December 2018

GRADES 5–9

Third Edition

TRANSMATH®

*TransMath Third Edition*, Grades 5–9

# Texas Essential Knowledge and Skills for Mathematics

VOYAGER SOPRIS LEARNING®

*TransMath Third Edition* **Correlated to**

# Texas Essential Knowledge and Skills for Mathematics

**Grades 5 – 9**

| TEKS | Lesson Subsection (and Page Number) in *TransMath 1* Where Standard is Addressed | Lesson Subsection (and Page Number) in *TransMath 2* Where Standard is Addressed | Lesson Subsection (and Page Number) in *TransMath 3* Where Standard is Addressed |
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| **Grade 5** | | | |
| **Knowledge and skills.** | | | |
| **1.** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: | | | |
| **A.** apply mathematics to problems arising in everyday life, society, and the workplace; | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 8:** Unit Opener (829-830) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 4:** Unit Opener (389-390) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 1:** Unit Opener (1-2) |
| **B.** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; | **Unit 1:** Lesson 1, Problem Solving (14-15); Lesson 2, Problem Solving (22-24); Lesson 3, Problem Solving (30-31)<br>**Unit 2:** Lesson 7, Problem Solving (181-182) | **Unit 7:** Lesson 6, Problem Solving (819-822) | **Unit 8:** Lesson 4, Problem Solving (894-898) |
| **C.** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 4:** Lesson 1, Problem Solving (386-388) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 1**: Lesson 1, Problem Solving (12-13) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 2:** Lesson 13, Problem Solving (286-289) |
| **D.** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 4:** Lesson 3, Building Number Concepts (400) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) |
| **E.** create and use representations to organize, record, and communicate mathematical ideas; | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. |

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| | For example: **Unit 1:** Lesson 9, Problem Solving (73-74) | For example: **Unit 2:** Lesson 14, Building Number Concepts (224-227) | For example: **Unit 1:** Lesson 1, Problem Solving (14-17) |
| **F.** analyze mathematical relationships to connect and communicate mathematical ideas; and | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 7:** Lesson 8, Building Number Concepts (796-798) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 11, Problem Solving (944-946) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 9, Building Number Concepts (938-940) |
| **G.** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 5, Problem Solving (875) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 4:** Lesson 6, Building Number Concepts (447) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 12, Building Number Concepts (962) |
| **2.** Number and operations. The student applies mathematical process standards to represent, compare, and order positive rational numbers and understand relationships as related to place value. The student is expected to: | | | |
| **A.** represent the value of the digit in decimals through the thousandths using expanded notation and numerals; | | **Unit 5:** Lesson 3, Building Number Concepts (513-517); Lesson 4, Building Number Concepts (522-524); Lesson 5, Building Number Concepts (529-533); Lesson 6, Building Number Concepts (538-540); Lesson 8, Building Number Concepts (554-557) | |
| **B.** compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or =; and | | **Unit 5:** Lesson 11, Building Number Concepts (581-586); Lesson 12, Building Number Concepts (589-593); Lesson 13, Building Number Concepts (597-601) | **Unit 1:** Lesson 8, Building Number Concepts (83-87) |
| **C.** round decimals to tenths or hundredths. | | **Unit 5:** Lesson 12, Building Number Concepts (589-593)<br>**Unit 6:** Lesson 2, Building Number Concepts (649-652); Lesson 3, Building Number Concepts (657-660) | **Unit 1:** Lesson 8, Building Number Concepts (83-87) |
| **3.** Number and operations. The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to: | | | |

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| **A.** estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division; | **Unit 1:** Lesson 11, Building Number Concepts (87-90)<br>**Unit 2:** Lesson 6, Building Number Concepts (169-172); Lesson 7, Building Number Concepts (178-180), Problem Solving (181-182); Lesson 8, Building Number Concepts (185-187), Problem Solving (188-189); Lesson 9, Building Number Concepts (192-193), Problem Solving (194-195); Lesson 13, Problem Solving (224-225)<br>**Unit 3:** Lesson 8, Building Number Concepts (309-312); Lesson 10, Building Number Concepts (326-328); Lesson 11, Building Number Concepts (334-336)<br>**Unit 4:** Lesson 11, Building Number Concepts (462-464)<br>**Unit 8:** Lesson 7, Building Number Concepts (890-892); Lesson 9, Building Number Concepts (905-907) | **Unit 4:** Lesson 9, Building Number Concepts (468-470), Problem Solving (471-472) | |
| **B.** multiply with fluency a three-digit number by a two-digit number using the standard algorithm; | **Unit 3:** Lesson 6, Building Number Concepts (293-296); Lesson 7, Building Number Concepts (301-304); Lesson 9, Building Number Concepts (318-320) | | |
| **C.** solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm; | **Unit 4:** Lesson 1, Building Number Concepts (383-385), Problem Solving (386-388); Lesson 2, Building Number Concepts (391-394), Problem Solving (395-397); Lesson 3, Building Number Concepts (400-402); Lesson 4, Building Number Concepts (407-409), Problem Solving (410-411); Lesson 5, Problem Solving (414-417); Lesson 6, Building Number Concepts (422-425), Problem Solving (426-427); Lesson 7, Building Number Concepts (430-431), Problem Solving (432-435); Lesson 8, Building Number Concepts (438-440), Problem Solving (441-443); Lesson 9, Building Number Concepts (446-448), Problem Solving (449-451); Lesson 10, Building Number Concepts (454-457); Lesson 11, Problem Solving (465-467); | | |

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| | Lesson 12, Problem Solving (469-473); Lesson 13, Building Number Concepts (476-480), Problem Solving (481-483); Lesson 14, Building Number Concepts (486-488), Problem Solving (489-491) | | |
| **D.** represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models; | | **Unit 6:** Lesson 6, Building Number Concepts (678-681) | **Unit 1:** Lesson 11, Building Number Concepts (112-114) |
| **E.** solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers; | | **Unit 6:** Lesson 7, Building Number Concepts (687-689); Lesson 8, Building Number Concepts (692-694) | **Unit 1:** Lesson 12, Building Number Concepts (120-123) |
| **F.** represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects and pictorial models, including area models; | | **Unit 6:** Lesson 11, Building Number Concepts (716-719) | **Unit 1:** Lesson 13, Building Number Concepts (128-131) |
| **G.** solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm; | | **Unit 6:** Lesson 12, Building Number Concepts (725-727); Lesson 13, Building Number Concepts (733-735); Lesson 14, Building Number Concepts (740-744) | **Unit 1:** Lesson 13, Building Number Concepts (128-131); Lesson 14, Building Number Concepts (138-140) |
| **H.** represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations; | **Unit 9:** Lesson 1, Building Number Concepts (971-975); Lesson 2, Building Number Concepts (981-984); Lesson 3, Building Number Concepts (989-990); Lesson 4, Building Number Concepts (997-1000); Lesson 6, Building Number Concepts (1012-1015); Lesson 8, Building Number Concepts (1028-1031); Lesson 8, Problem Solving (1032-1033); Lesson 9, Problem Solving (1036-1038) | **Unit 2:** Lesson 6, Problem Solving (155-157); Lesson 8, Building Number Concepts (169-174); Lesson 8, Problem Solving (175-177); Lesson 9, Building Number Concepts (180-184); Lesson 9, Problem Solving (185-186); Lesson 10, Building Number Concepts (189-193); Lesson 11, Building Number Concepts (198-201); Lesson 11, Problem Solving (202-204); Lesson 12, Building Number Concepts (207-210); Lesson 12, Problem Solving (211-212); Lesson 13, Building Number Concepts (215-219); Lesson 13, Problem Solving (220-221); Lesson 14, Building Number Concepts (224-227); Lesson 14, Problem Solving (228-229)<br>**Unit 3:** Lesson 14, Problem Solving (372-374)<br>**Unit 4:** Lesson 1, Building Number Concepts (397-401); Lesson 2, Building Number Concepts (406-411); Lesson 3, Building Number Concepts (416-422); Lesson 4, Building Number Concepts (428-431); Lesson 5, Building Number Concepts (438-440) | **Unit 1:** Lesson 2, Building Number Concepts (20-27); Lesson 6, Building Number Concepts (60-63) |
| **I.** represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models; | | **Unit 3:** Lesson 1, Building Number Concepts (255-259) | **Unit 1:** Lesson 3, Building Number Concepts (30-32); Lesson 4, Building Number Concepts (41-44); Lesson 6, Building Number Concepts (60-63) |

