Correlation of

ALGEBRA 1:
Mathematics in Context,
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to

Tennessee's Learning Expectations and Performance Indicators:
Technical Algebra (Mathematics for Technology II)

Standard 1.0: Number and Operations Students recognize, represent, model, and apply real numbers and operations verbally, physically, symbolically, and graphically.	
LEARNING EXPECTATIONS	**PAGE REFERENCES**
1.1 The student will demonstrate an understanding of the subsets, properties, and operations of the real number system.	SE/TE: 4–4, 85–86, 90–91, 147–150, 152, 153, 161–164, 167, 502, 508, 694–698 TRB: 1–6, 119–124, 131–136 SGA: 1.1, 1.R
1.2 The student will demonstrate an understanding of the relative size of rational and irrational numbers.	SE/TE: 13–17, 76, 496–500, 694–698 TRB: 5–6, 545–550 SGA: 1.1, 1.R
1.3 The student will articulate, model, and apply the concept of inverse (opposites and reciprocals, and powers and roots).	SE/TE: 21, 150–151, 304–305, 570–574, 575–580 TRB: 119–124, 445–450, 451–456 SGA: 10.3, 104
1.4 The student will describe, model, and apply inverse operations.	SE/TE: 146–154, 155–160, 161–168, 169–174, 175–179, 185–189, 190–201, 202–203, 501–505, 506–511, 512–518, 537–540, 544–553, 554–555 TRB: 119–124, 125–130, 131–136, 137–142, 143–148, 149–154, 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 1.1, 1.4, 1.5, 1.R, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.R
1.5 The student will apply number theory concepts (primes, factors, divisibility and multiples) in mathematical problem solving.	SE/TE: 564–569 TRB: 439–444
1.6 The student will connect graphical and symbolic representations of absolute value.	SE/TE: 13–18, 180–184, 519–522 TRB: 13–18, 149–154 SGA: 1.3, 1.R

1.7 The student will use real numbers to represent real-world applications (slope, rate of change, probability, and proportionality).	SE/TE: 18–25, 26–30, 32–36, 49–53, 59–75, 76–77, 156–160 TRB: 1–6, 23–24, 25–30 SGA: 1.1, 1.4, 1.5, 1.R, 3.2
1.8 The student will use a variety of notations appropriately (exponential, functional, square root).	SE/TE: 37–43, 55–56, 60, 76–77, 280–286, 304–311, 338–339, 570–574, 575–580, 694–698 TRB: 37–42 SGA: 5.1, 5.2, 10.1, 10.3
1.9 The student will select and apply an appropriate method (e.g., mental mathematics, paper and pencil, or technology) for computing with real numbers, and evaluate the reasonableness of results.	SE/TE: 54–58, 59–75, 122–127, 128–141, 190–201, 260–264, 265–275, 320–322, 3223–337, 374–377, 379–385, 426–429, 430–437, 481–491, 544–553, 607–610, 611–615, 657–663, 664–675, 722–727, 728–739 TRB: 19–24, 25–30 SGA: 1.4, 1.5, 1.R, 2.1
1.10 The student will perform operations on algebraic expressions and informally justify the procedures chosen.	SE/TE: 80–84, 85–86, 90–91, 147–150, 152, 153, 161–164, 167, 502, 508 TRB: 63–68, 71–74 SGA: 2.1
1.11 The student will perform operations on matrices in real-world problem solving situations (i.e., addition, subtraction and scalar multiplication).	SE/TE: 32–36, 56–58, 63, 72, 76–77 TRB: 31–36 SGA: 1.6, 1.R

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – *At level 1, the student is able to*	
• select the best estimate for the coordinate of a given point on a number line (only rational).	SE/TE: 5–7, 13–14, 496–500 TRB: 1–4, 383–388 SGA: 1.1, 1.R
• identify the opposite of a rational number	SE/TE: 21
• determine the square root of a perfect square less than 169	SE/TE: 304–305, 309–310 TRB: 243–248
• use exponents to simplify a monomial written in expanded form	SE/TE: 564–569, 570–574 TRB: 445–450 SGA: 10.3, 10.4
• apply order of operations when computing with integers using no more than two sets of grouping symbols and exponents 1 and 2	SE/TE: 80–84 TRB: 63–68 SGA: 1.4, 1.5, 1.R, 2.1
• select a reasonable solution for a real-world division problem in which the remainder must be considered	SE/TE: 26–31

