

Correlation of

GEOMETRY:
Mathematics in Context,
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to

Tennessee's Learning Expectations and Performance Indicators:
Technical Geometry

Standard 1.0: Number and Operations	
Students will recognize, order, represent, and graph rational and irrational numbers.	
LEARNING EXPECTATIONS	PAGE REFERENCES
1.1 The student will demonstrate an understanding of the relative size of rational and irrational numbers.	SE/TE: Covered in <i>Algebra I: Mathematics in Context</i>
1.2 The student will choose and use appropriate notations for rational and irrational numbers, including graphic representations.	SE/TE: 342–343, 501–503 TRB: 257–262, 263–268
1.3 The student will demonstrate an understanding of absolute value.	SE/TE: 11, 13–18, 51

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> order a set of rational and irrational numbers 	SE/TE: Covered in <i>Algebra I: Mathematics in Context</i>
<ul style="list-style-type: none"> find an integral power of a positive rational number (exponents 1 – 3) 	SE/TE: Covered in <i>Algebra I: Mathematics in Context</i>
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> use absolute value to express the distance between two points on a number line and vice versa 	SE/TE: 12–18
<ul style="list-style-type: none"> simplify a radical (radicand less than 1000) 	SE/TE: 342–343, 501–503
<ul style="list-style-type: none"> match a given irrational number to the appropriate point on a number line and vice versa (e.g., $\sqrt{2}$, $\sqrt{30}$, π) 	SE/TE: 343–344, 501–503 TRB: 257–262, 263–268
<i>There are no state-assessed performance indicators at Level 3.</i>	

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> order a set of rational numbers (e.g., determine the sizing of electrical wire by gauge) 	SE/TE: Covered in <i>Algebra I: Mathematics in Context</i>
<ul style="list-style-type: none"> estimate the value of an irrational number expressed as a radical (radicand less than 1000) (e.g., order lengths determined by a carpenter’s square) 	SE/TE: 348–353, 369–371, 385 TRB: 257–262, 263–268
<ul style="list-style-type: none"> approximate pi given a table of values for the circumference and diameter of circles 	SE/TE: 481–486, 501–503 SW: 63
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> estimate the distance between two points on a line 	SE/TE: 12–18, 51 TRB: 7–12
<ul style="list-style-type: none"> discuss the accuracy of radicals and their decimal approximations in contexts such as carpentry 	SE/TE: 348–353, 369–371, 385 TRB: 257–262, 263–268
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> represent irrational numbers as lengths of lines in the coordinate plane (e.g., $\sqrt{5}$ is the length of a diagonal brace of a rectangle frame with a base of 1 and a height of 2) 	SE/TE: 343–344 TRB: 289–294 SW 63

Standard 2.0: Algebra	
Students	
LEARNING EXPECTATIONS	PAGE REFERENCES
2.1 The student will recognize, extend, and create geometric, spatial, and numerical patterns.	SE/TE: 68–73, 382–383, 694–697
2.2 The student will analyze mathematical patterns related to algebra and geometry in real-world problem solving.	SE/TE: 44–50, 51–63, 115–122, 123–135, 184–189, 190–199, 237–241, 242–250, 291–296, 297–305, 367–372, 373–385, 413–420, 444–453, 454–455, 497–503, 504–513, 564–570, 571–577, 642–649, 650–661, 712–720, 721–730 TRB: 307–313
2.3 The student will solve problems connecting geometry with number theory, probability and statistics, and measurement and estimation using algebraic thinking and symbolism.	SE/TE: 256–257, 492–496 TRB: 369–374
2.4 The student will apply coordinate geometry to analyze and solve problems.	SE/TE: 390–396, 397–403, 405–412, 421–428, 429–437, 438–443, 444–453, 454–455, 518–524, 557–563 TRB: 289–294, 295–300, 301–306, 307–312, 313–318, 319–324 SGA: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.R SW: 51, 52, 53, 54, 55, 56, 57, 58, 59, 60 PS: 65–78
2.5 The student will apply ratio and proportion to problems involving similar figures.	SE/TE: 310–315, 316–322, 323–330, 335–340, 487–491, 632–636 TRB: 227–232, 233–238, 239–244, 245–250, 251–256 SGA: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 SW: 49 PS: 55–64