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| **J.** represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as 1/3 ÷ 7 and 7 ÷ 1/3 using objects and pictorial models, including area models; | | | **Unit 1:** Lesson 6, Building Number Concepts (60-63) |
| **K.** add and subtract positive rational numbers fluently; and | **Unit 9:** Lesson 1, Building Number Concepts (971-975); Lesson 2, Building Number Concepts (981-984); Lesson 3, Building Number Concepts (989-990); Lesson 4, Building Number Concepts (997-1000) | **Unit 4:** Lesson 1, Building Number Concepts (397-401); Lesson 1, Problem Solving (402-403); Lesson 2, Building Number Concepts (406-411); Lesson 2, Problem Solving (412-413); Lesson 3, Building Number Concepts (416-422); Lesson 4, Building Number Concepts (428-431); Lesson 5, Building Number Concepts (438-440); Lesson 8, Building Number Concepts (462-463); Lesson 9, Building Number Concepts (468-470); Lesson 9, Problem Solving (471-472)<br>**Unit 6:** Lesson 1, Building Number Concepts (639-643) | **Unit 1:** Lesson 6, Building Number Concepts (60-63) |
| **L.** divide whole numbers by unit fractions and unit fractions by whole numbers. | | | **Unit 1:** Lesson 6, Building Number Concepts (60-63) |
| **4.** Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to: | | | |
| **A.** identify prime and composite numbers; | **Unit 5:** Lesson 5, Building Number Concepts (546-550); Lesson 6, Building Number Concepts (555-557); Lesson 7, Building Number Concepts (564-567); Lesson 8, Building Number Concepts (572-574); Lesson 10, Building Number Concepts (586-588); Lesson 13, Building Number Concepts (611-613); Lesson 14, Building Number Concepts (618-620)<br>**Unit 6:** Lesson 5, Building Number Concepts (681-683); Lesson 6, Building Number Concepts (687-691) | | |
| **B.** represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity; | | | **Unit 2:** Lesson 8, Building Number Concepts (234-237); Lesson 9, Building Number Concepts (244-248); Lesson 11, Building Number Concepts (262-267); Lesson 12, Building Number Concepts (274-277); Lesson 14, Building Number Concepts (293-296) |
| **C.** generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph; | | | **Unit 2:** Lesson 2, Problem Solving (186-189)<br>**Unit 4:** Lesson 1, Building Number Concepts (429-432); Lesson 3, Building Number Concepts (448-452); Lesson 4, Building Number Concepts (460- |

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| | | | 463); Lesson 5, Building Number Concepts (471-475); Lesson 6, Building Number Concepts (480-483); Lesson 7, Building Number Concepts (489-491); Lesson 8, Building Number Concepts (498-501); Lesson 9, Building Number Concepts (508-510) |
| **D.** recognize the difference between additive and multiplicative numerical patterns given in a table or graph; | | | **Unit 2:** Lesson 1, Problem Solving (175-177); Lesson 2, Problem Solving (186-189)<br>**Unit 4:** Lesson 3, Building Number Concepts (448-452); Lesson 4, Building Number Concepts (460-463); Lesson 5, Building Number Concepts (471-475); Lesson 6, Building Number Concepts (480-483); Lesson 7, Building Number Concepts (489-491) |
| **E.** describe the meaning of parentheses and brackets in a numeric expression; | | | **Unit 5:** Lesson 1, Building Number Concepts (541-545); Lesson 2, Building Number Concepts (553-555); Lesson 3, Building Number Concepts (561-564) |
| **F.** simplify numerical expressions that do not involve exponents, including up to two levels of grouping; | | | **Unit 5:** Lesson 6, Building Number Concepts (588-594); Lesson 7, Building Number Concepts (597-601); Lesson 8, Building Number Concepts (608-612) |
| **G.** use concrete objects and pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube ($V = l \times w \times h$, $V = s \times s \times s$, and $V = Bh$); and | | | **Unit 6:** Lesson 1, Problem Solving (651-653); Lesson 2, Problem Solving (655-661); Lesson 3, Problem Solving (671-675) |
| **H.** represent and solve problems related to perimeter and/or area and related to volume | | | **Unit 2:** Lesson 8, Building Number Concepts (234-237); Lesson 9, Building Number Concepts (244-248) |
| **5.** Geometry and measurement. The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties. | **Unit 6:** Lesson 1, Problem Solving (649-651); Lesson 2, Problem Solving (659-661)<br>**Unit 7:** Lesson 1, Problem Solving (747-749); Lesson 2, Problem Solving (756-757); Lesson 3, Problem Solving (763-764); Lesson 6, Problem Solving (785-787) | **Unit 5:** Lesson 1, Problem Solving (500-501); Lesson 7, Problem Solving (550-551); Lesson 8, Problem Solving (558-560); Lesson 9, Problem Solving (569-570); Lesson 12, Problem Solving (594-595); Lesson 13, Problem Solving (602-603); Lesson 14, Problem Solving (612-613) | |
| **6.** Geometry and measurement. The student applies mathematical process standards to understand, recognize, and quantify volume. The student is expected to: | | | |

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| **A.** recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible; and | | | **Unit 6:** Lesson 1, Problem Solving (651-653) |
| **B.** determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base. | | | **Unit 6:** Lesson 1, Problem Solving (651-653); Lesson 2, Problem Solving (655-661); Lesson 3, Problem Solving (671-675) |
| **7.** Geometry and measurement. The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving measurement. The student is expected to solve problems by calculating conversions within a measurement system, customary or metric. | **Unit 9:** Lesson 1, Problem Solving (976-978); Lesson 2, Problem Solving (985-986); Lesson 3, Problem Solving (991-994); Lesson 4, Problem Solving (1001-1002); Lesson 5, Problem Solving (1005-1007); Lesson 6, Problem Solving (1016-1017) | | |
| **8.** Geometry and measurement. The student applies mathematical process standards to identify locations on a coordinate plane. The student is expected to: | | | |
| **A.** describe the key attributes of the coordinate plane, including perpendicular number lines (axes) where the intersection (origin) of the two lines coincides with zero on each number line and the given point (0, 0); the x-coordinate, the first number in an ordered pair, indicates movement parallel to the x-axis starting at the origin; and the y-coordinate, the second number, indicates movement parallel to the y-axis starting at the origin; | | **Unit 8:** Lesson 8, Problem Solving (923-925); Lesson 10, Problem Solving (934-938); Lesson 11, Problem Solving (944-950); Lesson 12, Problem Solving (953-956)<br>**Unit 9:** Lesson 1, Problem Solving (1004-1006) | **Unit 9:** Lesson 1, Problem Solving (1013-1015) |
| **B.** describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane; and | | **Unit 8:** Lesson 8, Problem Solving (923-925); Lesson 10, Problem Solving (934-938); Lesson 11, Problem Solving (944-950)<br>**Unit 9:** Lesson 1, Problem Solving (1004-1006) | **Unit 9:** Lesson 1, Problem Solving (1013-1015) |
| **C.** graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real-world problems, including those generated by number patterns or found in an input-output table. | | **Unit 8:** Lesson 8, Problem Solving (923-925); Lesson 10, Problem Solving (934-938); Lesson 11, Problem Solving (944-950)<br>**Unit 9:** Lesson 1, Problem Solving (1004-1006) | **Unit 9:** Lesson 1, Problem Solving (1013-1015) |
| **9.** Data analysis. The student applies mathematical process standards to solve problems by collecting, | | | |

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| organizing, displaying, and interpreting data. The student is expected to: | | | |
| **A.** represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots; | **Unit 1:** Lesson 4, Problem Solving (36-38); Lesson 5, Problem Solving (41-42); Lesson 6, Problem Solving (50-51); Lesson 7, Problem Solving (58-59); Lesson 8, Problem Solving (65-66); Lesson 9, Problem Solving (73-74); Lesson 11, Problem Solving (91-92); Lesson 12, Problem Solving (98-99); Lesson 13, Problem Solving (104-105)<br>**Unit 2:** Lesson 2, Problem Solving (144-145); Lesson 4, Problem Solving (158-159); Lesson 6, Problem Solving (173-175)<br>**Unit 8:** Lesson 8, Problem Solving (900-902); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925) | **Unit 8:** Lesson 1, Problem Solving (866-867); Lesson 3, Problem Solving (882-883); Lesson 4, Problem Solving (889-892); Lesson 6, Problem Solving (908-910); Lesson 8, Problem Solving (923-925) | |
| **B.** represent discrete paired data on a scatterplot; and | | | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **C.** solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot. | **Unit 1:** Lesson 4, Problem Solving (36-38); Lesson 5, Problem Solving (41-42); Lesson 6, Problem Solving (50-51); Lesson 7, Problem Solving (58-59); Lesson 8, Problem Solving (65-66); Lesson 9, Problem Solving (73-74); Lesson 11, Problem Solving (91-92); Lesson 12, Problem Solving (98-99); Lesson 13, Problem Solving (104-105)<br>**Unit 2:** Lesson 2, Problem Solving (144-145); Lesson 4, Problem Solving (158-159); Lesson 6, Problem Solving (173-175)<br>**Unit 8:** Lesson 8, Problem Solving (900-902); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925) | **Unit 8:** Lesson 1, Problem Solving (866-867); Lesson 3, Problem Solving (882-883); Lesson 4, Problem Solving (889-892); Lesson 6, Problem Solving (908-910); Lesson 8, Problem Solving (923-925) | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **10.** Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to: | | | |

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| **A.** define income tax, payroll tax, sales tax, and property tax; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **B.** explain the difference between gross income and net income; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **C.** identify the advantages and disadvantages of different methods of payment, including check, credit card, debit card, and electronic payments; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **D.** develop a system for keeping and using financial records; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **E.** describe actions that might be taken to balance a budget when expenses exceed income; and | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **F.** balance a simple budget. | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, | | |

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| | Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |