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
At level 2, the student is able to	
• order a given set of rational numbers (both fraction and decimal notations)	SE/TE: 13–17, 76, 496–500 TRB: 1–4 SGA: 1.1, 1.R
• identify the reciprocal of a rational number; add and subtract algebraic expressions	SE/TE: 85–86, 90–91, 147–150, 150–151, 152, 153, 161–164, 167, 581–585 TRB: 457–462
• multiply two polynomials with each factor having no more than two terms	SE/TE: 586–592, 601–606, 609–610, 611, 616 TRB: 463–468, 477–478 SGA: 10.6, 10.8 SW: 92–93
• use estimation to determine a reasonable solution for a tedious arithmetic computation	SE/TE: 114–117, 118–121
• select ratios and proportions to represent real-world problems (i.e., scale drawings, sampling)	SE/TE: 49–53, 59–75, 76–77, 155–160 TRB: 125–130 SGA: 3.2
At level 3, the student is able to	
• apply the concept of slope to represent rate of change in a real-world situation	SE/TE: 218–224, 226–227, 236–237, 242–244, 249–254, 265, 268–275, 276–277, 722–725 TRB: 175–180 SGA: 4.2

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – *At level 1, the student is able to*	
• connect a variety of real-world situations to integers (e.g., sports)	SE/TE: 4–8, 17, 25, 29, 59–75 TRB: 1–4, 23–24, 25–30 SGA: 1.1, 1.4, 1.5, 1.R
• use manipulatives to represent commutative and associative properties of addition and multiplication (e.g., lumber industry, board feet)	SE/TE: 146–154, 161–168
• investigate alternate algorithms that show the relationship of division to subtraction and multiplication to addition (e.g., accounting)	SE/TE: 18–25, 26–31, 32–36, 59–75 TRB: 19–24, 25–30 SGA: 1.4, 1.5, 1.R
• analyze prime and composite numbers (e.g., masonry, tessellations)	SE/TE: 564–569, 613 TRB: 439–444
• compare and contrast the GCF and LCM of a set of numbers (e.g., pattern layouts, manufacturing)	SE/TE: 564–569, 613, 614, 615

At level 2, the student is able to	
• probe the relationships among various subsets of the real number system (e.g., wildlife management, which set of animals are harvested or categorized)	SE/TE: 4–8, 17, 25, 29, 59–75 TRB: 1–6 SGA: 1.1, 1.R
• compare and contrast the GCF and LCM of a set of algebraic expressions (e.g., construction, by changing the width of patio blocks "w", how do you get the blocks to same dimensions as an existing patio who's width is 2.5 "w"?)	SE/TE: 564–569, 613, 614, 615 TRB: 439–444
• construct a number line to describe the absolute value of a number as distance from zero (e.g., search and rescue team, how far east and west could a lost student be in "x" numbers of minutes?)	SE/TE: 13–18, 180–184, 519–522 TRB: 13–18 SGA: 1.3, 1.R
• model operations using real-world situations and physical representations (e.g., medical field, establishing correct dosages from a formula)	SE/TE: 80–84, 128–141 TRB: 19–24, 25–30 SGA: 1.4, 1.5, 1.R
• perform operations on matrices in real-world problem solving situations using technology (i.e., addition, subtraction and scalar multiplication; e.g., manufacturing)	SE/TE: 32–36, 56–58, 63, 72, 76–77 TRB: 31–36 SGA: 1.6, 1.R
• explain the importance of the value of the determinant of a matrix (e.g., systems problems in packaging)	Not covered
• explore various representations of absolute value (e.g., auto body, restoring alignment of the frame after an accident)	SE/TE: 13–18 TRB: 13–18 SGA: 1.3, 1.R

At level 3, the student is able to	
• research the history of pi and its usages in the real world (e.g., effect of tire size on an odometer)	SE/TE: 103–104, 105, 498
• use technology to solve systems of equations using matrices (e.g., manufacturing)	Not covered
• scrutinize approximate values of real numbers such as pi and other irrational numbers (e.g., landscaping amount of edging needed for a circular flower garden)	SE/TE: 103–104, 694–698

