.G.SRT.5, G.G.C.3, G.G.GPE.4, G.G.GPE.5
	B) Angle Bisectors of Triangles and Incenters	
5-3 Medians and Altitudes in Triangles	A) Medians of Triangles and Centroids	G.G.CO.10, G.G.GPE.4, G.G.GPE.5
	B) Altitudes of Triangles and Orthocenters	
5-4 Angle-Side Relationships in Triangles	A) Using Side Lengths to Compare Interior Angle Measures	
	B) Using Interior Angle Measures to Compare Side Lengths	
5-5 Triangle Inequalities	A) Triangle Inequality Theorem	
	B) Determining Possible Lengths of a Missing Side in a Triangle	

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Chapter 6 Polygons and Quadrilaterals

Lesson	Topic	AZ Standards
6-1 Introduction to Polygons	A) Identifying and Naming Polygons	G.G.CO.13
	B) Identifying Concave and Convex Polygons	
	C) Properties of Regular Polygons	
6-2 Angles of Polygons	A) Sum of the Measures of the Interior Angles in Convex Polygons	
	B) Sum of the Measures of the Exterior Angles of Convex Polygons	
	C) Measure of Each Interior and Exterior Angle in Regular Convex Polygons	
6-3 Parallelograms	A) Definition of Parallelogram	G.G.CO.11, G.G.GPE.4, G.G.GPE.7
	B) Opposite Sides and Angles of Parallelograms	
	C) Diagonals of Parallelograms	
6-4 Test for Parallelograms	A) Using Opposite Sides, Opposite Angles, or Diagonals to Prove a Quadrilateral is a Parallelogram	G.G.CO.11
	B) Determining if Quadrilaterals are Parallelograms	
6-5 Rectangles	A) Definition of Rectangle	G.G.CO.11
	B) Properties of Diagonals of Rectangles	
	C) Determining if a Parallelogram is a Rectangle	
6-6 Rhombuses and Squares	A) Definition of Rhombus and Square	G.G.CO.11
	B) Properties of Rhombuses and Squares	
	C) Determining if a Parallelogram is a Rhombus or a Square	
6-7 Trapezoids and their Midsegments	A) Definition of Trapezoid and Isosceles Trapezoid	
	B) Base Angles and Diagonals of Isosceles Trapezoids	
	C) Midsegments of Trapezoids	
6-8 Kites	A) Definition of Kite	
	B) Diagonals of Kites	
	C) Opposite Angles in Kites	

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Chapter 7 Transformations

Lesson	Topic	AZ Standards
7-1 Transformation Notation and Translations	A) Transformation Notation	G.G.CO.2, G.G.CO.4, G.G.CO.5, G.G.CO.6
	B) Identifying Translations	
	C) Writing Translation Vectors as Translation Functions	
7-2 Reflections	A) Reflecting in Horizontal and Vertical Lines	G.G.CO.2, G.G.CO.4, G.G.CO.5, G.G.GPE.4
	B) Reflecting in y=x and y=-x	
	C) Determining a Line of Reflection	
7-3 Symmetry and Rotations	A) Lines of Symmetry	G.G.CO.2, G.G.CO.4, G.G.CO.5
	B) Rotational Symmetry	
	C) Rotating a Figure about a Point	
7-4 Dilations	A) Dilation about a Point	G.G.CO.2, G.G.CO.5, G.G.SRT.1.a, G.G.SRT.1.b
	B) Determining if Transformations are Dilations	
	C) Dilation about the Origin	
7-5 Composition of Isometries	A) Compositions of Reflections in Parallel or Intersecting Lines	G.G.CO.2, G.G.CO.3, G.G.CO.4, G.G.CO.5
	B) Glide Reflections	
	C) Performing and Identifying Compositions of Isometries	

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Chapter 8 Similar Figures

Lesson	Topic	AZ Standards
8-1 Ratio and Proportion	A) Ratios and Proportions	7.RP.3
	B) Equivalent Proportions	
	C) Solving Proportions	
8-2 Directed Line Segments	A) Ratios and Segments	G.G.GPE.6
	B) Using Ratios of Segments to Determine Segment Length	
	C) Using Ratios of Segments to Determine the Coordinates of a Point on a Segment	
8-3 Similar Polygons	A) Similarity and Proportionality Statements	G.G.SRT.2
	B) Using Similarity Statements to Identify Corresponding Parts	
	C) Scale Factor	
8-4 Similar Triangles	A) Angle-Angle Triangle Similarity Postulate	G.G.CO.10, G.G.SRT.2, G.G.SRT.3, G.G.SRT.5
	B) Side-Side-Side and Side-Angle-Side Similarity Theorems	
	C) Missing Measures in Similar Triangles	
8-5 Proportions in Triangles	A) Parallel Lines and Proportional Segments	G.G.CO.10, G.G.SRT.4, G.G.SRT.5
	B) Angle Bisectors and Proportional Segments	
8-6 Midsegments of Triangles	A) Parallel Segments	G.G.CO.10, G.G.SRT.5
	B) Length Relationships	

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Chapter 9 Right Triangles and Trigonometry