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> extend or find missing element(s) in a geometric pattern 	SE/TE: Covered in <i>Algebra I: Mathematics in Context</i>
<ul style="list-style-type: none"> solve multistep linear equations to find length, width, perimeter, and area of geometric figures 	SE/TE: 413–420, 458–464, 465–470 TRB: 307–312
<ul style="list-style-type: none"> apply the concept of rate of change to solve a real-world problem given a pattern of data 	SE/TE: 140–147, 354–360, 405–412 TRB: 301–306, 307–312 SGA: 7.3
<ul style="list-style-type: none"> determine the slope given a graph of a linear equation and vice versa 	SE/TE: 141–142, 405–412 TRB: 101–106, 301–306, 307–312 SGA: 7.3
<ul style="list-style-type: none"> determine the distance, midpoint, or slope when given the coordinates of two points (answers must be given as decimals to the nearest hundredth) 	SE/TE: 390–396, 405–412 TRB: 289–294, 301–306 SGA: 7.1, 7.3 SW: 51
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> determine the equation of a line parallel or perpendicular to a given line, from given information (e.g., equations of lines, graphs of lines, or two points) 	SE/TE: 140–147, 413–420, 421–428, 439–441 TRB: 101–106, 307–312
<ul style="list-style-type: none"> apply ratio and proportion to solve real-world problems involving polygons (e.g., scale drawings, similar figures) 	SE/TE: 310–315, 316–322, 323–330, 335–340, 487–491, 632–636 TRB: 227–232, 233–238, 239–244, 245, 251–256 SGA: 6.1, 6.2, 6.3, 6.4, 6.5 PS: 55–64

<ul style="list-style-type: none"> • apply the triangle inequality property to determine which sets of side lengths determine a triangle 	SE/TE: 179–183, 193, 200–201 TRB: 125–136 SGA: 3.6 SW: 19, 20
<ul style="list-style-type: none"> • determine the perimeter, area, or volume given the ratio of two similar polygons or rectangular solids 	SE/TE: 310–316, 317–322, 323–330, 487–491, 632–636 TRB: 233–238, 239–244, 363–368, 469–474 SGA: 6.2, 8.6, 10.8
<ul style="list-style-type: none"> • apply the Triangle Sum Theorem or Exterior Angle Theorem to determine the measures of the angles of a given triangle with the angle measures expressed algebraically 	SE/TE: 162–170, 186–187 TRB: 119–124 SGA: 3.4 SW: 18, 21, 22
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> • determine the equation of a circle given coordinates or the graph of the circle (e.g., the center, the endpoints of the diameter) 	SE/TE: 518–524 TRB: 383–388 SGA: 9.1 SW: 69

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> • apply the line of best fit given real-world data to make predictions and describe trends (e.g., quality control sampling, marketing sales of specific products, demographics in an area) 	SE/TE: 415–420 TRB: 311–312
<ul style="list-style-type: none"> • translate given data into algebraic expressions (e.g., feasibility studies, cost vs. profit/production, and consumer costs for products) 	SE/TE: 413–420 TRB: 307–312
<ul style="list-style-type: none"> • find powers and roots of numbers in problem solving using appropriate technology (e.g., apply concept to bacterial growth, amortization of a house) 	SE/TE: 501–503
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> • explore patterns in real-world situations (e.g., Golden Ratio, Pythagorean Triples, and Tiling) 	SE/TE: 42, 338, 341–347, 348–353, 382–383, 505, 694–697 TRB: 257–262 SGA: 6.6
<ul style="list-style-type: none"> • use manipulatives to determine relationships between linear, square, or cubic measures when one of the measures of the object has changed 	SE/TE: 310, 313–315, 316, 3323–325, 371–372, 487, 497–501, 632 TRB: 233–238, 239–244, 363–368, 469–474
<ul style="list-style-type: none"> • simplify radicals to estimate irregular areas (e.g., building design, building braces, and grade of a slope) 	SE/TE: 460–464, 504, 507, 508–510
<ul style="list-style-type: none"> • find regression equations for data sets using technology 	Not covered
<ul style="list-style-type: none"> • solve problems involving indirect ratios, such as gear ratios 	Not covered

