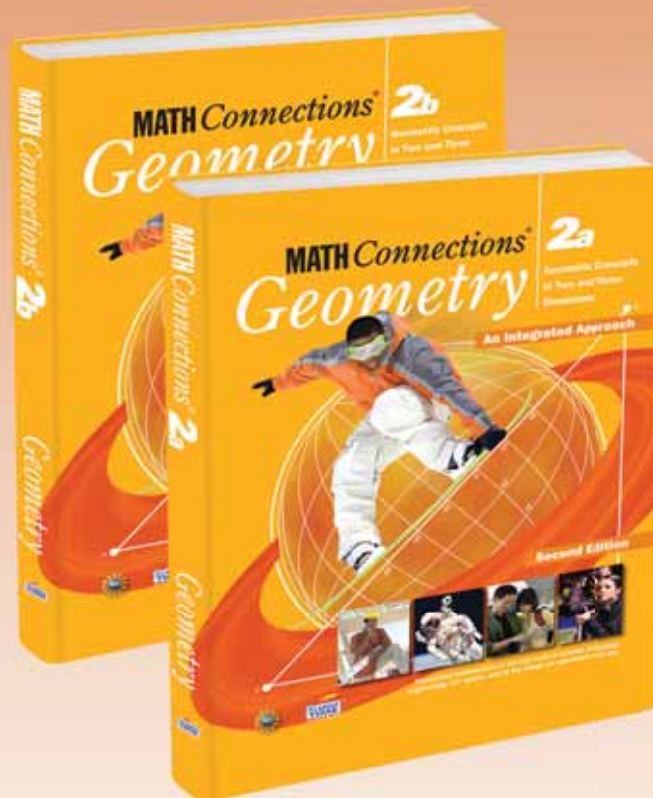


# MATH *Connections*<sup>®</sup>

Geometry Correlation to the South Carolina  
Mathematics Academic Standards  
Grades 9–12



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Indicators	Location/Page where Standard is found
<b>Standard G-1: Continued</b>	
G-1.9 Demonstrate an understanding of how geometry applies to real-world contexts (including architecture, construction, farming, and astronomy).	Book 2a: 2, 4, 5, 11, 20, 40, 48, 49 54 – 58, 61, 74, 85 – 88, 90 – 95, 99 – 101, 105 – 107, 126 – 137, 144 – 160, 165 – 168, 174 – 176, 181 – 183, 187, 190 – 192, 198 – 200, 206 – 210, 212, 213, 216, 217, 219, 220, 222, 225, 226, 228, 230, 231, 258, 260, 263, 264, 296 – 298, 303, 304, 309 – 311, 316 – 319, 330 Book 2b: 348, 350, 351, , 359, 371, 372, 374 – 376, 387, 397, 399, 400, 404 – 413, 417 – 419, 430 – 434, 454, 461, 462, 469, 470, 472 – 477, 481, 502, 505, 509, 518, 519, 522, 528, 551, 552, 559, 584 – 588, 595, 604, 605, 611 – 615, 625 – 638, 661 - 663
G-1.10 Demonstrate an understanding of geometric relationships (including constructions through investigations by using a variety of tools, such as straightedge, compass, Patty Paper, dynamic geometry software, and handheld computing devices).	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, 456 – 468, 477, 460
Indicators	Location/Page where Standard is found
<b>Standard G-2: The students will demonstrate through the mathematical processes an understanding of the properties of basic geometric figures and the relationships between and among them.</b>	
G-2.1 Infer missing elements of visual or numerical geometric patterns (including triangular and rectangular numbers and the number of diagonals in polygons).	Book 2a: 50, 51, 139, 237, 345, 346 Book 2b: 380, 436, 503, 504, 561, 578
G-2.2 Apply properties of parallel lines, intersecting lines, and 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
G-2.3 Use the congruence of line segments and angles to solve problems.	Book 2a: 24 – 26, 31, 33, 44, 47, 65, 73 ,149, 178, 179, 181, 183, 184, 195, 229, 241 – 243, 254, 286 Book 2b: 365, 373, 416, 441, 494, 641, 655
G-2.4 Use direct measurement to determine the length of a segment, degree of an angle, and distance from a point to a line.	Book 2a: 3 – 5, 7, 9 – 11, 67, 68, 70, 152, 155, 158, 182, 187, 193, 200 Book 2b: 377, 392, 416, 417, 424, 437 – 441, 448 – 450, 458 – 462, 475, 515, 518
G-2.5 Carry out a procedure to create geometric constructions (including the midpoint of a line segment, the angle bisector, the perpendicular bisector of a line segment, the line through a given point that is parallel to a given line, and the line through a given point that is perpendicular to a given line).	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-2.6 Use scale factors to solve problems involving scale drawings and models.	Book 2a: 3, 5, 74, 142 – 148, 176, 182, 187, 190, 231, 260, 272, 273 Book 2b: 359, 403, 404, 466 – 468, 470, 472, 475, 476, 516 - 519
G-2.7 Use geometric probability to solve problems.	Year 1 Related Topics Chapter 7

