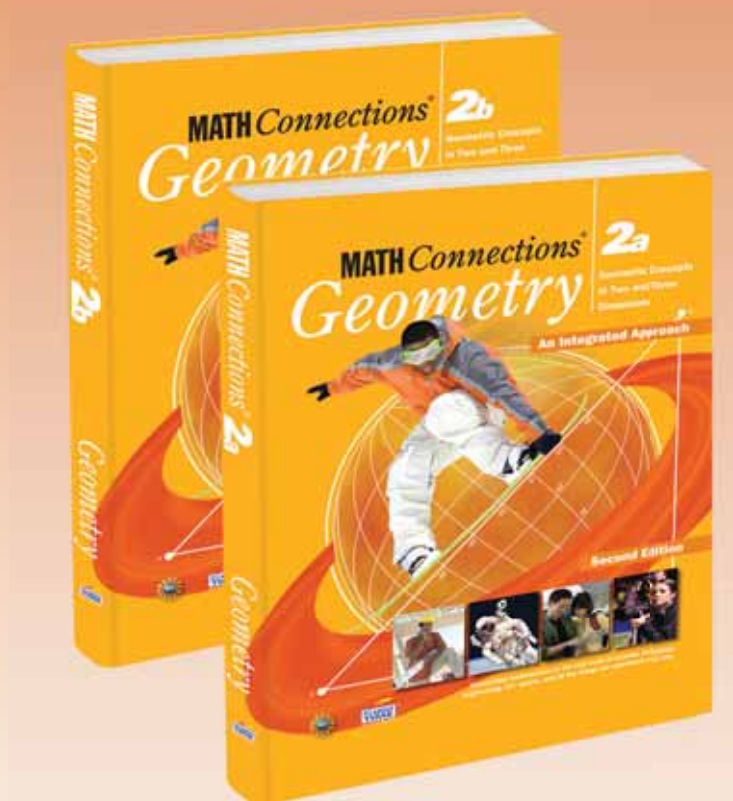


MATH *Connections*[®]

Geometry Correlation to the
Indiana
Standards for Mathematics K-12



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Indicators	Location/Page where Standard is found
Standard 1: Points, Lines, Angles and Planes	
G.1.1 Find the length of line segments in one- or two-dimensional coordinate systems, the slopes of line segments in two-dimensional coordinate systems, and find the point that is a given fractional distance from one end of the segment to another.	Book 2a: 11, 83, 84, 86, 105, 142, 143, 151 – 153, 161, 162, 165 – 168, 191, 198, 200, 233 – 238 Book 2b: 431, 461, 524, 525, 534, 535, 542 – 544, 589
G.1.2 Construct congruent segments and angles, angle bisectors, perpendicular bisectors, and parallel and perpendicular lines using appropriate geometric construction tools, explaining and justifying the process used.	Book 2a: 10, 11, 25 – 27, 63 – 67, 70, 73 – 76, 108 – 114, 147, 148, 186, 194 – 197, 204, 239 – 356 Book 2b: 363 – 365, 368, 370 – 372, 404, 425 – 437, 442 – 450, 459, 460
G.1.3 Recognize, use, and justify the relationships between special angles created by parallel lines and transversals.	Book 2a: 169 – 177, 186 – 188, 229, 230, 236, 242, 245, 256, 266, 306
G.1.4 Identify and apply properties of and theorems about parallel and perpendicular lines, and write equations of parallel and perpendicular lines, and develop simple geometric proofs involving parallel and perpendicular lines.	Book 2a: 169 – 177, 186 – 188, 229, 230, 236, 242 – 246, 250 – 256, 266, 306
G.1.5 Identify, justify and apply properties of planes.	Book 2b: 532 – 537, 589 – 603
G.1.6 Represent geometric objects and figures algebraically using coordinates, use algebra to solve geometric problems, and develop simple coordinate proofs involving geometric objects in the coordinate plane.	Book 2a: 50, 51, 83, 84, 86, 105, 118, 119, 121 – 123, 142, 143, 170, 191, 200, 233, 235 – 238 Book 2b: 431, 525, 526, 646 – 648, 650 – 658, 665, 666 – 675
G.1.7 Describe the intersection of two or more geometric figures in the plane.	Book 2b: 597, 598, 602
Standard 2: Polygons	
G.2.1 Find and use the sum of the measures of interior and exterior angles of convex polygons, justifying the method used.	Book 2a: 159, 172, 173, 203 – 210, 228 – 231
G.2.2 Identify types of symmetry (line, point, rotational, self-congruences) of polygons.	Book 2a: 22 – 29, 32, 37, 38, 195 Book 2b: 353 – 357, 360 – 362, 365, 430, 516, 641 – 651, 654 – 658, 664, 673 – 675
G.2.3 Solve problems involving congruent and similar polygons.	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
G.2.4 Predict and describe the results of translations, reflections, and rotations on polygons and describe a motion or series of motions that will show that two shapes are congruent.	Book 2a: 118, 119, 121 – 123 Book 2b: 643 – 651, 654 – 658, 670, 672 – 675
G.2.5 Deduce formulas relating lengths and sides, perimeters, and areas of regular polygons and understand how limiting cases of such formulas lead to expressions for the circumference and the area of a circle.	Book 2a: 17, 18, 40 – 43, 49, 345 Book 2b: 388 – 391, 394 – 400
G.2.6 Recognize and use coordinate geometry to verify properties of polygons, such as regularity, congruence and similarity.	Book 2a: 118, 119, 121 – 123, 142, 143, 191, 198, 200, 233 – 238 Book 2b: 646 – 648, 650 – 658, 665, 666
G.2.7 Develop simple geometric proofs involving congruent and similar polygons and provide reasons for each statement.	Book 2a: 172, 173, 180, 185, 186, 196, 200, 211, 212