Standard 2.0: Algebra Students describe, extend, analyze, and create a wide variety of patterns and functions using appropriate materials and representations in real world problem solving.	
LEARNING EXPECTATIONS	**PAGE REFERENCES**
2.1 The student will recognize, analyze, extend, and create a variety of patterns.	SE/TE: 9–12, 59, 76, 282 TRB: 7–12 SGA: 1.2
2.2 The student will use algebraic thinking to generalize a pattern by expressing the pattern in functional notation.	SE/TE: 280–286, 287–290, 291–295 TRB: 225–230
2.3 The student will communicate the meaning of variables in algebraic expressions, equations, and inequalities.	SE/TE: 80–84, 128, 142 TRB: 63–68, 69–73, 119–124, 125–130, 131–136, 137–142, 143–148, 149–154, 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.R
2.4 The student will identify and represent a variety of functions using technology.	SE/TE: 255–259, 296–303, 304–311, 312–319 TRB: 219–224, 225–230, 231–236 SGA: 5.1
2.5 The student will apply and interpret rates of change from graphical and numerical data.	SE/TE: 218–224, 225–233, 234–240, 249–254, 255–259, 265–275, 276–277 TRB: 175–180, 181–186 SGA: 4.3

2.6 The student will analyze graphs to describe the behavior of functions.	SE/TE: 280–286, 287–290, 291–295, 296–303, 304–311, 312–319, 320–323, 324–337, 620–624, 626–632, 662–663, 667 TRB: 237–242, 243–248, 249–254, 489–494, 495–500 SGA: 5.3, 5.4, 5.5, 5.6, 5.R, 11.1, 11.2, 11.R SW: 95–98, 102–103
2.7 The student will interpret results of algebraic procedures.	SE/TE: 81–84, 128, 206–211, 213–217, 218–224, 225–233, 241–248, 249–254, 265–275, 276–277, 287–290 TRB: 119–124, 125–130, 131–136, 137–142, 143–148, 149–154, 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.R
2.8 The student will apply the concept of variable in simplifying algebraic expressions, solving equations, and solving inequalities.	SE/TE: 3, 4–8, 13–17, 18–25, 26–31, 54–55, 59–75, 76–77, 80–84, 128, 142, 146–154, 161–168, 169–174, 175–179, 180–184, 185–189, 190–201, 202–203, 496–500, 501–505, 606–511, 512–518, 519–522, 544–553, 554–555 TRB: 63–68, 69–73 SGA: 2.1, 2.2, 3.1, 3.3, 3.4, 3.5, 3.6, 3.R, 9.1, 9.2, 9.3, 9.4, 9.5, 9.R
2.9 The student will interpret graphs that depict real-world phenomena.	SE/TE: 206–211, 213–217, 225–233, 234–240, 241–248, 249–254, 255–259, 265–275, 276–277 TRB: 181–186, 187–192, 205–210 SGA: 4.4, 5.3, 5.4, 5.5, 5.6, 5.R SW: 35, 36, 37, 38, 39
2.10 The student will model real-world phenomena using functions and graphs.	SE/TE: 206–211, 213–217, 225–233, 234–240, 241–248, 249–254, 255–259, 265–275, 276–277, 296–303, 304–311, 312–319 TRB: 181–186, 187–192, 205–210, 219–224, 225–230, 231–236, 249–254 SGA: 4.1, 4.3, 4.4, 5.1, 5.4, 5.5, 5.6

2.11 The student will articulate and apply algebraic properties in symbolic manipulation.	SE/TE: 146–150, 152, 153, 161–164, 167, 502, 508
2.12 The student will analyze relationships which can and which cannot be represented by a function.	SE/TE: 255–259, 296–303, 304–311, 312–319 TRB: 219–224, 225–230, 231–236, 237–242, 243–248, 249–254 SGA: 5.1, 5.2, 5.3
2.13 The student will graph inequalities and interpret graphs of inequalities.	SE/TE: 496–500, 501–505, 506–511, 512–518, 519–522, 544–553, 554–555 TRB: 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.R
2.14 The student will describe the domain and range of functions and articulate restrictions imposed either by the operations or by the real-life situations which the functions represent.	SE/TE: 241–248, 280–286, 287–290, 291–295, 296–303, 304–311, 312–319, 320–322, 323–337 TRB: 219–224, 225–230, 231–236, 237–242, 243–248, 249–254 SGA: 5.1, 5.2
2.15 The student will describe the transformation of the graph that occurs when coefficients and/or constants of the corresponding linear equations are changed.	SE/TE: 218–224, 225–233, 234–240, 620–624 TRB: 187–192, 205–210 SGA: 4.3, 4.4, 4.5, 4.7