Indicators		Location/Page where Standard is found
<b>Standard G-3: The students will demonstrate through the mathematical processes an understanding of the properties and special segments of triangles and the relationships between and among triangles.</b>		
G-3.1	Carry out a procedure to compute the perimeter of a triangle.	Book 2a: 84, 86, 179, 184, 217 Book 2b: 440
G-3.2	Carry out a procedure to compute the area of a triangle.	Book 2a: 44 – 46, 50, 67 – 70, 73 – 76, 89, 106, 214, 217, 220, 253, 270 Book 2b: 394, 396, 414, 420 – 422, 434, 480, 567, 574
G-3.3	Analyze how changes in dimensions affect the perimeter or area of triangles.	Book 2a: 89, 211, 212, 216 – 220
G-3.4	Apply properties of isosceles and equilateral triangles to solve problems.	Book 2a: 17, 108 – 114, 186, 194, 196, 248, 343, 345, 346 Book 2b: 361, 365, 367, 372, 373, 418, 426, 436, 437, 443, 459, 468, 488, 489, 501, 542, 566, 578
G-3.5	Use interior angles, exterior angles, medians, angle bisectors, altitudes, and perpendicular bisectors to solve problems.	Book 2a: 24, 26, 29, 32, 109 – 115, 186, 195, 196, 203 – 209, 228, 230, 235 – 240, 244, 248, 249 Book 2b: 365 – 373, 431, 437 – 441, 515, 566
G-3.6	Apply the triangle sum theorem to solve problems.	Book 2a: 159, 172, 173, 190, 192, 203, 229, 269 Book 2b: 418 – 422, 432
G-3.7	Apply the triangle inequality theorem to solve problems.	Book 2a: 181, 187
G-3.8	Apply congruence and similarity relationships among triangles to solve problems.	Book 2a: 182, 185 – 188, 197 – 200, 213 – 220
G-3.9	Apply theorems to prove that triangles are either similar or congruent.	Book 2a: 178 – 180, 183, 184, 186, 187, 191 – 193, 197, 200 – 202, 207, 212, 230, 261, 283 Book 2b: 365, 367, 373, 459
G-3.10	Use the Pythagorean theorem and its converse to solve problems.	Book 2a: 77 – 87, 90, 102 – 106, 133, 134, 137, 161, 165, 174, 179, 180, 185, 186, 199, 231, 275, 276, 302, 314, 315, 338, 339, 343 Book 2b: 393, 424, 458 – 463, 466, 467, 500, 503, 504, 524, 574
G-3.11	Use the properties of 45-45-90 and 30-60-90 triangles to solve problems.	Book 2a: 338 – 346 Book 2b: 377, 406, 459, 460, 467, 491, 572
G-3.12	Use trigonometric ratios (including sine, cosine, and tangent) to solve problems involving right triangles.	Book 2a: 251 – 336 Book 2b: 377 – 386, 406, 408, 414, 418, 419, 434, 459, 460, 467, 491, 492, 560, 577, 649, 650, 652, 653, 666, 667, 672 – 674
Indicators		Location/Page where Standard is found
<b>Standard G-4: The students will demonstrate through the mathematical processes an understanding of the properties of quadrilaterals and other polygons and the relationships between and among them.</b>		
G-4.1	Carry out a procedure to compute the perimeter of quadrilaterals, regular polygons, and composite figures.	Book 2a: 18, 20, 42, 84, 86, 89, 102, 105, 179, 238 Book 2b: 394 – 396
G-4.2	Carry out a procedure to find the area of quadrilaterals, regular polygons, and composite figures.	Book 2a: 73, 76, 207 – 210, 345, 346 Book 2b: 394, 396

