



**MathConnections Correlation to the Oklahoma Priority Academic Student Skills
Grade 9-12
Geometry**

Standard	Location/Page where Standard is found
Standard 1: Logical Reasoning - The student will use deductive and inductive reasoning to solve problems.	
1. Identify and use logical reasoning skills (inductive and deductive) to make and test conjectures, formulate counter examples, and follow logical arguments.	Book 2a: 29, 38, 39, 44, 75, 77, 78, 85, 87, 108 – 116, 159, 176, 164, 171 – 173, 177, 180, 182 – 186, 188, 193, 196, 200 – 206, 212, 214, 215, 233, 234, 236, 240 – 244, 254, 256, 269, 290, 312, 315 Book 2b: 360, 361, 363, 365, 373, 383, 396, 401, 414, 416, 417, 420 – 422, 431, 436, 438, 442, 444 – 450, 459, 460, 476, 515, 582, 652, 653
2. State, use, and examine the validity of the converse, inverse, and contrapositive of “if-then” statements.	Book 2a: 35, 36, 39, 79, 80, 170, 188, 200 Book 2b: 366, 367, 373, 393 More in Book 3b: 488 – 509
3. Compare the properties of Euclidean geometry to non-Euclidean geometries (for example, elliptical geometry, as shown on the surface of a globe, does not uphold the parallel postulate).	Book 2a: 4 – 6 See Book 3b: 746 – 760
Standard 2: Properties of 2-Dimensional Figures - The student will use the properties and formulas of geometric figures to solve problems.	
1. Use geometric tools (for example, protractor, compass, straight edge) to construct a variety of figures.	Book 2a: 10, 11, 25 – 27, 63 – 67, 70, 73 – 76, 108 – 114, 147, 148, 186, 194, 195, 197, 204, 239 – 256 Book 2b: 363 – 365, 368, 370 – 372, 425 – 427, 436, 437, 442 – 450, 459, 460
2. Line and Angle Relationships	

a. Use the angle relationships formed by parallel lines cut by a transversal to solve problems.	Book 2a: 169 – 171, 174, 186 – 188, 229, 230, 236, 242, 245, 256, 266, 306 Book 2b: 525, 528, 529, 533 – 537, 540, 558, 559, 594, 596
b. Use the angle relationships formed by two lines cut by a transversal to determine if the two lines are parallel and verify, using algebraic and deductive proofs.	Book 2a: 183, 184, 188, 256
c. Use relationships between pairs of angles (for example, adjacent, complementary, vertical) to solve problems.	Book 2a: 163 – 167, 173, 175 – 177, 206, 229, 231, 269, 302, 303, 317 Book 2b: 365
3. Polygons and Other Plane Figures	
a. Identify, describe, and analyze polygons (for example, convex, concave, regular, pentagonal, hexagonal, n-gonal).	Book 2a: 30 – 39, 51, 201 – 210, 235 – 238
b. Apply the interior and exterior angle sum of convex polygons to solve problems, and verify using algebraic and deductive proofs.	Book 2a: 159, 172, 173, 203 – 210, 228 – 231
c. Develop and apply the properties of quadrilaterals to solve problems (for example, rectangles, parallelograms, rhombi, trapezoids, kites).	Book 2a: 17, 30, 33 – 39, 50, 102, 104, 116, 173, 202, 206, 208, 218, 233 – 238 Book 2b: 355 – 361, 367, 373, 373, 400, 564
d. Use properties of 2-dimensional figures and side length, perimeter or circumference, and area to determine unknown values and correctly identify the appropriate unit of measure of each.	Book 2a: 17 – 20, 40 – 62, 68, 70, 74 – 76, 83 – 86, 89, 97, 101 – 107, 179, 184 – 187, 209 – 220, 226, 231, 232, 236, 238, 249, 253, 256, 266, 270, 297, 316, 317, 343, 345, 346 Book 2b: 387 – 400, 405, 408 – 414, 420 – 422, 426, 429, 430, 433, 434, 437 – 441, 462, 467, 480, 483, 488 – 492, 500 – 504, 511, 517, 519, 565 – 567, 569 – 576 Book 2b: 394 – 396, 571
4. Similarity	
a. Determine and verify the relationships of similarity of triangles, using algebraic and deductive proofs.	Book 2a: 140, 142, 148, 151, 211, 212, 216 – 220
b. Use ratios of similar 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.	Book 2a: 44, 47, 73, 128 – 148, 151, 178 – 186, 195, 211 – 212, 217, 218, 229, 230, 241 – 243, 254, 260, 261, 272, 273, 282, 283, 285