Indicators	Location/Page where Standard is found
Standard 2: Quadrilaterals	
G.2.8 Describe, classify, and recognize relationships among the quadrilaterals such as squares, rectangles, rhombuses, parallelograms, trapezoids and kites.	Book 2a: 30 – 39, 104
G.2.9 Prove and apply theorems about parallelograms and trapezoids (including isosceles trapezoids) involving their angles, sides, and diagonals and prove that given quadrilaterals are parallelograms, rhombuses, rectangles, squares, or trapezoids (as appropriate).	Book 2a: 50, 218, 233 – 238, 242 – 246, 250 – 256
Standard 2: Triangles	
G.2.10 Define, identify, construct, and solve problems involving perpendicular bisectors, angle bisectors, medians and altitudes in triangles.	Book 2a: 24 - 27, 32, 109 – 115, 186, 194, 195, 239, 240, 248, 249 Book 2b: 365 – 373, 435 – 446, 515, 566
G.2.11 Construct triangles congruent to given triangles, explaining and justifying the process used.	Book 2a: 63 – 65, 73, 74, 181, 197
G.2.12 Use theorems to show whether two triangles are congruent (SSS, SAS, ASA) or similar (AA, SAS, SSS).	Book 2a: 178 – 200, 229, 230, 241 – 243, 254 Book 2b: 365, 373, 441, 500, 501, 641
G.2.13 Apply the triangle inequality theorem.	Book 2a: 73, 181, 197
G.2.14 Develop simple geometric proofs involving triangles and provide reasons for each statement.	Book 2a: 67, 68, 172, 173, 177, 179, 180, 185, 186, 196, 200, 211, 212, 269 Book 2b: 500, 501
Standard 2: Isosceles Triangles	
G.2.15 Prove and apply the isosceles triangle theorem and its converse.	Book 2a: 186, 194 – 196, 200 Book 2b: 418
Standard 2: Right Triangles	
G.2.16 Prove the Pythagorean Theorem and its converse and use them to solve problems, including problems involving the length of a segment in the coordinate plane.	Book 2a: 77 – 87, 90, 102, 103, 105, 106, 133, 134, 137, 161, 165, 174, 179, 180, 185, 186, 191, 198 – 200, 231, 233 – 238, 275, 276, 302, 307, 309, 314, 315, 338, 339, 343 Book 2b: 398, 458 – 460, 462, 463, 466 – 468, 489, 501, 504, 525 – 530
G.2.17 Prove and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle.	Book 2a: 179 , 180
G.2.18 Use special right triangles ($30^\circ - 60^\circ$ and $45^\circ - 45^\circ$) to solve problems.	Book 2a: 338 – 346 Book 2b: 377, 406, 459, 460, 467, 491, 572
G.2.19 Define and use the trigonometric functions (sine, cosine, tangent) in terms of angles of right triangles.	Book 2a: 260 – 262, 265 – 270, 272, 273, 275, 276, 278 – 281, 283 – 285, 288 – 291, 325 – 331, 334 – 337
G.2.20 Deduce and apply the area formula $A = \frac{1}{2} ab \sin C$, where a and b are the lengths of two sides of a triangle and C is the measure of the included angle formed by the two sides.	Book 2a: 316, 317, 320
G.2.21 Solve problems that can be modeled using right triangles, including problems that can be modeled using trigonometric functions. Interpret the solutions, and determine whether the solutions are reasonable, using technology when appropriate.	Book 2a: 81 – 86, 90, 102, 103, 105, 106, 133, 134, 137, 161, 165, 174, 179, 180, 185, 186, 191, 198 – 200, 231, 233 – 238, 260 – 262, 265 – 270, 272, 273, 275, 276, 278 – 281, 283 – 285, 288 – 291, 325 – 331, 334 – 337 Book 2b: 377, 398, 406, 408, 414, 418, 419, 434, 458 – 468, 489, 491, 492, 501, 504, 525 – 530, 560, 572