<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> recognize complete and incomplete networks (e.g., delivery routes, mapping, electrical and plumbing applications) 	Not covered
<ul style="list-style-type: none"> apply the Law of Sines and Law of Cosines to triangles (e.g., surveying, architecture, plotting location, welding) 	Not covered

Standard 3.0: Geometry	
Students will investigate, model, and apply geometric properties and relationships and use indirect reasoning to make conjectures; deductive reasoning to draw conclusions; and both inductive and deductive reasoning to establish the truth of statements.	
LEARNING EXPECTATIONS	PAGE REFERENCES
3.1 The student will analyze relationships among corresponding parts of similar or congruent geometric figures.	SE/TE: 204–210, 211–217, 218–223, 224–230, 310–315, 316–322, 323–330, 335–340 TRB: 145–150, 151–156, 157–162, 163–168, 233–238, 239–244, 245–250, 251–256 SGA: 4.1, 4.2, 4.3, 4.4, 4.R, 6.1, 6.2, 6.3, 6.4, 6.5, 6.R SW: 31, 32 PS: 27–38, 55–64
3.2 The student will apply geometric properties of solids, polygons, and circles to solve real-world problems.	SE/TE: 256–261, 262–267, 268–272, 273–278, 279–284, 285–290, 291–296, 297–305, 525–532, 571–577, 650–660 TRB: 183–188, 189–194, 195–200, 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 5.1, 5.2, 5.3, 5.5, 5.6, 5.R, 9.2, 9.3, 9.4, 9.5, 9.R SW: 35, 36, 37, 38, 39, 40, 41, 70, 71, 72, 73, 74 PS: 39–54, 97–114
3.3 The student will justify conclusions and solve problems using deductive reasoning.	SE/TE: 23, 68–73, 74–79, 80–84, 85–94, 95–102, 103–109, 115–120, 123–135, 188–189, 194 TRB: 51–56, 61–62, 63–68, 97–98 SGA: 2.2, 2.4, 2.5, 2.6, 2.7 SW: 9, 14, 15 PS: 1–144
3.4 The student will use inductive reasoning to make conjectures and solve problems.	SE/TE: 68–73, 77, 194 TRB: 45–50 SGA: 2.1

<p>3.5 The student will communicate position using spatial sense with two- and three-dimensional coordinate systems.</p>	<p>SE/TE: 390–396, 397–403, 405–412, 421–428, 429–437, 438–443, 444–453, 454–455, 518–524, 557–563</p> <p>TRB: 289–294, 295–300, 301–306, 307–312, 313–318, 319–324, 427–432, 433–438, 475–480</p> <p>SGA: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.R</p> <p>SW: 51, 53, 54, 55, 59, 60</p> <p>PS: 65–78</p>
<p>3.6 The student will demonstrate an understanding of transformations of geometric figures (e.g., translations, rotations, dilations, and reflections).</p>	<p>SE/TE: 666–673, 674–680, 681–687, 688–693, 694–697, 698–704, 705–711, 712–720, 721–730</p> <p>TRB: 489–494, 495–500, 501–506, 507–512, 513–518, 525–530</p> <p>SGA: 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.R</p> <p>SW: 85, 86, 87, 88, 89, 90, 91, 92</p> <p>PS: 129–144</p>
<p>3.7 The student will apply right triangle relationships including the Pythagorean Theorem, the distance formula, and trigonometric ratios.</p>	<p>SE/TE: 341–347, 348–353, 354–360, 361–366, 369–371, 390–396</p> <p>TRB: 257–262, 263–268, 269–274, 275–280, 289–294</p> <p>SGA: 6.5, 6.6, 6.7, 6.8, 6.9, 6.R</p> <p>SW: 44, 45, 46, 47, 48</p>
<p>3.8 The student will describe geometric objects and recognize minimal conditions necessary to define the geometric objects.</p>	<p>SE/TE: 4–11, 51, 53, 140–147, 162–170, 231–236, 256–261, 268–269</p> <p>TRB: 1–6, 31–36, 183–188, 195–200</p> <p>SGA: 1.1, 3.1, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.R</p> <p>SW: 7</p>
<p>3.9 The student will apply reflexive, transitive, and symmetric properties when appropriate.</p>	<p>SE/TE: 95–102, 226</p> <p>TRB: 75–78</p> <p>SGA: 2.5</p> <p>PS: 5</p>