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – *At level 1, the student is able to*	
• extend a geometric pattern.	SE/TE: 10–12, 59, 76 TRB: 7–12 SGA: 1.2
• extend a numerical pattern.	SE/TE: 9–12, 59, 76, 282 TRB: 7–12 SGA: 1.2
• translate a verbal expression into an algebraic expression	SE/TE: 80–84, 128, 142 TRB: 63–68 SGA: 2.2
• evaluate a first degree algebraic expression given values for one or more variables	SE/TE: 80–84, 128, 142 TRB: 63–68 SGA: 2.1, 2.2
• solve one- and two-step linear equations using integers (with integral coefficients and constants)	SE/TE: 146–154, 161–168, 169–174, 175–179, 180–184, 185–189, 190–201, 202–203 TRB: 63–68, 69–73, 119–124, 125–130, 131–136, 137–142, 143–148, 149–154 SGA: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.R

At level 2, the student is able to	
• select the algebraic notation which generalizes the pattern represented by data in a given table; translate a verbal sentence into an algebraic equation	SE/TE: 9–12, 59, 76, 80–84, 128, 142, 282 TRB: 63–68 SGA: 2.2
• select the graph that represents a given linear function expressed in slope-intercept form	SE/TE: 225–233, 234–240, 241–248, 249–254, 255–259, 265–275 TRB: 181–186, 187–192, 205–210 SGA: 4.5, 4.6
• solve multi-step linear equations (more than two steps, variables on only one side of the equation)	SE/TE: 169–174 TRB: 137–142, 149–154 SGA: 3.4, 3.R
• solve multi-step linear equations (more than two steps, with variables on both sides of the equation)	SE/TE: 175–179 TRB: 143–148 SGA: 3.5, 3.R
• solve multi-step linear equations (more than two steps, with one set of parentheses on each side of the equation)	SE/TE: 175–179 TRB: 137–142, 143–148, 149–154 SGA: 3.4, 3.5, 3.R
• select the linear graphs that models the given real-world situation described in a narrative (no data set given)	SE/TE: 262–264, 265–275 TRB: 181–186, 187–192 SGA: 4.5, 4.6
• select the linear graph that models the given real-world situation described in a tabular set of data	SE/TE: 225–233, 234–240, 241–248, 249–254, 255–259, 265–275 TRB: 181–186, 187–192, 205–210 SGA: 4.5, 4.6
• evaluate an algebraic expression given values for one or more variables using grouping symbols and/or exponents less than four	SE/TE: 10–12, 59, 76 TRB: 63–68 SGA: 2.1, 2.2, 5.2

• determine the slope from the graph of a linear equation (no labeled points)	SE/TE: 218–224, 225–233, 234–240, 241–248, 249–254 TRB: 175–180, 181–186, 187–192, 199–204 SGA: 4.3, 4.4, 4.5, 4.6, 4.7, 4.R
• apply the concept of rate of change to solve real-world problems	SE/TE: 218–224, 225–233, 234–240, 249–254, 255–259, 265–275, 276–277 TRB: 175–180 SGA: 4.3, 4.R
• select the appropriate graphical representation of a given linear inequality	SE/TE: 496–500, 501–505, 506–511, 512–518, 519–522, 544–553 TRB: 413–418, 419–424 SGA: 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.R
• select the non-linear graph that models the given real-world situation or vice versa	SE/TE: 291–295, 296–303, 304–311, 312–319, 320–322, 323–337 TRB: 237–242, 243–248, 249–254 SGA: 5.4, 5.5, 5.6, 5.R
• identify the graphical representation of the solution to a one variable inequality on a number line	SE/TE: 496–500, 501–505, 506–511, 512–518, 519–522, 544–553 TRB: 383–388, 389–394, 395–400, 401–406, 407–412 SGA: 9.1, 9.2, 9.3 SW: 83
At level 3, the student is able to	
• solve multi-step linear inequalities in real-world situations	SE/TE: 496–500, 501–505, 506–511, 512–518, 519–522, 544–553 TRB: 395–400, 401–406, 407–412 SGA: 9.3, 9.4, 9.5, 9.R
• recognize the graphical transformation that occurs when coefficients and/or constants of the corresponding linear equations are changed	SE/TE: 218–224, 225–233, 234–240, 620–624 TRB: 199–204 SGA: 4.7
• determine the domain and/or range of a function represented by the graph of real-world situations	SE/TE: 241–248, 280–286, 287–290, 291–295, 296–303, 304–311, 312–319, 320–322, 323–337 TRB: 219–224, 237–242, 243–248, 249–254 SGA: 5.1, 5.2