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| **Grade 6** | | | |
| **Knowledge and skills.** | | | |
| **1.** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: | | | |
| **A.** apply mathematics to problems arising in everyday life, society, and the workplace; | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 8:** Unit Opener (829-830) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 4:** Unit Opener (389-390) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 1:** Unit Opener (1-2) |
| **B.** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; | **Unit 1:** Lesson 1, Problem Solving (14-15); Lesson 2, Problem Solving (22-24); Lesson 3, Problem Solving (30-31)<br>**Unit 2:** Lesson 7, Problem Solving (181-182) | **Unit 7:** Lesson 6, Problem Solving (819-822) | **Unit 8:** Lesson 4, Problem Solving (894-898) |
| **C.** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 4:** Lesson 1, Problem Solving (386-388) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 1**: Lesson 1, Problem Solving (12-13) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 2:** Lesson 13, Problem Solving (286-289) |
| **D.** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 4:** Lesson 3, Building Number Concepts (400) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) |
| **E.** create and use representations to organize, record, and communicate mathematical ideas; | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. |

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| | For example: **Unit 1:** Lesson 9, Problem Solving (73-74) | For example: **Unit 2:** Lesson 14, Building Number Concepts (224-227) | For example: **Unit 1:** Lesson 1, Problem Solving (14-17) |
| **F.** analyze mathematical relationships to connect and communicate mathematical ideas; and | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 7:** Lesson 8, Building Number Concepts (796-798) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 11, Problem Solving (944-946) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 9, Building Number Concepts (938-940) |
| **G.** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 5, Problem Solving (875) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 4:** Lesson 6, Building Number Concepts (447) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 12, Building Number Concepts (962) |
| **2.** Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to: | | | |
| **A.** classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers; | | | The following helps address the standard.<br><br>**Unit 10:** Lesson 5, Building Number Concepts (1195-1198) |
| **B.** identify a number, its opposite, and its absolute value; | | **Unit 8:** Lesson 1, Building Number Concepts (863-865); Lesson 2, Building Number Concepts (870-875); Lesson 3, Building Number Concepts (878-881); Lesson 4, Building Number Concepts (886-888) | |
| **C.** locate, compare, and order integers and rational numbers using a number line; | | **Unit 8:** Lesson 1, Building Number Concepts (863-865); Lesson 2, Building Number Concepts (870-875); Lesson 3, Building Number Concepts (878-881); Lesson 4, Building Number Concepts (886-888) | |
| **D.** order a set of rational numbers arising from mathematical and real-world contexts; and | The following help address the standard.<br><br>**Unit 8:** Lesson 9, Building Number Concepts (905-907); Lesson 10, Building Number Concepts (913- | **Unit 5:** Lesson 11, Building Number Concepts (581-586)<br><br>The following help address the standard. | The following helps address the standard. |

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| | 915); Lesson 11, Building Number Concepts (920-922) | **Unit 2:** Lesson 1, Building Number Concepts (107-108); Lesson 2, Building Number Concepts (115-117); Lesson 3, Building Number Concepts (123-127), Problem Solving (128-130); Lesson 4, Problem Solving (136-138)<br>**Unit 8:** Lesson 4, Building Number Concepts (886-888) | **Unit 1:** Lesson 10, Building Number Concepts (104-107) |
| **E.** extend representations for division to include fraction notation such as $a/b$ represents the same number as $a \div b$ where $b \neq 0$. | | **Unit 5:** Lesson 3, Building Number Concepts (513-517) | |
| **3.** Number and operations. The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions. The student is expected to: | | | |
| **A.** recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values; | | **Unit 3:** Lesson 8, Building Number Concepts (317-321); Lesson 9, Building Number Concepts (327-330), Problem Solving (331-332); Lesson 11, Building Number Concepts (335-337) | **Unit 1:** Lesson 5, Building Number Concepts (52-55) |
| **B.** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one; | | | **Unit 1:** Lesson 3, Building Number Concepts (30-32); Lesson 4, Building Number Concepts (41-44) |
| **C.** represent integer operations with concrete models and connect the actions with the models to standardized algorithms; | | **Unit 8:** Lesson 5, Building Number Concepts (895-899); Lesson 6, Building Number Concepts (904-907); Lesson 7, Building Number Concepts (913-916); Lesson 8, Building Number Concepts (919-922); Lesson 9, Building Number Concepts (928-931); Lesson 14, Building Number Concepts (967-971)<br>**Unit 9:** Lesson 1, Building Number Concepts (999-1003); Lesson 2, Building Number Concepts (1009-1013); Lesson 4, Building Number Concepts (1026-1030); Lesson 6, Building Number Concepts (1043-1047) | |
| **D.** add, subtract, multiply, and divide integers fluently; and | | **Unit 8:** Lesson 5, Building Number Concepts (895-899); Lesson 6, Building Number Concepts (904-907); Lesson 7, Building Number Concepts (913-916); Lesson 8, Building Number Concepts (919- | |

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| | | 922); Lesson 9, Building Number Concepts (928-931); Lesson 13, Building Number Concepts (959-964); Lesson 14, Building Number Concepts (967-971)<br>**Unit 9:** Lesson 1, Building Number Concepts (999-1003); Lesson 2, Building Number Concepts (1009-1013); Lesson 4, Building Number Concepts (1026-1030); Lesson 6, Building Number Concepts (1043-1047); Lesson 9, Building Number Concepts (1062-1065) | |
| **E.** multiply and divide positive rational numbers fluently. | | **Unit 3:** Lesson 2, Building Number Concepts (265-267); Lesson 3, Building Number Concepts (272-275); Lesson 3, Problem Solving (276-277); Lesson 4, Building Number Concepts (280-282); Lesson 5, Building Number Concepts (288-292); Lesson 7, Building Number Concepts (307-310); Lesson 8, Building Number Concepts (317-321); Lesson 9, Building Number Concepts (326-330); Lesson 9, Problem Solving (331-332); Lesson 10, Building Number Concepts (335-337); Lesson 11, Building Number Concepts (342-345); Lesson 11, Problem Solving (346-347); Lesson 12, Building Number Concepts (350-354); Lesson 13, Building Number Concepts (360-364); Lesson 14, Building Number Concepts (369-371); Lesson 14, Problem Solving (372-374)<br>**Unit 4:** Lesson 1, Problem Solving (402-403); Lesson 2, Problem Solving (412-413); Lesson 6, Building Number Concepts (445-448); Lesson 6, Problem Solving (449-450); Lesson 7, Building Number Concepts (453-456); Lesson 8, Building Number Concepts (462-463); Lesson 9, Building Number Concepts (468-470); Lesson 9, Problem Solving (471-472)<br>**Unit 6:** Lesson 13, Problem Solving (736-737) | **Unit 1:** Lesson 3, Building Number Concepts (30-32); Lesson 4, Building Number Concepts (41-44); Lesson 5, Building Number Concepts (52-55); Lesson 6, Building Number Concepts (60-63) |
| **4.** Proportionality. The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to: | | | |
| **A.** compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships; | | | The following helps address the standard.<br><br>**Unit 9:** Lesson 5, Building Number Concepts (1044-1048) |

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| **B.** apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates; | **Unit 3:** Lesson 8, Problem Solving (313-315); Lesson 9, Problem Solving (321-323); Lesson 11, Problem Solving (337-338) | | **Unit 2:** Lesson 3, Building Number Concepts (193-196); Lesson 3, Problem Solving (197-198); Lesson 13, Building Number Concepts (284-285)<br><br>**Unit 3:** Lesson 1, Problem Solving (331-334); Lesson 2, Problem Solving (342-344); Lesson 4, Problem Solving (358-361); Lesson 6, Problem Solving (374-380) |
| **C.** give examples of ratios as multiplicative comparisons of two quantities describing the same attribute; | | | **Unit 2:** Lesson 3, Building Number Concepts (193-196); Lesson 3, Problem Solving (197-198); Lesson 7, Building Number Concepts (227-229); Lesson 13, Building Number Concepts (284-285) |
| **D.** give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients; | **Unit 3:** Lesson 8, Problem Solving (313-315); Lesson 9, Problem Solving (321-323); Lesson 11, Problem Solving (337-338) | | **Unit 3:** Lesson 1, Problem Solving (331-334); Lesson 2, Problem Solving (342-344); Lesson 4, Problem Solving (358-361); Lesson 6, Problem Solving (374-380) |
| **E.** represent ratios and percents with concrete models, fractions, and decimals; | | **Unit 7:** Lesson 1, Building Number Concepts (769-772); Lesson 2, Building Number Concepts (780-782); Lesson 3, Building Number Concepts (790-792); Lesson 5, Building Number Concepts (810-814) | **Unit 2:** Lesson 3, Building Number Concepts (193-196); Lesson 3, Problem Solving (197-198); Lesson 13, Building Number Concepts (284-285)<br><br>**Unit 4:** Lesson 1, Problem Solving (433-435) |
| **F.** represent benchmark fractions and percents such as 1%, 10%, 25%, 33 1/3%, and multiples of these values using 10 by 10 grids, strip diagrams, number lines, and numbers; | | **Unit 7:** Lesson 3, Building Number Concepts (790-792); Lesson 5, Building Number Concepts (810-814) | |
| **G.** generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money; and | | **Unit 5:** Lesson 7, Building Number Concepts (545-549); Lesson 9, Building Number Concepts (563-568); Lesson 10, Building Number Concepts (573-576); Lesson 14, Building Number Concepts (606-611)<br>**Unit 7:** Lesson 1, Building Number Concepts (769-772); Lesson 2, Building Number Concepts (780-782); Lesson 3, Building Number Concepts (790-792); Lesson 5, Building Number Concepts (810-814) | **Unit 1:** Lesson 7, Building Number Concepts (72-75)<br>**Unit 4:** Lesson 4, Problem Solving (464-467) |
| **H.** convert units within a measurement system, including the use of proportions and unit rates. | **Unit 9:** Lesson 1, Problem Solving (976-978); Lesson 2, Problem Solving (985-986); Lesson 3, Problem Solving (991-994); Lesson 4, Problem | | |