<p>3.10 The student will demonstrate understanding of geometric properties of congruence, similarity, perpendicularity, and parallelism.</p>	<p>SE/TE: 110–114, 122, 148–154, 155–161, 162–170, 171–178, 179–183, 200–201, 204–210, 211–217, 218–223, 224–230, 310–315, 316–322, 323–330, 335–340</p> <p>TRB: 25–30, 87–92, 101–106, 107–112, 113–118, 145–150, 151–156, 157–162, 163–168, 233–238, 239–244, 245–250, 251–256</p> <p>SGA: 1.5, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.R, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.7, 6.8, 6.9, 6.R</p> <p>SW: 17, 23, 24</p> <p>PS: 15–26</p>
<p>3.11 The student will recognize and articulate relationships among families of geometric figures (e.g., quadrilaterals, prisms).</p>	<p>SE/TE: 256–261, 268–272, 279–284, 596–604, 605–611, 612–618, 619–624</p> <p>TRB: 195–200, 201–206, 207–212, 213–218</p> <p>SGA: 5.1, 5.3</p> <p>PS: 39–54</p>
<p>3.12 The student will use logic and proof to establish the validity of conjectures and theorems.</p>	<p>SE/TE: 23, 68–73, 74–79, 80–84, 85–94, 95–102, 103–109, 115–120, 123–135, 188–189</p> <p>TRB: 45–50, 51–56, 61–62, 63–68, 145–168</p> <p>SGA: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.R, 4.2</p> <p>PS: 1–144</p>

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> identify corresponding parts of similar and congruent geometric figures given a diagram 	SE/TE: 204–210, 211–217, 218–223, 242–250, 251–252 TRB: 145–150, 151–156, 157–162, 163–168, 233–238, 239–244, 245–250, 251–256 SGA: 4.1, 4.2, 4.3, 4.4, 4.5, 4.R, 6.1, 6.2, 6.3, 6.3, 6.5, 6.6, 6.R
<ul style="list-style-type: none"> determine the length of a missing side in a right triangle when given two sides (answers must be given as simplified radicals) 	SE/TE: 341–347, 348–353, 354–360, 361–366, 369–370, 373–385 SGA: 6.6, 6.7, 6.8, 6.9
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> identify properties of plane figures from information given in diagram 	SE/TE: 256–261, 268–272, 279–284, 285–290, 291–296, 297–284 TRB: 1–6, 183–188, 195–200, 204–206, 207–211, 213–218 SGA: 1.1, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6
<ul style="list-style-type: none"> identify chords, inscribed angles, or central angles of circles given a diagram 	SE/TE: 533–541, 542–549, 550–556, 565–590, 571–577, 578–579 TRB: 395–400, 410–406 SGA: 9.2, 9.3, 9.4, 9.5, 9.R SW: 70, 71, 72, 73, 74
<ul style="list-style-type: none"> determine congruence or similarity relations between triangles or quadrilaterals given a diagram 	SE/TE: 204–210, 211–217, 218–223, 224–230, 310–315, 316–322, 323–330, 335–340 TRB: 145–150, 151–156, 157–162, 163–168, 195–200, 201–206, 207–212, 213–218 SGA: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6