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – *At level 1, the student is able to*	
• analyze rational number patterns (e.g., number of oranges in a rectangular pyramid display of 12 rows of oranges; row one has one orange, row two has four oranges, row three has nine oranges, etc.)	SE/TE: 9–12, 59, 76, 282 TRB: 7–12 SGA: 1.2
• describe in writing the pattern for real-world data listed in a function table (e.g., finance tables with various interest rates applied)	SE/TE: 9–12, 59, 76, 280–285, 326 TRB: 187–192, 193–198 SGA: 4.5
At level 2, the student is able to	
• produce an equation to describe the relationship between data sets (e.g., manufacturing, cost verses profit)	SE/TE: 206–211, 213–217, 225–233, 234–240, 241–248, 249–254, 255–259, 265–275, 276–277 TRB: 187–192 SGA: 4.5, 7.3
• solve a system of two linear equations using the graphing, elimination, and substitution methods (e.g., manufacturing)	SE/TE: 442–448, 449–454, 456–461, 463–469, 470–475, 476–480, 481–491, 492–493 TRB: 345–350, 351–356, 357–362, 363–368, 369–374 SGA: 8.1, 8.2, 8.3, 8.4, 8.5, 8.R SW: 66–74
• defend the selection of a method for solving a system of equations (e.g., logical reasoning)	SE/TE: 447, 453, 460, 467, 473, 476–480, 481–491 TRB: 345–350, 351–356, 357–362, 363–368, 369–374 SGA: 8.1, 8.2, 8.3, 8.4, 8.5, 8.R SW: 66–74
• represent algebraic expressions and operations using manipulatives (e.g., drafting)	SE/TE: 80–84, 128, 142 SW: 19, 20, 21

• model the steps for solving simple linear equations using manipulatives (e.g., algebra tiles)	SE/TE: 162, 175, 185–189 TRB: 137–138, 143–144 SW: 19, 20, 21
• write an equation that symbolically expresses a problem solving situation (e.g., robotics)	SE/TE: 190–201 SGA: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.R
• justify correct results of algebraic procedures (e.g., engineering, wind tunnel)	SE/TE: 146–154, 161–168, 169–174, 175–179, 180–184, 185–189, 190–201, 202–203
• distinguish between a function and other relationships (e.g., shipping, box dimensions vs. cost)	SE/TE: 280–286, 287–290, 291–295 TRB: 193–198, 219–224, 225–230, 231–236, 237–242, 243–248, 249–254 SGA: 4.6, 5.1, 5.2
• solve quadratic functions using a variety of methods	SE/TE: 620–624, 626–632, 633–637, 638–643, 644–648, 649–656, 657–663, 664–675 TRB: 489–494, 495–500, 501–506, 507–512, 513–518, 519–524
• analyze "families of functions" including non-linear functions (e.g., finance)	SE/TE: 296–303, 304–311, 312–319 TRB: 193–198, 199–204, 231–236, 237–242, 243–248, 249–254 SGA: 5.3, 5.4, 5.5, 5.6, 5.R
At level 3, the student is able to	
• analyze "families of functions" using technology (e.g., a technician is performing an experiment with a laser that is beamed at a mirror and checking its reflection)	SE/TE: 296–303, 304–311, 312–319 TRB: 193–198, 231–236, 237–242, 243–248, 249–254 SGA: 5.3, 5.4, 5.5, 5.6, 5.R
• select the non-linear graph that models the given real-world situation described in a narrative (e.g., water patterns programmed for the musical productions at Opryland Hotel)	SE/TE: 296–303, 304–311, 312–319, 320–322, 323–337 SGA: 5.3, 5.4, 5.5, 5.6, 5.R
• explore patterns including Pascal's Triangle and a Fibonacci sequence (e.g., Forestry)	Covered in *Bridges: Mathematics in Context*