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| | Solving (1001-1002); Lesson 5, Problem Solving (1005-1007); Lesson 6, Problem Solving (1016-1017) | | |
| **5.** Proportionality. The student applies mathematical process standards to solve problems involving proportional relationships. The student is expected to: | | | |
| **A.** represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions; | **Unit 3:** Lesson 12, Problem Solving (341-343) | | **Unit 2:** Lesson 3, Problem Solving (197-198); Lesson 4, Problem Solving (206-208); Lesson 6, Problem Solving (221-224); Lesson 7, Problem Solving (232-231); Lesson 8, Problem Solving (238-240); Lesson 9, Problem Solving (249-250) |
| **B.** solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models; and | | **Unit 7:** Lesson 1, Building Number Concepts (769-772); Lesson 2, Building Number Concepts (780-782); Lesson 3, Building Number Concepts (790-792); Lesson 5, Building Number Concepts (810-814) | **Unit 4:** Lesson 1, Problem Solving (433-435) |
| **C.** use equivalent fractions, decimals, and percents to show equal parts of the same whole. | | **Unit 7:** Lesson 1, Building Number Concepts (769-772); Lesson 2, Building Number Concepts (780-782); Lesson 3, Building Number Concepts (790-792); Lesson 5, Building Number Concepts (810-814) | **Unit 4:** Lesson 1, Problem Solving (433-435) |
| **6.** Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to describe algebraic relationships. The student is expected to: | | | |
| **A.** identify independent and dependent quantities from tables and graphs; | | | **Unit 9:** Lesson 5, Building Number Concepts (1044-1048)<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192) |
| **B.** write an equation that represents the relationship between independent and dependent quantities from a table; and | | | **Unit 4:** Lesson 1, Building Number Concepts (429-432); Lesson 3, Building Number Concepts (448-452); Lesson 4, Building Number Concepts (460-463); Lesson 5, Building Number Concepts (471-475); Lesson 6, Building Number Concepts (480-483); Lesson 7, Building Number Concepts (489-491) |

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| **C.** represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$. | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055) |
| **7.** Expressions, equations, and relationships. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to: | | | |
| **A.** generate equivalent numerical expressions using order of operations, including whole number exponents and prime factorization; | | | **Unit 5:** Lesson 1, Building Number Concepts (541-545); Lesson 2, Building Number Concepts (553-555); Lesson 3, Building Number Concepts (561-564); Lesson 4, Building Number Concepts (570-575); Lesson 6, Building Number Concepts (588-594); Lesson 7, Building Number Concepts (597-601); Lesson 8, Building Number Concepts (608-612)<br>**Unit 6:** Lesson 1, Building Number Concepts (643-650); Lesson 3, Building Number Concepts (664-670); Lesson 4, Building Number Concepts (678-683); Lesson 5, Building Number Concepts (686-689); Lesson 7, Building Number Concepts (703-709) |
| **B.** distinguish between expressions and equations verbally, numerically, and algebraically; | | | **Unit 5:** Lesson 1, Building Number Concepts (541-545); Lesson 2, Building Number Concepts (553-555); Lesson 3, Building Number Concepts (561-564); Lesson 4, Building Number Concepts (570-575); Lesson 6, Building Number Concepts (588-594); Lesson 7, Building Number Concepts (597-601); Lesson 8, Building Number Concepts (608-612)<br>**Unit 7:** Lesson 1, Building Number Concepts (751-754)**;** Lesson 2, Building Number Concepts (763-765) |
| **C.** determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations; and | | | **Unit 5:** Lesson 2, Building Number Concepts (553-555); Lesson 4, Building Number Concepts (570-575)<br>**Unit 7:** Lesson 1, Building Number Concepts (751-754); Lesson 2, Building Number Concepts (763-765); Lesson 3, Building Number Concepts (772- |

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| | | | 777); Lesson 4, Building Number Concepts (780-785) |
| **D.** generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties. | | | **Unit 5:** Lesson 1, Building Number Concepts (541-545); Lesson 2, Building Number Concepts (553-555); Lesson 3, Building Number Concepts (561-564); Lesson 4, Building Number Concepts (570-575); Lesson 6, Building Number Concepts (588-594); Lesson 7, Building Number Concepts (597-601); Lesson 8, Building Number Concepts (608-612) |
| **8.** Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to represent relationships and solve problems. The student is expected to: | | | |
| **A.** extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle; | | **Unit 3:** Lesson 12, Building Number Concepts (350-354); Lesson 13, Problem Solving (365-366) | **Unit 7:** Lesson 1, Problem Solving (755-760); Lesson 2, Problem Solving (766-769); Lesson 4, Problem Solving (786-790); Lesson 5, Problem Solving (793-796); Lesson 6, Problem Solving (805-808); Lesson 7, Problem Solving (816-819); Lesson 8, Problem Solving (826-828); Lesson 9, Problem Solving (834-836) |
| **B.** model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes; | **Unit 5:** Lesson 3, Problem Solving (533-535); Lesson 4, Problem Solving (542-543) | **Unit 6:** Lesson 4, Problem Solving (663-666); Lesson 5, Problem Solving (669-673); Lesson 6, Problem Solving (682-684); Lesson 8, Problem Solving (695-697) | |
| **C.** write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers; and | **Unit 5:** Lesson 3, Problem Solving (533-535); Lesson 4, Problem Solving (542-543) | **Unit 6:** Lesson 6, Problem Solving (682-684) | |
| **D.** determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers. | **Unit 5:** Lesson 4, Problem Solving (542-543); Lesson 12, Problem Solving (606-608); Lesson 13, Problem Solving (614-615) | **Unit 6:** Lesson 6, Problem Solving (682-684) | |
| **9.** Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to represent situations. The student is expected to: | | | |
| **A.** write one-variable, one-step equations and inequalities to represent constraints or conditions within problems; | | | **Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355- |

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| | | | 357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402); Lesson 10, Building Number Concepts (408-413) |
| **B.** represent solutions for one-variable, one-step equations and inequalities on number lines; and | | | **Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **C.** write corresponding real-world problems given one-variable, one-step equations or inequalities. | | | **Unit 2:** Lesson 14, Building Number Concepts (293-296)<br><br>**Unit 3:** Lesson 9, Building Number Concepts (400-402) |
| **10.** Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to: | | | |
| **A.** model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts; and | | | **Unit 2:** Lesson 6, Building Number Concepts (218-220); Lesson 8, Building Number Concepts (234-237); Lesson 9, Building Number Concepts (244-248); Lesson 11, Building Number Concepts (262-267); Lesson 12, Building Number Concepts (274-277); Lesson 14, Building Number Concepts (293-296)<br><br>**Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |

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| | | | **Unit 7:** Lesson 2, Building Number Concepts (763-765); Lesson 3, Building Number Concepts (772-777); Lesson 4, Building Number Concepts (780-785); Lesson 6, Building Number Concepts (801-804); Lesson 7, Building Number Concepts (811-815); Lesson 8, Building Number Concepts (822-825); Lesson 9, Building Number Concepts (831-833) |
| **B.** determine if the given value(s) make(s) one-variable, one-step equations or inequalities true. | | | **Unit 2:** Lesson 4, Building Number Concepts (202-205); Lesson 5, Building Number Concepts (211-213); Lesson 6, Building Number Concepts (218-220)<br>**Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402)<br>**Unit 7:** Lesson 4, Building Number Concepts (780-785); Lesson 6, Building Number Concepts (801-804); Lesson 7, Building Number Concepts (811-815); Lesson 8, Building Number Concepts (822-825); Lesson 9, Building Number Concepts (831-833) |
| **11.** Measurement and data. The student applies mathematical process standards to use coordinate geometry to identify locations on a plane. The student is expected to graph points in all four quadrants using ordered pairs of rational numbers. | | **Unit 8:** Lesson 8, Problem Solving (923-925); Lesson 10, Problem Solving (934-939); Lesson 11, Problem Solving (944-950); Lesson 12, Problem Solving (953-956)<br>**Unit 9:** Lesson 1, Problem Solving (1004-1006); Lesson 2, Problem Solving (1014-1016); Lesson 3, Problem Solving (1019-1023); Lesson 4, Problem Solving (1031-1032); Lesson 5, Problem Solving (1035-1038); Lesson 7, Problem Solving (1050-1053); Lesson 8, Problem Solving (1056-1059) | **Unit 9:** Lesson 1, Problem Solving (1013-1015); Lesson 2, Problem Solving (1022-1024); Lesson 3, Problem Solving (1032-1034) |
| **12.** Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to analyze problems. The student is expected to: | | | |
| **A.** represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots; | **Unit 8:** Lesson 7, Problem Solving (893-894); Lesson 8, Problem Solving (900-902); Lesson 9, | | **Unit 1:** Lesson 6, Problem Solving (64-69); Lesson 7, Problem Solving (76-80); Lesson 8, Problem |