Indicators		Location/Page where Standard is found
<b>Standard G-4: Continued</b>		
G-4.3	Apply procedures to compute measures of interior and exterior angles of polygons.	Book 2a: 203 – 209, 228, 230
G-4.4	Analyze how changes in dimensions affect the perimeter or area of quadrilaterals and regular polygons.	Book 2a: 89, 90, 213 – 220,
G-4.5	Apply the properties and attributes of quadrilaterals and regular polygons and their component parts to solve problems.	Book 2a: 17, 30, 33 – 39, 50, 102, 104, 116, 173, 202, 206, 208, 218, 233 – 238 Book 2b: 355 – 361, 367, 373, 400, 564
G-4.6	Apply congruence and similarity relationships among shapes (including quadrilaterals and polygons) to solve problems.	Book 2a: 44, 47, 63, 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
Indicators		Location/Page where Standard is found
<b>Standard G-5: The students will demonstrate through the mathematical processes an understanding of the properties of circles, the lines that intersect them, and the use of their special segments.</b>		
G-5.1	Carry out a procedure to compute the circumference of circles.	Book 2b: 387, 392 – 398, 400, 405, 429, 430, 433, 462
G-5.2	Carry out a procedure to compute the area of circles.	Book 2b: 398 – 400, 404 – 406, 411 – 414, 430 – 434, 489, 491, 492, 500, 501, 503, 519
G-5.3	Analyze how a change in the radius affects the circumference or area of a circle.	Book 2b: 388, 389, 399 – 401
G-5.4	Carry out a procedure to compute the length of an arc or the area of a sector of a circle.	Book 2b: 402 – 414, 432 – 434
G-5.5	Apply the properties of the component parts of a circle (including radii, diameters, chords, sectors, arcs, and segments) to solve problems.	Book 2b: 364 – 375, 398 – 400, 404 – 422, 432 – 434, 447 – 449, 451
G-5.6	Apply the properties of lines that intersect circles (including two secants, two tangents, and a secant and a tangent) to solve problems.	Book 2b: 447 – 452
G-5.7	Apply the properties of central angles, inscribed angles, and arcs of circles to solve problems.	Book 2b: 402 – 422, 432 – 434, 447 – 449, 451
Indicators		Location/Page where Standard is found
<b>Standard G-6: The students will demonstrate through the mathematical processes an understanding of transformations, coordinate geometry, and vectors.</b>		
G-6.1	Use the distance formula to solve problems.	Book 2a: 83, 86, 233 – 238 Book 2b: 524 – 530, 536, 542, 548, 567
G-6.2	Use the midpoint formula to solve problems.	Year 1, Book 1a: 262 – 265
G-6.3	Apply transformations—translation, reflection, rotation, and dilation—to figures in the coordinate plane by using sketches and coordinates.	Book 2a: 118 – 123 Book 2b: 378 – 386, 646 – 658, 663 – 665, 686 – 694
G-6.4	Apply transformations (including translation and dilation) to figures in the coordinate plane by using matrices.	Book 2b: 646 – 655, 657, 658, 665 – 675
G-6.5	Carry out a procedure to represent the sum of two vectors geometrically by using the parallelogram method.	Book 2a: 307, 308, 310
G-6.6	Carry out a procedure to determine the magnitude and direction of the resultant of two vectors by using a scale drawing and direct measurement.	Book 2a: 307, 308, 310
G-6.7	Carry out a procedure to compute the magnitude of the resultant of two perpendicular vectors by using the Pythagorean theorem.	Book 2a: 302, 306 – 311, 337

Indicators		Location/Page where Standard is found
<b>Standard G-6: Continued</b>		
G-6.8	Carry out a procedure to determine the direction of the resultant of two perpendicular vectors by using a scale drawing and direct measurement.	Book 2a: 306 – 311, 337
Indicators		Location/Page where Standard is found
<b>Standard G-7: The students will demonstrate through the mathematical processes an understanding of the surface area and volume of three-dimensional objects.</b>		
G-7.1	Carry out a procedure to compute the surface area of three-dimensional objects (including cones, cylinders, pyramids, prisms, spheres, and hemispheres).	Book 2a: 107 Book 2b: 467, 480, 483, 504, 565, 569 – 576
G-7.2	Carry out a procedure to compute the volume of three-dimensional objects (Including cones, cylinders, pyramids, prisms, spheres, hemispheres, and composite objects)	Book 2a: 96 – 101, 103, 105, 221 – 226, 231 Book 2b: 484 – 505, 510 – 512, 514, 517, 519, 520, 564 – 567
G-7.3	Analyze how changes in dimensions affect the volume of objects (including cylinders, prisms, and spheres).	Book 2a: 97 – 101, 222 – 226, 232 Book 2b: 459 – 463, 485 – 490, 496
G-7.4	Apply congruence and similarity relationships among geometric objects to solve problems.	Book 2a: 221 – 226 Book 2b: 466, 467, 494
G-7.5	Apply a procedure to draw a top view, front view, and side view of a three-dimensional object.	Book 2b: 470 – 478, 481 – 483
G-7.6	Apply a procedure to draw an isometric view of a three-dimensional object.	Not presented

Indicators		Location/Page where Standard is found
<b>Standard G-6: Continued</b>		
G-6.8	Carry out a procedure to determine the direction of the resultant of two perpendicular vectors by using a scale drawing and direct measurement.	Book 2a: 306 – 311, 337
Indicators		Location/Page where Standard is found
<b>Standard G-7: The students will demonstrate through the mathematical processes an understanding of the surface area and volume of three-dimensional objects.</b>		
G-7.1	Carry out a procedure to compute the surface area of three-dimensional objects (including cones, cylinders, pyramids, prisms, spheres, and hemispheres).	Book 2a: 107 Book 2b: 467, 480, 483, 504, 565, 569 – 576
G-7.2	Carry out a procedure to compute the volume of three-dimensional objects (Including cones, cylinders, pyramids, prisms, spheres, hemispheres, and composite objects)	Book 2a: 96 – 101, 103, 105, 221 – 226, 231 Book 2b: 484 – 505, 510 – 512, 514, 517, 519, 520, 564 – 567
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