Standard 3.0: Geometry Students will investigate, model, and apply geometric properties and relationships.	
LEARNING EXPECTATIONS	**PAGE REFERENCES**
3.1 The student will apply geometric properties, formulas, and relationships to solve real-world problems.	SE/TE: 90, 97–102, 103–106, 107–113, 123–125, 130, 133, 138, 141, 260–262 TRB: 69–74, 81–86, 87–92, 93–98, 533–538, 539–544 SGA: 2.2, 2.4, 2.5, 2.6, 2.R
3.2 The student will solve problems using the midpoint formula.	Not covered
3.3 The student will apply right triangle relationships including the Pythagorean Theorem and the distance formula.	SE/TE: 688–692, 699–707, 709–716 TRB: 539–544, 551–556, 557–562 SGA: 12.2, 12.4, 12.5, 12.R SW: 42, 105
3.4 The student will find and represent solutions of quadratic equations geometrically.	SE/TE: 593–599, 607–608, 620–624, 626–630, 638–643

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – *At level 1, the student is able to*	
• identify ordered pairs in the coordinate plane	SE/TE: 206–211, 213–217 TRB: 163–168, 169–174 SGA: 4.1, 4.2 SW: 27
At level 2, the student is able to	
• apply the given Pythagorean Theorem to a real life problem illustrated by a diagram (no radicals in answer)	SE/TE: 688–693 TRB: 539–544 SGA: 12.2 SW: 42, 105
• apply proportion and the concepts of similar triangles to find the length of a missing side of a triangle	SE/TE: 680–686 TRB: 533–538 SGA: 12.1
At level 3, the student is able to	
• calculate the distance between two points given the Pythagorean Theorem and the distance formula	SE/TE: 688–693 TRB: 539–544 SGA: 12.2

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – *At level 1, the student is able to*	
• describe real-world uses of geometric formulas and relationships (e.g., construction)	SE/TE: 97–102, 103–106, 107–113, 123–125 TRB: 69–74, 81–86, 87–92, 93–98 SGA: 2.2, 2.4, 2.5, 2.6, 2.R
• discuss issues related to estimating areas of irregular-shaped figures for real-world uses (e.g., fencing, painting, laying carpet, purchasing wallpaper or border)	SE/TE: 97–102 TRB: 69–74, 81–86
• design a concept map showing connections among polygons (e.g., quadrilateral, parallelogram, rectangle, rhombus, square, and trapezoid)	Not covered
At level 2, the student is able to	
• explain how to determine if a triangle is a right triangle given the measurements of all three sides (e.g., carpentry)	SE/TE: 688–693, 694–698, 699–707, 709–716, 725–727, 728–739 TRB: 539–544, 551–556, 557–562 SGA: 12.2., 12.4, 12.5
• illustrate the Pythagorean Theorem by measuring the length, width, and diagonals of rectangular objects. (e.g., surveying)	SE/TE: 688–693, 725–726 TRB: 539–544 SGA: 12.2 SW: 42, 105
• design area models to illustrate the Pythagorean Theorem (e.g., construction)	SE/TE: 688–693, 725–726 TRB: 539–544 SW: 42

At level 3, the student is able to	
• determine the height of an object that is difficult to measure by using the properties of similar triangles (e.g., electrical line technicians, which trees to trim)	SE/TE: 680–687 TRB: 533–538
• use a determinant to find the area of a right triangle graphed on a coordinate plane using appropriate technology (e.g., construction)	Not covered
• explore relationships among varying dimensions in area and volume problems (e.g., gutter dimensions)	SE/TE: 97–102, 103–106, 107–113, 123–125 TRB: 69–74, 81–86 SGA: 2.4, 2.5, 2.6, 2.R
• apply the Pythagorean Theorem and the distance formula to workplace situations including appropriate approximations of irrational numbers (e.g., plumbing)	SE/TE: 688–693 TRB: 539–544 SGA: 12.2
• identify graphs of conic sections from their equations (e.g., space exploration)	Not covered