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| | Problem Solving (908-910); Lesson 11, Problem Solving (923-925); Lesson 12, Problem Solving (932-933); Lesson 14, Problem Solving (946-947) | | Solving (88-92); Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **B.** use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution; | **Unit 8:** Lesson 1, Problem Solving (842-844); Lesson 2, Problem Solving (850-851); Lesson 3, Problem Solving (858-861); Lesson 4, Problem Solving (869-871); Lesson 5, Problem Solving (874-876); Lesson 6, Problem Solving (885-887); Lesson 7, Problem Solving (893-894); Lesson 8, Problem Solving (900-902); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925); Lesson 12, Problem Solving (932-933); Lesson 14, Problem Solving (946-947) | | |
| **C.** summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution; and | **Unit 8:** Lesson 3, Problem Solving (858-861); Lesson 4, Problem Solving (869-871); Lesson 5, Problem Solving (874-876); Lesson 6, Problem Solving (885-887); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925); Lesson 12, Problem Solving (932-933); Lesson 14, Problem Solving (946-947) | | **Unit 1:** Lesson 1, Problem Solving (14-17); Lesson 3, Problem Solving (33-38); Lesson 4, Problem Solving (45-49); Lesson 6, Problem Solving (64-69); Lesson 7, Problem Solving (76-80); Lesson 8, Problem Solving (88-92); Lesson 13, Problem Solving (132-135) |
| **D.** summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution. | **Unit 1:** Lesson 4, Problem Solving (36-38); Lesson 5, Problem Solving (41-42); Lesson 6, Problem Solving (50-51); Lesson 7, Problem Solving (58-59); Lesson 8, Problem Solving (65-66); Lesson 9, Problem Solving (73-74); Lesson 11, Problem Solving (91-92); Lesson 12, Problem Solving (98-99); Lesson 13, Problem Solving (104-105)<br>**Unit 2:** Lesson 2, Problem Solving (144-145); Lesson 4, Problem Solving (158-159); Lesson 6, Problem Solving (173-175)<br>**Unit 8:** Lesson 8, Problem Solving (900-902); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925) | | |
| **13.** Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to solve problems. The student is expected to: | | | |
| **A.** interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots; and | **Unit 1:** Lesson 4, Problem Solving (36-38); Lesson 5, Problem Solving (41-42); Lesson 6, Problem Solving (50-51); Lesson 7, Problem Solving (58-59); Lesson 8, Problem Solving (65-66); Lesson 9, Problem Solving (73-74); Lesson 11, Problem Solving (91-92); Lesson 12, Problem Solving (98- | **Unit 8:** Lesson 4, Problem Solving (889-892); Lesson 6, Problem Solving (908-910); Lesson 8, Problem Solving (923-925) | **Unit 1:** Lesson 6, Problem Solving (64-69); Lesson 7, Problem Solving (76-80); Lesson 8, Problem Solving (88-92) |

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| | 99); Lesson 13, Problem Solving (104-105)<br><br>**Unit 8:** Lesson 8, Problem Solving (900-902); Lesson 9, Problem Solving (908-910); Lesson 11, Problem Solving (923-925) | | |
| **B.** distinguish between situations that yield data with and without variability. | | | The following help address the standard.<br><br>**Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **14.** Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: | | | |
| **A.** compare the features and costs of a checking account and a debit card offered by different local financial institutions; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem | | |
| **B.** distinguish between debit cards and credit cards; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem | | |
| **C.** balance a check register that includes deposits, withdrawals, and transfers; college, including through savings, grants, scholarships, student loans, and work-study; and | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **D.** explain why it is important to establish a positive credit history; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem | | |

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| **E.** describe the information in a credit report and how long it is retained; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **F.** describe the value of credit reports to borrowers and to lenders; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **G.** explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study; and | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **H.** compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income. | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |

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| **Grade 7** | | | |
| **Knowledge and skills.** | | | |
| **1.** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: | | | |
| **A.** apply mathematics to problems arising in everyday life, society, and the workplace; | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 8:** Unit Opener (829-830) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 4:** Unit Opener (389-390) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 1:** Unit Opener (1-2) |
| **B.** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; | **Unit 1:** Lesson 1, Problem Solving (14-15); Lesson 2, Problem Solving (22-24); Lesson 3, Problem Solving (30-31)<br>**Unit 2:** Lesson 7, Problem Solving (181-182) | **Unit 7:** Lesson 6, Problem Solving (819-822) | **Unit 8:** Lesson 4, Problem Solving (894-898) |
| **C.** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 4:** Lesson 1, Problem Solving (386-388) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 1**: Lesson 1, Problem Solving (12-13) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 2:** Lesson 13, Problem Solving (286-289) |
| **D.** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 4:** Lesson 3, Building Number Concepts (400) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) |
| **E.** create and use representations to organize, record, and communicate mathematical ideas; | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. |

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| | For example: **Unit 1:** Lesson 9, Problem Solving (73-74) | For example: **Unit 2:** Lesson 14, Building Number Concepts (224-227) | For example: **Unit 1:** Lesson 1, Problem Solving (14-17) |
| **F.** analyze mathematical relationships to connect and communicate mathematical ideas; and | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 7:** Lesson 8, Building Number Concepts (796-798) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 11, Problem Solving (944-946) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 9, Building Number Concepts (938-940) |
| **G.** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 5, Problem Solving (875) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 4:** Lesson 6, Building Number Concepts (447) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 12, Building Number Concepts (962) |
| **2.** Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers. | In TransMath Level 1, students are taught operations with whole numbers. Later, they are introduced to the concept of fractions. Finally, they learn to add and subtract fractions.<br><br>**Unit 1:** Addition (1); **Unit 2:** Subtraction (125); **Unit 3:** Multiplication (245); **Unit 4:** Division (375); **Unit 8:** Concept of Fractions (829); **Unit 9:** Adding and Subtracting Fractions (963) | In TransMath Level 2, students are taught operations with fractions, decimals, percentages, and integers.<br><br>**Unit 2:** Magnitude, Equivalence, and the Addition and Subtraction of Fractions (99); **Unit 3:** Multiplication and Division of Fractions (247); **Unit 4:** Working with Mixed Numbers (389); **Unit 5:** The Concept of Decimal Numbers (487); **Unit 6:** Operations on Decimal Numbers (631); **Unit 7:** Understanding Percent (761); **Unit 8:** Integers (835); **Unit 9:** Operations on Integers (991) | In TransMath Level 3, operations on rational numbers are treated more as a review.<br><br>**Unit 1:** Fractions and Decimals (1) |
| **3.** Number and operations. The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to: | | | |
| **A.** add, subtract, multiply, and divide rational numbers fluently; and | In TransMath Level 1, students are taught operations with whole numbers. Later, they are introduced to the concept of fractions. Finally, they learn to add and subtract fractions. | In TransMath Level 2, students are taught operations with fractions, decimals, percentages, and integers.<br><br>**Unit 2:** Magnitude, Equivalence, and the Addition | In TransMath Level 3, operations on rational numbers are treated more as a review.<br><br>**Unit 1:** Fractions and Decimals (1) |

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| | **Unit 1:** Addition (1); **Unit 2:** Subtraction (125); **Unit 3:** Multiplication (245); **Unit 4:** Division (375); **Unit 8:** Concept of Fractions (829); **Unit 9:** Adding and Subtracting Fractions (963) | and Subtraction of Fractions (99); **Unit 3:** Multiplication and Division of Fractions (247); **Unit 4:** Working with Mixed Numbers (389); **Unit 5:** The Concept of Decimal Numbers (487); **Unit 6:** Operations on Decimal Numbers (631); **Unit 7:** Understanding Percent (761); **Unit 8:** Integers (835); **Unit 9:** Operations on Integers (991) | |
| **B.** apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers. | In TransMath Level 1, students are taught operations with whole numbers. Later, they are introduced to the concept of fractions. Finally, they learn to add and subtract fractions.<br><br>**Unit 1:** Addition (1); **Unit 2:** Subtraction (125); **Unit 3:** Multiplication (245); **Unit 4:** Division (375); **Unit 8:** Concept of Fractions (829); **Unit 9:** Adding and Subtracting Fractions (963) | In TransMath Level 2, students are taught operations with fractions, decimals, percentages, and integers.<br><br>**Unit 2:** Magnitude, Equivalence, and the Addition and Subtraction of Fractions (99); **Unit 3:** Multiplication and Division of Fractions (247); **Unit 4:** Working with Mixed Numbers (389); **Unit 5:** The Concept of Decimal Numbers (487); **Unit 6:** Operations on Decimal Numbers (631); **Unit 7:** Understanding Percent (761); **Unit 8:** Integers (835); **Unit 9:** Operations on Integers (991) | In TransMath Level 3, operations on rational numbers are treated more as a review.<br><br>**Unit 1:** Fractions and Decimals (1) |
| **4.** Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: | | | |
| **A.** represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$; | | | **Unit 2:** Lesson 10, Problem Solving (254-256); Lesson 11, Problem Solving (268-270); Lesson 12, Problem Solving (278-280); Lesson 13, Problem Solving (286-289); Lesson 14, Problem Solving (297-298)<br>**Unit 3:** Lesson 1, Problem Solving (331-335); Lesson 2, Problem Solving (342-344); Lesson 4, Problem Solving (358-361); Lesson 6, Problem Solving (374-380); Lesson 8, Problem Solving (392-396)<br>**Unit 8:** Lesson 6, Problem Solving (912-915); Lesson 7, Problem Solving (921-925); Lesson 8, Problem Solving (933-935); Lesson 10, Problem Solving (946-949); Lesson 11, Problem Solving (957-959); Lesson 12, Problem Solving (965-967); Lesson 13, Problem Solving (975-978) |