<ul style="list-style-type: none"> determine whether a plane figure has been translated, dilated, reflected, or rotated given a diagram and vice versa 	<p>SE/TE: 666–673, 674–680, 681–687, 688–693, 694–697, 698–704, 705–711, 712–720, 721–730</p> <p>TRB: 489–494, 495–500, 501–506, 507–512, 513–518, 525–530</p> <p>SGA: 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.R</p> <p>SW: 85, 86, 87, 88, 89, 90, 91, 92</p> <p>PS: 129–144</p>
<ul style="list-style-type: none"> solve problems involving complementary, supplementary, congruent, vertical, or adjacent angles given angle measures expressed algebraically 	<p>SE/TE: 23–25, 26–29, 44–45, 56–63, 64–65, 103–109, 110–114</p> <p>TRB: 19–24, 81–86</p> <p>PS: 5–14</p>
<ul style="list-style-type: none"> determine the trigonometric ratio for a right triangle needed to solve a real-world problem given a diagram 	<p>SE/TE: 354–360, 361–366</p> <p>TRB: 269–274, 275–280</p> <p>SGA: 6.8, 6.9</p>
<ul style="list-style-type: none"> find a missing side length in a 30-60-90 or 45-45-90 degree triangle without rationalizing the denominator 	<p>SE/TE: 348–353, 369–371</p> <p>TRB: 263–268</p> <p>SGA: 6.7</p>
<ul style="list-style-type: none"> apply properties of quadrilaterals to solve a real-world problem given a diagram (opposite sides and angles, consecutive sides and angles, or diagonals) 	<p>SE/TE: 268–272, 273–278, 279–284, 285–290, 293–296, 297–305, 306–307</p> <p>TRB: 195–200</p> <p>SGA: 5.4, 5.5, 5.6</p> <p>SW: 35, 36, 37</p>
<ul style="list-style-type: none"> solve real-world problems involving measures of interior or exterior angles of regular polygons 	<p>SE/TE: 262–267</p> <p>TRB: 189–194</p> <p>SGA: 5.2</p> <p>SW: 18, 35</p>

<ul style="list-style-type: none"> • solve problems involving complementary, supplementary, congruent, vertical, or adjacent angles given angle measures expressed algebraically 	<p>SE/TE: 23–25, 26–29, 44–45, 56–63, 64–65, 103–109, 110–114</p> <p>TRB: 19–24, 81–86</p> <p>PS: 5–14</p>
<ul style="list-style-type: none"> • determine the trigonometric ratio for a right triangle needed to solve a real-world problem given a diagram 	<p>SE/TE: 354–360, 361–366</p> <p>TRB: 269–274, 275–280</p> <p>SGA: 6.8, 6.9</p>
<ul style="list-style-type: none"> • find a missing side length in a 30-60-90 or 45-45-90 degree triangle without rationalizing the denominator 	<p>SE/TE: 348–353, 369–371</p> <p>TRB: 263–268</p> <p>SGA: 6.7</p>
<ul style="list-style-type: none"> • apply properties of quadrilaterals to solve a real-world problem given a diagram (opposite sides and angles, consecutive sides and angles, or diagonals) 	<p>SE/TE: 268–272, 273–278, 279–284, 285–290, 293–296, 297–305, 306–307</p> <p>TRB: 195–200</p> <p>SGA: 5.4, 5.5, 5.6</p> <p>SW: 35, 36, 37</p>
<ul style="list-style-type: none"> • solve real-world problems involving measures of interior or exterior angles of regular polygons 	<p>SE/TE: 262–267</p> <p>TRB: 189–194</p> <p>SGA: 5.2</p> <p>SW: 18, 35</p>
<ul style="list-style-type: none"> • identify the appropriate segment of a triangle given a diagram and vice versa (e.g., median, altitude, angle bisector, perpendicular bisector) 	<p>SE/TE: 231–236, 237–238, 239–241</p> <p>TRB: 169–174</p> <p>SGA: 4.6, 4.R</p>