Standard 4.0: Measurement Students apply appropriate tools and units of measurement; develop effective estimation and computation strategies for producing reasonable results; and calculate using appropriate tools such as mental mathematics, technology, manipulatives, and pencil-and-paper.	
LEARNING EXPECTATIONS	**PAGE REFERENCES**
4.1 The student will use concepts of length, area, and volume to estimate and solve real-world problems.	SE/TE: 97–102, 103–106, 107–113, 125–127, 128–141 TRB: 81–86, 87–92, 93–98 SGA: 2.4, 2.5, 2.6, 2.R SW: 12
4.2 The student will apply and communicate measurement concepts and relationships in algebraic and geometric problem-solving situations.	SE/TE: 54–56, 114–117, 118–121, 262–263 TRB: 43–48 SGA: 2.4, 2.5, 2.6, 2.R
4.3 The student will demonstrate an understanding of rates and other derived and indirect measurements (e.g., velocity, miles per hour, revolutions per minute, cost per unit).	SE/TE: 44–47, 49–53, 76, 122, 125–127, 262–263 TRB: 49–54 SW: 13, 24, 25
4.4 The student will make decisions about units, scales, and measurement tools that are appropriate for problem situations involving measurement.	SE/TE: 97–102, 107–113, 125–127, 128–141 TRB: 99–104, 105–110 SGA: 2.7, 2.8 SW: 7, 8, 9, 10, 24, 25
4.5 The student will analyze precision, accuracy, and approximate error in measurement situations.	SE/TE: 114–117, 118–121 TRB: 99–104, 105–110 SGA: 2.7, 2.8, 2.R

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – *At level 1, the student is able to*	
• estimate the area of irregular geometric figures on a grid	Not covered
• calculate rates involving cost per unit to determine the best buy (no more than three samples)	SE/TE: 49–53 TRB: 49–54
• apply the given formula to determine the area or perimeter of a rectangle	SE/TE: 97–98, 101–102 TRB: 81–86 SGA: 2.4, 2.R
At level 2, the student is able to	
• apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid	SE/TE: 103–106, 107–113 TRB: 87–92, 93–98 SGA: 2.5, 2.6, 2.R
At level 3, the student is able to	
• select the area representation for a given product of two one-variable binomials with positive constants and coefficients	SE/TE: 570–574, 586–592 TRB: 467–468

PERFORMANCE INDICATORS TEACHER:	PAGE REFERENCES
As documented through teacher observation – *At level 1, the student is able to*	
• justify the selection of a unit of measure in specific situations (e.g., manufacturing)	SE/TE: 46–47, 49–53 TRB: 43–48 SGA: 2.4, 2.R
• refine strategies for estimating whole numbers, fractions, and percentages (e.g., cost)	Covered in *Bridges: Mathematics in Context*
• defend estimates o the perimeter and/or area of rectangles and triangles (e.g., flooring)	SE/TE: 97–102 TRB: 81–86 SGA: 2.4, 2.R
• discover and explain formulas used to compute area and volume (e.g., pool construction)	SE/TE: 97–102, 103–106, 107–113, 128–141 TRB: 81–86, 93–98 SGA: 2.4, 2.5, 2.6, 2.R SW: 12
At level 2, the student is able to	
• describe the procedure for determining the area of a composite shape in a real-world situation (e.g., surveying)	SE/TE: 97–102, 138

• generalize area formulas using manipulatives for a parallelogram, a triangle, and a trapezoid (e.g., surveying)	SE/TE: 97–102 TRB: 81–86 SGA: 2.4
• defend an estimate for the volume of a container (e.g., bottling companies)	SE/TE: 107–113, 130, 133 TRB: 93–98 SGA: 2.6
• compare the height of a container to its volume and graph the relationship (e.g., packaging company)	SE/TE: 107–113, 130, 133 TRB: 93–98 SGA: 2.6
• calculate a dimension of a geometric figure given the volume and other pertinent information (e.g., housing)	SE/TE: 107–113, 130, 133 TRB: 93–98 SGA: 2.6 SW: 12
At level 3, the student is able to	
• discover the dimensions of a rectangle when given its area and the relationship between the length and width of the sides (e.g., art)	SE/TE: 97–102 TRB: 81–86 SGA: 2.4
• describe how changes in the dimensions of figures affect perimeter, area, and volume (e.g., construction)	SE/TE: 97–102, 107–113 TRB: 81–86, 87–92, 93–98 SGA: 2.4, 2.5, 2.6 SW: 12