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| **B.** calculate unit rates from rates in mathematical and real-world problems; | | **Unit 6:** Lesson 13, Problem Solving (736-737) | **Unit 2:** Lesson 12, Problem Solving (278-280); Lesson 13, Problem Solving (286-289); Lesson 14, Problem Solving (297-298)<br>**Unit 3:** Lesson 1, Problem Solving (331-335); Lesson 2, Problem Solving (342-344); Lesson 4, Problem Solving (358-361); Lesson 6, Problem Solving (374-380); Lesson 8, Problem Solving (392-396) |
| **C.** determine the constant of proportionality ($k = y/x$) within mathematical and real-world problems; | | | **Unit 2:** Lesson 12, Problem Solving (278-280); Lesson 13, Problem Solving (286-289); Lesson 14, Problem Solving (297-298) |
| **D.** solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems; and | | | **Unit 2:** Lesson 12, Problem Solving (278-280); Lesson 13, Problem Solving (286-289); Lesson 14, Problem Solving (297-298)<br>**Unit 4:** Lesson 1, Problem Solving (433-435) Lesson 2, Building Number Concepts (439-440); Lesson 2, Problem Solving (441-445); Lesson 3, Problem Solving (453-456); Lesson 4, Problem Solving (464-467); Lesson 6, Problem Solving (484-486); Lesson 7, Problem Solving (492-495); Lesson 8, Problem Solving (502-505); Lesson 9, Problem Solving (511-514)<br>**Unit 7:** Lesson 9, Building Number Concepts (831-833) |
| **E.** convert between measurement systems, including the use of proportions and the use of unit rates. | The following help address the standard.<br><br>**Unit 9:** Lesson 1, Problem Solving (976-978); Lesson 2, Problem Solving (985-986); Lesson 3, Problem Solving (991-994); Lesson 4, Problem Solving (1001-1002); Lesson 5, Problem Solving (1005-1007); Lesson 6, Problem Solving (1016-1017) | | |
| **5.** Proportionality. The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to: | | | |
| **A.** generalize the critical attributes of similarity, including ratios within and between similar shapes; | **Unit 6:** Lesson 7, Problem Solving (700-703); Lesson 10, Problem Solving (727-730) | | **Unit 2:** Lesson 8, Problem Solving (238-240); Lesson 9, Problem Solving (249-250) |
| **B.** describe π as the ratio of the circumference of a circle to its diameter; and | | **Unit 6:** Lesson 9, Problem Solving (700-704) | |

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| **C.** solve mathematical and real-world problems involving similar shape and scale drawings. | **Unit 6:** Lesson 7, Problem Solving (700-703); Lesson 9, Problem Solving (718-719) | | **Unit 2:** Lesson 8, Problem Solving (238-240); Lesson 9, Problem Solving (249-250) |
| **6.** Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: | | | |
| **A.** represent sample spaces for simple and compound events using lists and tree diagrams; | | **Unit 7:** Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **B.** select and use different simulations to represent simple and compound events with and without technology; | | **Unit 7:** Lesson 1, Problem Solving (773-777); Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **C.** make predictions and determine solutions using experimental data for simple and compound events; | | The following help address the standard.<br><br>**Unit 7:** Lesson 1, Problem Solving (773-777); Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **D.** make predictions and determine solutions using theoretical probability for simple and compound events; | | **Unit 7:** Lesson 1, Problem Solving (773-777); Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **E.** find the probabilities of a simple event and its complement and describe the relationship between the two; | | **Unit 7:** Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |

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| **F.** use data from a random sample to make inferences about a population; | | **Unit 7:** Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **G.** solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents; | | **Unit 7:** Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **H.** solve problems using qualitative and quantitative predictions and comparisons from simple experiments; and | | The following help address the standard.<br><br>**Unit 7:** Lesson 1, Problem Solving (773-777); Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **I.** determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces. | | **Unit 7:** Lesson 4, Building Number Concepts (800-804); Lesson 7, Building Number Concepts (825-828) | |
| **7.** Expressions, equations, and relationships. The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y=mx+b$. | | | **Unit 4:** Lesson 6, Building Number Concepts (480-483); Lesson 7, Building Number Concepts (489-491)<br>**Unit 8:** Lesson 1, Problem Solving (869-871); Lesson 2, Problem Solving (878-800); Lesson 3, Problem Solving (887-891); Lesson 4, Problem Solving (894-898); Lesson 5, Problem Solving (901-904); Lesson 9, Problem Solving (942-943); Lesson 12, Problem Solving (965-967); Lesson 13, Problem Solving (975-978); Lesson 14, Problem Solving (984-986)<br>**Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Problem Solving (1056-1059); Lesson 7, Problem Solving (1066-1067); Lesson 8, Problem Solving (1075-1076); Lesson 9, Problem Solving (1083-1085); Lesson 11, Problem Solving (1101-1105); Lesson 12, Problem Solving (1112-1116); Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |

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| **8.** Expressions, equations, and relationships. The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to: | | | |
| **A.** model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas; | | | **Unit 6:** Lesson 3, Problem Solving (671-675) |
| **B.** explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas; and | | | **Unit 6:** Lesson 3, Problem Solving (671-675) |
| **C.** use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas. | | **Unit 6:** Lesson 9, Problem Solving (700-704); Lesson 10, Problem Solving (707-711); Lesson 11, Problem Solving (720-722); Lesson 12, Problem Solving (728-730) | |
| **9.** Expressions, equations, and relationships. The student applies mathematical process standards to solve geometric problems. The student is expected to: | | | |
| **A.** solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids; | | | **Unit 6:** Lesson 1, Problem Solving (651-653); Lesson 2, Problem Solving (656-661); Lesson 3, Problem Solving (671-675); Lesson 6, Problem Solving (694-700); Lesson 9, Problem Solving (717-724) |
| **B.** determine the circumference and area of circles; | | **Unit 6:** Lesson 9, Problem Solving (700-704); Lesson 10, Problem Solving (707-711); Lesson 11, Problem Solving (720-722); Lesson 12, Problem Solving (728-730) | |
| **C.** determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles; and | | **Unit 6:** Lesson 6, Problem Solving (682-684) | |
| **D.** solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. | | | **Unit 5:** Lesson 5, Problem Solving (578-583); Lesson 7, Problem Solving (602-605); Lesson 8, Problem Solving (613-614); Lesson 9, Problem Solving (617-619) |
| **10.** Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to: | | | |

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| **A.** write one-variable, two-step equations and inequalities to represent constraints or conditions within problems; | | **Unit 4:** Lesson 3, Problem Solving (423-425); Lesson 4, Problem Solving (432-435); Lesson 7, Problem Solving (457-459); Lesson 10, Problem Solving (478-482)<br>**Unit 5:** Lesson 6, Problem Solving (541-542)<br>**Unit 9:** Lesson 4, Problem Solving (1031-1032); Lesson 5, Problem Solving (1035-1038); Lesson 7, Problem Solving (1050-1053); Lesson 8, Problem Solving (1056-1059) | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402)<br>**Unit 7:** Lesson 6, Building Number Concepts (801-804)**;** Lesson 7, Building Number Concepts (811-815); Lesson 8, Building Number Concepts (822-825); Lesson 9, Building Number Concepts (831-833) |
| **B.** represent solutions for one-variable, two-step equations and inequalities on number lines; and | | | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **C.** write a corresponding real-world problem given a one-variable, two-step equation or inequality. | | | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **11.** Expressions, equations, and relationships. The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: | | | |
| **A.** model and solve one-variable, two-step equations and inequalities; | | | **Unit 7:** Lesson 6, Building Number Concepts (801-804); Lesson 7, Building Number Concepts (811-815); Lesson 8, Building Number Concepts (822-825); Lesson 9, Building Number Concepts (831-833)<br>**Unit 8**: Lesson 1, Building Number Concepts (863-868); Lesson 2, Building Number Concepts (874-877); Lesson 3, Building Number Concepts (883-886); Lesson 6, Building Number Concepts (909-911); Lesson 7, Building Number Concepts (918-920); Lesson 8, Building Number Concepts (928-932); Lesson 9, Building Number Concepts (938-941); Lesson 11, Building Number Concepts (954-956); Lesson 12, Building Number Concepts (962-964); Lesson 13, Building Number Concepts (970-974); Lesson 14, Building Number Concepts (981-983)<br>**Unit 9:** Lesson 12, Problem Solving (1112-1116); Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **B.** determine if the given value(s) make(s) one-variable, two-step equations and inequalities true; and | | | **Unit 8:** Lesson 1, Building Number Concepts (863-868); Lesson 2, Building Number Concepts (874-877); Lesson 3, Building Number Concepts (883-886); Lesson 6, Building Number Concepts (909-911); Lesson 7, Building Number Concepts (918- |