<ul style="list-style-type: none"> determine which three-dimensional solid is represented by a given net and vice versa (two-dimensional drawing) 	SE/TE: 598, 599, 609, 612, 620, 647–649, 654
<ul style="list-style-type: none"> determine the area of indicated regions involving circles, squares, rectangles, and/or triangles 	SE/TE: 458–464, 465–470, 471–476, 477–480, 481–486, 487–491, 507–513, 514–515 TRB: 333–338, 339–344, 345–350, 351–356, 357–362, 363–368 SGA: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.R
<ul style="list-style-type: none"> justify triangle congruence given a diagram (e.g., ASA, SSS, AAS, SAS, or Hypotenuse/Leg) 	SE/TE: 204–210, 211–217, 218–223, 224–230 TRB: 145–150, 151–156, 157–162, 163–168 SGA: 4.1, 4.2, 4.3, 4.4, 4.5 SW: 31
<ul style="list-style-type: none"> determine if a triangle is a right triangle given the length of all sides of a triangle 	SE/TE: 341–347, 348–353 TRB: 257–262 SGA: 6.6
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> solve problems involving the properties of arcs, chords, tangents, or secants 	SE/TE: 501–503, 518–524, 525–532, 533–541, 542–549, 550–556, 565–570, 571–577, 578–579 TRB: 389–394, 395–400, 401–406, 407–412 SGA: 9.2, 9.3, 9.4, 9.5, 9.R SW: 71, 72, 73, 74
<ul style="list-style-type: none"> find the area of a sector of a circle given a diagram 	SE/TE: 494, 495, 496 TRB: 359–362 PS: 86

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> • use indirect reasoning to make conjectures and solve problems (e.g., crop analysis, inventory) 	SE/TE: 173–175, 186–187 SW: 18
<ul style="list-style-type: none"> • investigate the Pythagorean Theorem using various technologies 	SE/TE: 341–347, 373–385 TRB: 257–262 SGA: 6.6 SW: 44, 46, 47, 48
<ul style="list-style-type: none"> • construct parallelograms, rectangles, rhombi, and squares using physical materials, manipulatives, or technology (e.g., building construction, automobile design, quilting, pattern design) 	SE/TE: 273–278, 279–284, 293–296, 297–305 TRB: 199–200
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> • use inductive and deductive reasoning to draw a conclusion (e.g., diagnostics in automotives, health science nutrition science) 	SE/TE: 23, 68–73, 74–79, 80–84, 85–94, 95–102, 103–109, 115–120, 123–135, 188–189, 194 TRB: 45–50, 51–56, 61–62, 63–68, 97–98 SGA: 2.1, 2.2, 2.4 SW: 9, 14, 15
<ul style="list-style-type: none"> • recognize and articulate relationships among families of geometric figures (e.g., metal fabrication, floral design, landscaping) 	SE/TE: 256–261, 268–272, 279–284, 596–604, 605–611, 612–618, 619–624
<ul style="list-style-type: none"> • investigate the properties of angles, arcs, chords, tangents, and/or secants using technology or manipulatives 	SE/TE: 501–503, 518–524, 525–532, 533–5541, 542–549, 550–556, 565–570, 571–577, 578–579 TRB: 19–24, 81–86, 389–394, 395–400, 401–406, 407–412 SGA: 1.3, 1.4, 1.5, 1.R PS: 97–114

<ul style="list-style-type: none"> use logical reasoning to solve problems in the real world (e.g., health science, agri-science criminal justice, nutrition) 	SE/TE: 115–122, 123–135 TRB: 45–50, 51–56, 61–62, 63–68, 97–98 SGA: 2.3, 2.4
<ul style="list-style-type: none"> use manipulatives to explore the geometric mean of similar triangles (e.g., plumbing, electrical wiring) 	SE/TE: 335–340
<ul style="list-style-type: none"> use appropriate technology to develop geometric and spatial concepts 	SE/TE: 46–48, 120–121, 186–187, 239–241, 291–292, 369–371, 439–441, 501–503, 567–570, 582–588, 589–595, 637–641, 643–646, 712–715 TRB: 539–562 SGA: 10.1, 10.2
<ul style="list-style-type: none"> construct three-dimensional objects using physical materials and manipulatives (e.g., packaging, cake decorating, building construction, sculptural design, and mobile creation in child care) 	SE/TE: 582–588, 589–595, 596–604, 605–611, 612–618, 619–624, 625–631, 637–641, 642–646, 647–649, 650–660 TRB: 427–432, 433–438 SGA: 10.1, 10.2
<ul style="list-style-type: none"> identify the three basic trig ratios and their graphs 	SE/TE: 354–360, 361–366 TRB: 269–274, 275–280 SGA: 6.8, 6.9
<ul style="list-style-type: none"> recognize and apply reflexive, symmetric, and transitive property of equality, similarity, and congruence 	SE/TE: 95–102, 226 TRB: 75–78
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> use coordinates to communicate the location of a three-dimensional figure that has been rotated or reflected (e.g., systems, diagnostics, CAD) 	SE/TE: 429–436, 441–443, 450–451, 453 TRB: 319–324 SGA: 7.6
<ul style="list-style-type: none"> apply the three basic trig ratios to solving problems (e.g., angle of elevation, grade of a road, bearings) 	SE/TE: 354–360, 361–366 TRB: 269–274, 275–280 SGA: 6.8, 6.9