Standard 5.0: Data Analysis and Probability Students will collect, organize, represent, and interpret data and interpret and model situations to determine theoretical and experimental probabilities.	
LEARNING EXPECTATIONS	**PAGE REFERENCES**
5.1 The student will collect, represent, and describe linear and nonlinear data sets developed from the real world.	SE/TE: 405–410, 432, 437 TRB: 313–318 SGA: 7.2, 7.3, 7.4, 7.5 SW: 54, 55
5.2 The student will interpret a set of data using the appropriate measure of central tendency.	SE/TE: 390–396, 397–403, 415–419, 420–425, 430–437, 438–439 TRB: 301–306 SGA: 7.1 SW: 54, 55
5.3 The student will choose, construct, and analyze appropriate graphical representations for a data set.	SE/TE: 397–403, 426–429, 430–437 TRB: 307–312, 313–318, 319–324, 325–330 SGA: 4.1, 4.2, 4.4, 7.2 SW: 56, 60
5.4 The student will understand the concept of random sampling.	Covered in *Bridges: Mathematics in Context*
5.5 The student will apply counting principles of permutations and combinations using appropriate technology.	SE/TE: 342–348, 356–361, 362–367, 378–385, 386–387 TRB: 275–280, 281–286, 287–292 SGA: 6.2, 6.3, 6.4, 6.5, 6.R SW: 56, 60
5.6 The student will model situations to determine theoretical and experimental probabilities.	SE/TE: 349–355, 374–377 TRB: 263–268, 269–274, 287–292 SGA: 6.1, 6.2, 6.3, 6.4, 6.5, 6.R SW: 44, 45, 46, 47, 48, 49, 50, 51, 52, 53

PERFORMANCE INDICATORS STATE:	PAGE REFERENCES
As documented through state assessment – *At level 1, the student is able to*	
• determine the mean (average) of a given set of real-world data (no more than five two-digit numbers)	SE/TE: 390–396 TRB: 301–306 SGA: 7.1 SW: 54, 55
• interpret bar graphs representing real-world data	SE/TE: 397–403, 427–429, 430–437 SGA: 7.2 SW: 56, 60
• interpret circle graphs (pie charts) representing real-world data	SE/TE: 427–429, 430–437 SW: 56
At level 2, the student is able to	
• choose the matching linear graph given a set of ordered pairs	SE/TE: 213–217, 225–233, 404–410 TRB: 169–174, 313–318 SGA: 4.1, 4.2, 7.3
• make a prediction from the graph of a real-world linear data set	SE/TE: 405–410, 432, 437 TRB: 313–318, 319–324, 325–330 SGA: 7.1, 7.2, 7.3, 7.4, 7.5 SW: 56
• determine the median for a given set of real-world data (even number of data)	SE/TE: 390–396 TRB: 301–306 SGA: 7.1 SW: 55

At level 3, the student is able to	
• apply counting principles of permutations or combinations in real-world situations	SE/TE: 342–348, 356–361, 362–367, 378–385, 386–387 TRB: 275–280, 281–286, 287–292 SGA: 6.2, 6.3, 6.4, 6.5, 6.R SW: 44–53

PERFORMANCE INDICATORS TEACHER:	**PAGE REFERENCES**
As documented through teacher observation – *At level 1, the student is able to*	
• design a strategy for collecting real-world data for a scientific investigation (e.g., sampling); collect and organize real-world data (e.g., polling)	Covered in *Bridges: Mathematics in Context*
At level 2, the student is able to	
• graph real-world data using a variety of representations (e.g., newspaper)	SE/TE: 397–403, 405–410, 426–429, 430–437 TRB: 313–318, 319–324, 325–330 SGA: 4.3, 4.4, 4.5, 7.3, 7.4, 7.5 SW: 56
• debate the selection of a graphical representation which best describes specific data (e.g., news media)	SE/TE: 397–403, 426–429, 430–437 TRB: 319–324, 325–330 SGA: 7.2, 7.3, 7.4, 7.5 SW: 56–60

• model situations to determine theoretical and experimental probabilities (e.g., gambling)	SE/TE: 349–355, 374–377 TRB: 263–268, 269–274, 287–292 SGA: 6.2 SW: 44–53
• judge the validity of claims made in probabilities situations (e.g., advertising)	SE/TE: 349–355, 374–377 TRB: 263–268, 269–274, 275–280, 281–286, 287–292 SGA 6.1, 6.2, 6.3, 6.4, 6.5, 6.R
• defend the sampling method chosen to conduct a survey (e.g., sales)	Covered in *Bridges: Mathematics in Context*
At level 3, the student is able to	
• debate possible conclusions that can be supported by the data (e.g., medical studies)	SE/TE: 404–410 TRB: 313–318 SGA: 7.1, 7.3
• make predictions from real-world data using a line of best fit (e.g., population studies)	SE/TE: 404–410 TRB: 313–318 SGA: 7.3
• calculate standard deviation using the appropriate technology (e.g., educations)	SE/TE: 420–426 TRB: 331–336 SGA: 7.6