	Book 2b: 365, 373, 388, 401, 412, 416, 441, 466, 467, 494, 500, 501, 641, 654, 655
5. Congruence	
a. Determine and verify the relationships of congruency of triangles, using algebraic and deductive proofs.	Book 2a: 180, 183, 184, 186, 194 – 196, 200
b. Use the relationships of congruency of 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.	Book 2a: 44, 47, 178 – 200, 229, 230, 241 – 243, 254 Book 2b: 365, 373, 441, 500, 501, 641
6. Circles	
a. Find angle measures and arc measures related to circles.	Book 2b: 402 - 414, 447 – 452
b. Find angle measures and segment lengths using the relationships among radii, chords, secants, and tangents of a circle.	Book 2b: 447 – 452
Standard 3: Triangles and Trigonometric Ratios - The student will use the properties of right triangles and trigonometric ratios to solve problems.	
1. Use the Pythagorean Theorem and its converse to find missing side lengths and to determine acute, right, and obtuse triangles, and verify using algebraic and deductive proofs.	Book 2a: 77 – 87, 90, 102 – 106, 133, 134, 137, 161, 165, 174, 179, 180, 185, 186, 191, 198 – 200, 231 – 238, 275, 276, 302, 307, 309, 314, 315, 338, 339, 343 Book 2b: 398, 458 – 462, 466 – 468, 489, 501, 504, 525 – 530
2. Apply the 45-45-90 and 30-60-90 right triangle relationships to solve problems, and verify using algebraic and deductive proofs.	Book 2a: 338 – 346 Book 2b: 377, 406, 459, 460, 467, 491, 572
3. Express the trigonometric functions as ratios and use sine, cosine, and tangent ratios to solve real-world problems.	Book 2a: 265 – 270, 278 – 281, 288 – 291, 298 – 300 Book 2b: 377, 406, 408, 414, 418, 419, 434, 459, 460, 467, 491, 492, 560, 572
4. Use the trigonometric ratios to find the area of a triangle.	Book 2a: 316, 317, 320

Standard 4: Properties of 3-Dimensional Figures - The student will use the properties and formulas of geometric figures to solve problems.	
1. Polyhedra and Other Solids	
a. Identify, describe, and analyze polyhedra (for example, regular, decahedral).	Book 2b: 464 – 468, 563, 577 – 582
b. Use properties of 3-dimensional figures; side lengths, perimeter or circumference, and area of a face; and volume, lateral area, and surface area to determine unknown values and correctly identify the appropriate unit of measure of each.	Book 2a: 96 – 101, 103, 105, 107, 221 – 226, 231 Book 2b: 467, 480, 483 – 505, 510 – 512, 514, 517, 519, 520, 564 – 567
2. Similarity and Congruence	
a. Use ratios of similar 3-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference of a face, area of a face, and volume.	Book 2a: 221 – 226 Book 2b: 466, 467, 504, 565
b. Use the relationships of congruency of 3-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference of a face, area of a face, and volume.	Book 2b: 494
3. Create a model of a 3-dimensional figure from a 2-dimensional drawing and make a 2-dimensional representation of a 3-dimensional object (for example, nets, blueprints, perspective drawings).	Book 2b: 456 – 463, 466 – 483, 506 – 508, 517, 518
Standard 5: Coordinate Geometry - The student will solve problems with geometric figures in the coordinate plane.	
1. Use coordinate geometry to find the distance between two points; the midpoint of a segment; and to calculate the slopes of parallel, perpendicular, horizontal, and vertical lines.	Book 2a: 50, 51, 83, 84, 86, 105, 118, 119, 121 – 123, 142, 143, 170, 191, 200, 233 – 238 Book 2b: 431, 525, 526, 646 – 648, 650 – 658, 665, 666 See also Book 1a: 255 – 265
2. Properties of Figures	
a. Given a set of points determine the type of figure formed based on its properties.	Book 2a: 51, 234 – 238 Book 2b: 547, 548
b. Use transformations (reflection, rotation, translation) on geometric figures to solve problems within coordinate geometry.	Book 2a: 118 – 123 Book 2b: 378 – 386, 646 – 658, 663 – 665, 686 – 674