<p>Standard 4.0: Measurement</p> <p>Students will apply appropriate units of measurement; develop effective estimation and computation strategies for solving real world problems involving length, area, and volume; and choose appropriate techniques and tools to measure quantities in order to meet specifications for precision, accuracy, and tolerance.</p>	
LEARNING EXPECTATIONS	PAGE REFERENCES
<p>4.1 The student will use concepts of length, area, and volume to estimate and solve real-world problems.</p>	<p>SE/TE: 390–396, 458–464, 465–470, 471–476, 477–480, 481–486, 487–491, 504–513, 514–515, 596–604, 605–611, 612–618, 619–624, 626–631, 647–649, 650–660, 661–663</p> <p>TRB: 333–338, 339–344, 345–350, 351–356, 357–362, 363–368, 439–444, 445–450, 451–456, 457–462, 463–468</p> <p>SGA: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.R, 10.3, 10.4, 10.5, 10.6, 10.7, 10.R</p> <p>SW: 64, 65, 66, 67, 78, 79, 80, 81, 82, 83</p> <p>PS: 79–96, 115–128</p>
<p>4.2 The student will apply measurement concepts and relationships in algebraic and geometric problem-solving situations.</p>	<p>SE/TE: 51–63, 316–322, 323–330, 331–340, 341–347, 354–360, 361–366, 367–372, 373–385, 504–513, 571–577, 650–660</p> <p>TRB: 7–12, 13–18, 233–238, 239–244, 245–250, 251–256, 257–262, 269–274, 275–280</p> <p>SGA: 1.2, 1.3, 6.2, 6.3, 6.4, 6.5, 6.6, 6.8, 6.9</p> <p>SW: 43</p>
<p>4.3 The student will choose appropriate techniques and tools to measure quantities in order to meet specifications for precision, accuracy, and tolerance.</p>	<p>SE/TE: 12–18, 19–25, 162–170, 256–261, 262–267, 268–272, 273–278, 279–284, 285–290, 291–292, 297–305</p> <p>TRB: 7–12, 13–18</p> <p>SGA: 1.2</p> <p>SW: 1</p>

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> determine the perimeter or area of a triangle or rectangle when the dimensions are given as first degree binomials in one variable 	SE/TE: 458–464, 465–470, 504, 507, 509 TRB: 333–338, 339–344 SGA: 8.1, 8.2
<ul style="list-style-type: none"> solve real world problems involving perimeter or area of three or four sided plane figures 	SE/TE: 504–513, 571–577, 650–660 TRB: 333–338, 339–344, 345–350, 351–356, 357–362, 363–368 SGA: 8.1, 8.2, 8.3, 8.4, 8.6
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> determine the volume or surface area of a rectangular solid or cylinder in a real-world situation 	SE/TE: 596–604, 605–611, 647–649, 650–660 TRB: 439–444, 445–450 SGA: 10.3, 10.4 SW: 78–83 PS: 115–128
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> determine whether a reading falls within an acceptable tolerance range 	SE/TE: 19–25, 162–170