Lesson	Topic	AZ Standards
9-1 Right Triangle Similarity	A) Right Triangles and Proportionality Statements	G.G.SRT.4, G.G.SRT.5
	B) Missing Measures in Similar Right Triangles	
9-2 Pythagorean Theorem and Pythagorean Inequalities	A) Pythagorean Theorem	G.G.SRT.4
	B) Pythagorean Triples	
	C) Pythagorean Inequalities	
9-3 Isosceles Right Triangles	A) Determine the Length of the Hypotenuse from a Leg	G.G.SRT.6
	B) Determine the Length of a Leg from the Hypotenuse	
9-4 30°-60°-90° Triangles	A) Determine the Length of the Long Leg and the Hypotenuse from the Short Leg	G.G.SRT.6
	B) Determine the Length of the Short Leg and the Long Leg from the Hypotenuse	
	C) Determine the Length of the Short Leg and the Hypotenuse from the Long Leg	
9-5 Trigonometric Ratios	A) Sine, Cosine, and Tangent Ratios	G.G.SRT.6, G.G.SRT.7
	B) Relationship Between the Sine and Cosine Ratios for Complementary Angles	
	C) Inverse Trigonometric Ratios	
9-6 Solving Right Triangles	A) Use Trigonometry to Determine Missing Side Lengths and Angle Measures in Right Triangles	G.G.SRT.8
	B) Angles of Elevation and Depression	
	C) Using Angles of Elevation and Depression to Determine Missing Lengths	
9-7 Area of Triangles and Law of Sines	A) Area of Triangles using Sine	RFR.ETT.1, RFR.ETT.2, RFR.ETT.3
	B) Law of Sines to Determine Measures of Missing Lengths in Triangles	
	C) Law of Sines to Determine Measures of Interior Angles in Obtuse Triangles	
9-8 Law of Cosines	A) Law of Cosines to Determine Measures of Missing Lengths in Triangles	RFR.ETT.1, RFR.ETT.2
	B) Law of Cosines to Determine Measures of Interior Angles in Triangles	

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Chapter 10 Circles

Lesson	Topic	AZ Standards
10-1 Introduction to Circles	A) Segments in Circles	G.G.CO.1, G.G.C.2
	B) Major and Minor Arcs	
	C) Central Angles	
10-2 Tangents	A) Tangent Lines and Circles	G.G.C.2
	B) Tangent Lines and Radii	
	C) Lengths of Tangent Segments Intersecting in the Exterior of a Circle	
10-3 Inscribed Angles	A) Inscribed Angles and Their Intercepted Arcs	G.G.C.2, G.G.C.3
	B) Inscribed Angles That Intersect the Same Arc	
	C) Right Triangles and Quadrilaterals Inscribed in Circles	
10-4 Special Segment and Angle Relationships	A) Measures of Angles formed by Segments Intersecting in the Interior or Exterior of a Circle	G.G.C.2
	B) Lengths of Segments Intersecting in the Interior or Exterior of a Circle	
10-5 Chord Theorems	A) Congruent Chords and Their Intercepted Arcs	G.G.C.2
	B) Perpendicular Diameters and Chords	
	C) Chords That are Equidistant from the Center	
10-6 Equations of Circles	A) Write an Equation of a Circle	G.G.CO.1, G.G.C.1, G.G.GPE.1
	B) Determine the Center and the Radius from an Equation of a Circle	
	C) Similar Circles	

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Chapter 11 Perimeter, Area, and Circumference

Lesson	Topic	AZ Standards
11-1 Areas of Quadrilaterals	A) Area of Parallelograms, Kites, Rhombuses, and Trapezoids	G.G.MG.1, G.G.MG.3
11-2 Areas of Triangles	A) Area of Triangles Given Base and Height	G.G.MG.3
	B) Area of Equilateral Triangles Given Side Length	
11-3 Perimeter and Area of Regular Polygons	A) Perimeter of Regular Polygons	G.G.MG.3
	B) Area of Regular Polygons Given Apothem or Perimeter	
11-4 Area of Regular Polygons with Right Triangles	A) Area of Regular Polygons Using Special Right Triangles	G.G.SRT.8, G.G.MG.3
	B) Area of Regular Polygons Using Trigonometry	
11-5 Arc Length and Sectors	A) Use Arc Length to Determine Measures of Segments and Angles in a Circle	G.G.C.5, G.G.MG.1, G.G.MG.3
	B) Use Sectors to Determine Measures of Segments and Angles in a Circle	

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Chapter 12 Solids

Lesson	Topic	AZ Standards
12-1 Introduction to Solids	A) Faces, Vertices, Edges	G.G.GMD.4
	B) Naming Solids	
	C) Rotations of Two-Dimensional Figures	
12-2 Surface Area of Prisms and Cylinders	A) Surface Area Given Nets	G.G.MG.1, G.G.MG.3
	B) Lateral Area of Right Prisms and Cylinders	
	C) Surface Area of Right Prisms and Cylinders	
12-3 Surface Area of Pyramids and Cones	A) Surface Area Given Nets	G.G.MG.1, G.G.MG.3
	B) Lateral Area of Right Pyramids and Cones	
	C) Surface Area of Right Pyramids and Cones	
12-4 Volume of Prisms and Cylinders	A) Volume of Right Prisms and Cylinders	G.G.GMD.1, G.G.GMD.3, G.G.MG.1, G.G.MG.3
	B) Volume of Oblique Prisms and Cylinders	
12-5 Volume of Pyramids and Cones	A) Volume of Right Pyramids and Cones	G.G.GMD.1, G.G.GMD.3, G.G.GMD.4, G.G.MG.1, G.G.MG.3
	B) Volume of Oblique Pyramids and Cones	
12-6 Surface Area and Volume of Spheres	A) Segments in Spheres	G.G.GMD.3, G.G.MG.2, G.G.MG.3
	B) Surface Area of Spheres	
	C) Volume of Spheres	
12-7 Ratios of Lengths, Areas, and Volumes of Similar Figures	A) Ratios of Length, Area, and Volume in Similar Solids	G.G.SRT.5, G.G.GMD.3, G.G.MG.2
	B) Using Ratios of Similar Figures to Find Lengths, Areas, and Volumes	