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| | | | 920); Lesson 8, Building Number Concepts (928-932); Lesson 9, Building Number Concepts (938-941); Lesson 11, Building Number Concepts (954-956); Lesson 12, Building Number Concepts (962-964); Lesson 13, Building Number Concepts (970-974); Lesson 14, Building Number Concepts (981-983) |
| **C.** write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships | | **Unit 3:** Lesson 8, Problem Solving (322-324); Lesson 12, Building Number Concepts (350-354); Lesson 12, Problem Solving (355-357); Lesson 13, Problem Solving (365-366) | **Unit 7:** Lesson 8, Problem Solving (826-828); Lesson 9, Problem Solving (834-836) |
| **12.** Measurement and data. The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to: | | | |
| **A.** compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads; | | **Unit 8:** Lesson 4, Problem Solving (889-892); Lesson 6, Problem Solving (908-910); Lesson 8, Problem Solving (923-925) | **Unit 1:** Lesson 6, Problem Solving (64-69); Lesson 7, Problem Solving (76-80); Lesson 8, Problem Solving (88-92) |
| **B.** use data from a random sample to make inferences about a population; and | | **Unit 7:** Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **C.** compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations. | | **Unit 7:** Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **13.** Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: | | | |
| **A.** calculate the sales tax for a given purchase and calculate income tax for earned wages; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **B.** identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and | The following help address the standard. | | |

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| variable expenses, and calculate what percentage each category comprises of the total budget; | **Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **C.** create and organize a financial assets and liabilities record and construct a net worth statement; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **D.** use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another large city nearby; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **E.** calculate and compare simple interest and compound interest earnings; and | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **F.** analyze and compare monetary incentives, including sales, rebates, and coupons. | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |

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| **Grade 8** | | | |
| **Knowledge and skills.** | | | |
| **1.** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: | | | |
| **A.** apply mathematics to problems arising in everyday life, society, and the workplace; | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 8:** Unit Opener (829-830) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 4:** Unit Opener (389-390) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 1:** Unit Opener (1-2) |
| **B.** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; | **Unit 1:** Lesson 1, Problem Solving (14-15); Lesson 2, Problem Solving (22-24); Lesson 3, Problem Solving (30-31)<br>**Unit 2:** Lesson 7, Problem Solving (181-182) | **Unit 7:** Lesson 6, Problem Solving (819-822) | **Unit 8:** Lesson 4, Problem Solving (894-898) |
| **C.** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 4:** Lesson 1, Problem Solving (386-388) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 1**: Lesson 1, Problem Solving (12-13) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 2:** Lesson 13, Problem Solving (286-289) |
| **D.** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 4:** Lesson 3, Building Number Concepts (400) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) |
| **E.** create and use representations to organize, record, and communicate mathematical ideas; | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. |

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| | For example: **Unit 1:** Lesson 9, Problem Solving (73-74) | For example: **Unit 2:** Lesson 14, Building Number Concepts (224-227) | For example: **Unit 1:** Lesson 1, Problem Solving (14-17) |
| **F.** analyze mathematical relationships to connect and communicate mathematical ideas; and | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 7:** Lesson 8, Building Number Concepts (796-798) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 11, Problem Solving (944-946) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 9, Building Number Concepts (938-940) |
| **G.** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 5, Problem Solving (875) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 4:** Lesson 6, Building Number Concepts (447) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 12, Building Number Concepts (962) |
| **2.** Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to: | | | |
| **A.** extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers; | | | The following helps address the standard.<br><br>**Unit 9:** Lesson 9, Building Number Concepts (1229-1232) |
| **B.** approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line; | | | **Unit 10:** Lesson 5, Building Number Concepts (1195-1198); Lesson 9, Building Number Concepts (1229-1232); Lesson 10, Building Number Concepts (1235-1240) |
| **C.** convert between standard decimal notation and scientific notation; and | | | The following help address the standard.<br><br>**Unit 7:** Lesson 2, Building Number Concepts (763-765); Lesson 3, Building Number Concepts (772-777); Lesson 4, Building Number Concepts (780-785) |

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| **D.** order a set of real numbers arising from mathematical and real-world contexts. | | **Unit 5:** Lesson 11, Building Number Concepts (581-586); Lesson 13, Building Number Concepts (597-601) | |
| **3.** Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to: | | | |
| **A.** generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation; | **Unit 6:** Lesson 7, Problem Solving (700-703); Lesson 8, Problem Solving (709-711); Lesson 9, Problem Solving (718-719) | | |
| **B.** compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane; and | The following helps address the standard.<br><br>**Unit 3:** Lesson 12, Problem Solving (341-343) | | The following helps address the standard.<br><br>**Unit 2:** Lesson 8, Problem Solving (238-240) |
| **C.** use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation. | The following helps address the standard.<br><br>**Unit 3:** Lesson 12, Problem Solving (341-343) | | The following helps address the standard.<br><br>**Unit 2:** Lesson 8, Problem Solving (238-240) |
| **4.** Proportionality. The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to: | | | |
| **A.** use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/ (x_2 - x_1)$, is the same for any two points $(x_1, y_1)$ and $(x_2, y_2)$ on the same line; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074) |
| **B.** graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship; and | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **C.** use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems. | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079- |

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| | | | 1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **5.** Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: | | | |
| **A.** represent linear proportional situations with tables, graphs, and equations in the form *of* $y = kx$; | | | **Unit 9:** Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **B.** represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$; | | | **Unit 9:** Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **C.** contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation; | | | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **D.** use a trend line that approximates the linear relationship between bivariate sets of data to make predictions; | | | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **E.** solve problems involving direct variation; | | | **Unit 9:** Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **F.** distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or y = $mx + b$, where $b \neq 0$; | | | **Unit 9:** Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 14, Building Number Concepts (1127-1132) |

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| **G.** identify functions using sets of ordered pairs, tables, mappings, and graphs; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **H.** identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems; and | | | **Unit 9:** Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **I.** write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **6.** Expressions, equations, and relationships. The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to: | | | |
| **A.** describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height; | | | **Unit 6:** Lesson 3, Problem Solving (671-675); Lesson 6, Problem Solving (694-700) |
| **B.** model the relationship between the volume of a cylinder and a cone having both congruent bases and | | | **Unit 6:** Lesson 3, Problem Solving (671-675) |

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| heights and connect that relationship to the formulas; and | | | |
| **C.** use models and diagrams to explain the Pythagorean theorem. | | | **Unit 10:** Lesson 1, Building Number Concepts (1159-1167); Lesson 2, Building Number Concepts (1170-1175) Lesson 3, Building Number Concepts (1178-1185) |
| **7.** Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems. The student is expected to: | | | |
| **A.** solve problems involving the volume of cylinders, cones, and spheres; | | | **Unit 6:** Lesson 8, Problem Solving (712-714); Lesson 9, Problem Solving (717-724) |
| **B.** use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders; | | | **Unit 5:** Lesson 7, Problem Solving (602-605); Lesson 8, Problem Solving (613-614); Lesson 9, Problem Solving (617-619) |
| **C.** use the Pythagorean Theorem and its converse to solve problems; and | | | **Unit 10:** Lesson 1, Building Number Concepts (1159-1167); Lesson 2, Building Number Concepts (1170-1175); Lesson 3, Building Number Concepts (1178-1185) |
| **D.** determine the distance between two points on a coordinate plane using the Pythagorean Theorem. | | | **Unit 10:** Lesson 1, Building Number Concepts (1159-1167); Lesson 2, Building Number Concepts (1170-1175); Lesson 3, Building Number Concepts (1178-1185) |
| **8.** Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to: | | | |
| **A.** write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants; | | | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 7, Problem Solving (387-389); Lesson 9, Building Number Concepts (400-402); Lesson 9, Problem Solving (403-404) |
| **B.** write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants; | | | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **C.** model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants; and | | | **Unit 3:** Lesson 7, Building Number Concepts (383-386); Lesson 7, Problem Solving (387-389); Lesson 9, Building Number Concepts (400-402); Lesson 9, Problem Solving (403-404) |
| **D.** use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles | | | **Unit 7:** Lesson 2, Problem Solving (766-769); Lesson 4, Problem Solving (786-790); Lesson 5, |