Indicators	Location/Page where Standard is found
Standard 3: Circles	
G.3.1 Construct the circle that passes through three given points not on a line and construct tangents to circles and circumscribe and inscribe circles, justifying the processes used.	Book 2a: 108 – 114 Book 2b: 268 – 372, 442 – 446
G.3.2 Define, deduce and use formulas for, and prove theorems for radius, diameter, chord, secant, and tangent.	Book 2b: 363, 364, 400, 401, 414, 447 – 452
G.3.3 Define, deduce and use formulas for, and prove theorems for measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	Book 2b: 415 – 422
G.3.4 Define, deduce and use formulas for, and prove theorems for measures of circumference, arc length, and areas of circles and sectors.	Book 2b: 394 – 408, 411 – 422, 432 – 434
G.3.5 Find the equation of a circle in the coordinate plane in terms of its center and radius and determine how the graph of a circle changes if a , b , and r are changed in the equation $(x - a)^2 + (y - b)^2 = r^2$.	Book 2b: 543, 544, 547, 548
G.3.6 Develop simple geometric proofs involving circles and provide reasons for each statement.	Book 2b: 367, 394 – 396, 414, 420, 421
Standard 4: Polyhedra and Other Solids	
G.4.1 Identify, justify and apply properties of prisms, regular pyramids, cylinders, right circular cones and spheres.	Book 2b: 459 – 463, 488 – 505
G.4.2 Solve problems involving congruent and similar solids.	Book 2a: 221 – 226
G.4.3 Find and use measures of sides, volumes, and surface areas of prisms, regular pyramids, cylinders, right circular cones and spheres. Relate these measures to each other using formulas.	Book 2a: 107 Book 2b: 467, 480, 483, 504, 565, 569 – 576
G.4.4 Visualize solids and surfaces in three-dimensional space when given two-dimensional representations and create two-dimensional representations for the surfaces of three-dimensional objects.	Book 2b: 469 – 483
Standard 5: Geometric Reasoning and Proof	
G.5.1 Describe the structure of and relationships within an axiomatic system (undefined terms, definitions, axioms/postulates, methods of reasoning, and theorems).	In depth Book 3b, Chapters 7 and 8
G.5.2 Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true and illustrate its counterparts in other geometries.	Book 2a: 12, 108 Book 2b: 464, 465 In depth Book 3b, Chapter 8
G.5.3 Understand the difference between supporting evidence, counterexamples, and actual proofs.	Book 2a: 36, 38, 39, 44, 140, 141, 149, 193, 201, 212, 290 Book 2b: 373, 416, 421, 425, 456
G.5.4 Develop simple geometric proofs (direct proofs, indirect proofs, proofs by contradiction and proofs involving coordinate geometry) using two-column, paragraphs, and flowcharts formats and providing reasons for each statement in the proofs.	Book 2a: 29, 32, 38, 39, 44, 75, 77, 78, 85, 87, 108 – 116, 159, 164, 171, 172, 173, 176, 177, 180, 182 – 186, 188, 193, 196, 200, 202 – 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 – 450, 459, 460, 476, 515, 582, 652, 653