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> determine the measure of an angle using a protractor (angles of elevation and grade of a road in surveying) 	SE/TE: 19–25, 44–45, 58 TRB: 13–18 SGA: 1.3
<ul style="list-style-type: none"> recognize vector quantities 	SE/TE: 397–403 TRB: 295–300 SGA: 7.2
<ul style="list-style-type: none"> determine the best estimate for a given measurement 	SE/TE: 12–18, 19–25
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> construct bisectors of angles and line segments, perpendicular lines, congruent line segments and angles, and perpendicular bisectors using a variety of methods such as patty paper and technology (e.g., tailoring of clothes, dentistry, carpentry); draw auxiliary diagrams to help solve for an unknown dimension or an unknown angle 	SE/TE: 36–43, 46–50, 59, 61, 65 TRB: 31–36 SGA: 1.6 SW: 3–5, 28, 29
<ul style="list-style-type: none"> choose appropriate techniques and tools to measure quantities in order to meet specification for precision, accuracy, and tolerance (quality control assurance, jewelry, tool and die) 	SE/TE: 12–18, 19–25, 162–170, 256–261, 262–267, 268–272, 273–278, 279–284, 285–290, 291–292, 297–305 TRB: 7–12, 13–18 SGA: 1.3
<ul style="list-style-type: none"> solve problems involving volume of three dimensional figures (e.g., right prisms, pyramids, cones, cylinders, and spheres) 	SE/TE: 605–611, 612–618, 619–625, 626–631, 632–636, 647–649, 650–660 TRB: 445–450, 451–456, 457–462, 463–468 SGA: 10.3, 10.4, 10.5, 10.6, 10.R SW: 78–83 PS: 115–128

<ul style="list-style-type: none"> • solve problems involving surface area of prisms and cylinders 	SE/TE: 596–604 TRB: 439–444 SGA: 10.3, 10.4
<ul style="list-style-type: none"> • make simple scale drawings (e.g., blueprints, models, publishing) 	SE/TE: 267, 312–315, 377 SW: 50
<ul style="list-style-type: none"> • find the magnitude and direction of a vector (e.g., location, headings) 	SE/TE: 397–403, 433–434 TRB: 295–300 SGA: 7.2
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> • locate the irrational numbers $\sqrt{2}$ and $\sqrt{3}$ on a number line by using the Pythagorean relationship and a straightedge and compass (e.g., surveying) 	SE/TE: 343–344
<ul style="list-style-type: none"> • solve problems involving surface area of pyramids, cones, and spheres 	SE/TE: 612–618, 619–624, 626–631, 650–660 TRB: 451–456, 457–462, 463–468
<ul style="list-style-type: none"> • solve problems involving signed numbers and vectors (e.g., work, force, bearings) 	SE/TE: 397–403, 444–445, 451 TRB: 295–300 SGA: 7.2

Standard 5.0: Data Analysis and Probability

Students will investigate, explore, and apply geometric representations to calculate theoretical probability; and will use data from geometric figures to investigate relationships.

LEARNING EXPECTATIONS	PAGE REFERENCES
5.1 The student will apply geometric representations to calculate theoretical probability.	SE/TE: 492–496 TRB: 369–374 SGA: 8.7
5.2 The student will use data analysis to investigate geometric relationships.	SE/TE: 120–121, 125, 128, 134, 190, 447, 449 TRB: 369–374 SGA: 8.7

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> • make a prediction from a geometric representation of a real-world data set 	SE/TE: 492–496 TRB: 369–374 SGA: 8.7
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> • determine the probability of an event represented as a subset of the area of a two-dimensional geometric figure 	SE/TE: 492–496 TRB: 369–374 SGA: 8.7
<i>There are no state-assessed performance indicators at Level 3.</i>	

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – <i>At level 1, the student is able to</i>	
<ul style="list-style-type: none"> explain and justify the given geometric representation of the probability of an event (sales projections) 	SE/TE: 492–496 TRB: 369–374 SGA: 8.7
<i>At level 2, the student is able to</i>	
<ul style="list-style-type: none"> use hands-on activities to model geometric representations of probability (polling results, inventory control) 	SE/TE: 492–496 TRB: 369–374 SGA: 8.7
<i>At level 3, the student is able to</i>	
<ul style="list-style-type: none"> analyze and debate the validity of claims made based on the given theoretical probability of a real-world situation (defective parts in a sample of products, analysis of the validity of survey results) 	SE/TE: 492–496 TRB: 369–374 SGA: 8.7