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| created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. | | | Problem Solving (793-796); Lesson 6, Problem Solving (805-808); Lesson 7, Problem Solving (816-819); Lesson 8, Problem Solving (826-828); Lesson 9, Problem Solving (834-836) |
| **9.** Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to identify and verify the values of *x* and *y* that simultaneously satisfy two linear equations in the form *y = mx + b* from the intersections of the graphed equations. | | | **Unit 9:** Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **10.** Two-dimensional shapes. The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: | | | |
| **A.** generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane; | **Unit 6:** Lesson 3, Problem Solving (668-670); Lesson 4, Problem Solving (677-678); Lesson 6, Problem Solving (692-693) | | **Unit 9:** Lesson 2, Problem Solving (1022-1024); Lesson 3, Problem Solving (1032-1034) |
| **B.** differentiate between transformations that preserve congruence and those that do not; | **Unit 6:** Lesson 4, Problem Solving (677-678); Lesson 6, Problem Solving (692-693); Lesson 10, Problem Solving (727-730) | | **Unit 9:** Lesson 2, Problem Solving (1022-1024); Lesson 3, Problem Solving (1032-1034) |
| **C.** explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation; and | | | **Unit 9:** Lesson 2, Problem Solving (1022-1024); Lesson 3, Problem Solving (1032-1034) |
| **D.** model the effect on linear and area measurements of dilated two-dimensional shapes. | | | The following helps address the standard.<br><br>**Unit 2:** Lesson 8, Problem Solving (238-240) |
| **11.** Measurement and data. The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to: | | | |
| **A.** construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data; | | | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem |

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| | | | Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **B.** determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points; and | | | **Unit 1:** Lesson 4, Problem Solving (45-49) |
| **C.** simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected. | | **Unit 7:** Lesson 2, Problem Solving (783-787); Lesson 3, Problem Solving (793-797); Lesson 4, Problem Solving (805-807); Lesson 6, Problem Solving (819-822); Lesson 7, Problem Solving (829-831); Lesson 8, Problem Solving (834-836); Lesson 9, Problem Solving (839-841) | |
| **12.** Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: | | | |
| **A.** solve real-world problems comparing how interest rate and loan length affect the cost of credit; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **B.** calculate the total cost of repaying a loan, including credit cards and easy access loans, under various rates of interest and over different periods using an online calculator; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **C.** explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |

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| **D.** calculate and compare simple interest and compound interest earnings; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **E.** identify and explain the advantages and disadvantages of different payment methods; | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |
| **F.** analyze situations to determine if they represent financially responsible decisions and identify the benefits of financial responsibility and the costs of financial irresponsibility; and | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, | | |
| **G.** estimate the cost of a two-year and four-year college education, including family contribution, and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college. | The following help address the standard.<br><br>**Unit 2:** Lesson 9, Problem Solving (194-195); Lesson 11, Problem Solving (209-210); Lesson 12, Problem Solving (217-218); Lesson 13, Problem Solving (224-225) | | |

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| **Algebra I** | | | |
| **Knowledge and skills** | | | |
| **1.** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: | | | |
| **A.** apply mathematics to problems arising in everyday life, society, and the workplace; | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 8:** Unit Opener (829-830) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 4:** Unit Opener (389-390) | Unit Openers are written specifically to highlight practical, real-world applications of math.<br><br>For example: **Unit 1:** Unit Opener (1-2) |
| **B.** use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; | **Unit 1:** Lesson 1, Problem Solving (14-15); Lesson 2, Problem Solving (22-24); Lesson 3, Problem Solving (30-31)<br>**Unit 2:** Lesson 7, Problem Solving (181-182) | **Unit 7:** Lesson 6, Problem Solving (819-822) | **Unit 8:** Lesson 4, Problem Solving (894-898) |
| **C.** select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 4:** Lesson 1, Problem Solving (386-388) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 1**: Lesson 1, Problem Solving (12-13) | Manipulatives such as number lines, tape diagrams, Cuisenaire rods, etc. are used throughout TransMath. VmathLive, an online application, allows students to use technology to practice mathematics online and includes timed competitions.<br><br>For example: **Unit 2:** Lesson 13, Problem Solving (286-289) |
| **D.** communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 4:** Lesson 3, Building Number Concepts (400) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) | Students have the opportunity to demonstrate their communication skills at the beginning of each lesson as they connect the lesson content to prior knowledge.<br><br>For example: **Unit 7:** Lesson 2, Problem Solving (783) |
| **E.** create and use representations to organize, record, and communicate mathematical ideas; | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. | Throughout TransMath, students use a variety of methods to categorize and convey ideas and concepts. |

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| | For example: **Unit 1:** Lesson 9, Problem Solving (73-74) | For example: **Unit 2:** Lesson 14, Building Number Concepts (224-227) | For example: **Unit 1:** Lesson 1, Problem Solving (14-17) |
| **F.** analyze mathematical relationships to connect and communicate mathematical ideas; and | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 7:** Lesson 8, Building Number Concepts (796-798) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 11, Problem Solving (944-946) | In each TransMath lesson, students are asked to convey mathematical concepts in the Demonstrate section.<br><br>For example: **Unit 8:** Lesson 9, Building Number Concepts (938-940) |
| **G.** display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 5, Problem Solving (875) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 4:** Lesson 6, Building Number Concepts (447) | In the Discuss section of TransMath lessons, students are asked to demonstrate understanding of the lesson skills and concepts.<br><br>For example: **Unit 8:** Lesson 12, Building Number Concepts (962) |
| **2.** Linear functions, equations, and inequalities. The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations. The student is expected to: | | | |
| **A.** determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities; | | | The following help address the standard.<br><br>**Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055) |
| **B.** write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts |

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| | | | (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **C.** write linear equations in two variables given a table of values, a graph, and a verbal description; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **D.** write and solve equations involving direct variation; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **E.** write the equation of a line that contains a given point and is parallel to a given line; | | | The following help address the standard.<br><br>**Unit 9:** Lesson 7, Building Number Concepts (1062-1065), Problem Solving (1066-1067); Lesson 8, Building Number Concepts (1071-1074), Problem Solving (1075-1076); Lesson 9, Building Number Concepts (1079-1082) |

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| **F.** write the equation of a line that contains a given point and is perpendicular to a given line; | | | The following help address the standard.<br><br>**Unit 9:** Lesson 7, Building Number Concepts (1062-1065), Problem Solving (1066-1067); Lesson 8, Building Number Concepts (1071-1074), Problem Solving (1075-1076); Lesson 9, Building Number Concepts (1079-1082) |
| **G.** write an equation of a line that is parallel or perpendicular to the X or Y axis and determine whether the slope of the line is zero or undefined; | | | The following help address the standard.<br><br>**Unit 9:** Lesson 7, Building Number Concepts (1062-1065), Problem Solving (1066-1067); Lesson 8, Building Number Concepts (1071-1074), Problem Solving (1075-1076); Lesson 9, Building Number Concepts (1079-1082) |
| **H.** write linear inequalities in two variables given a table of values, a graph, and a verbal description; and | | | **Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **I.** write systems of two linear equations given a table of values, a graph, and a verbal description. | | | **Unit 9:** Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **3.** Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations. The student is expected to: | | | |
| **A.** determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$; | | | **Unit 9:** Lesson 6, Problem Solving (1056-1059); Lesson 7, Problem Solving (1066-1067); Lesson 8, Problem Solving (1075-1076); Lesson 9, Problem Solving (1083-1085); Lesson 11, Problem Solving (1101-1105); Lesson 12, Problem Solving (1112- |

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| | | | 1116); Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **B.** calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems; | | | **Unit 9:** Lesson 12, Problem Solving (1112-1116); Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **C.** graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems; | | | **Unit 9:** Lesson 6, Problem Solving (1056-1059); Lesson 7, Problem Solving (1066-1067); Lesson 8, Problem Solving (1075-1076); Lesson 9, Problem Solving (1083-1085); Lesson 11, Problem Solving (1101-1105); Lesson 12, Problem Solving (1112-1116); Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **D.** graph the solution set of linear inequalities in two variables on the coordinate plane; | | | The following help address the standard.<br><br>**Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **E.** determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of $a$, $b$, $c$, and $d$; | | | The following help address the standard.<br><br>**Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |

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| **F.** graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist; | | | **Unit 9:** Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **G.** estimate graphically the solutions to systems of two linear equations with two variables in real-world problems; and | | | **Unit 9:** Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **H.** graph the solution set of systems of two linear inequalities in two variables on the coordinate plane. | | | The following help address the standard.<br><br>**Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383-386); Lesson 9, Building Number Concepts (400-402) |
| **4.** Linear functions, equations, and inequalities. The student applies the mathematical process standards to formulate statistical relationships and evaluate their reasonableness based on real-world data. The student is expected to: | | | |
| **A.** calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association; | | | The following help address the standard.<br><br>**Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **B.** compare and contrast association and causation in real-world problems; and | | | The following help address the standard.<br><br>**Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **C.** write, with and without technology, linear functions that provide a reasonable fit to data to estimate | | | The following help address the standard. |

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| solutions and make predictions for real-world problems. | | | **Unit 1:** Lesson 9, Problem Solving (98-101); Lesson 11, Problem Solving (115-117); Lesson 12, Problem Solving (124-125); Lesson 13, Problem Solving (132-135) |
| **5.** Linear functions, equations, and inequalities. The student applies the mathematical process standards to solve, with and without technology, linear equations and evaluate the reasonableness of their solutions. The student is expected to: | | | |
| **A.** solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; | | | **Unit 7:** Lesson 1, Building Number Concepts (751-754)**;** Lesson 2, Building Number Concepts (763-765); Lesson 3, Building Number Concepts (772-777); Lesson 4, Building Number Concepts (780-785); Lesson 6, Building Number Concepts (801-804); Lesson 7, Building Number Concepts (811-815); Lesson 8, Building Number Concepts (822-825); Lesson 9, Building Number Concepts (831-833)<br><br>**Unit 8:** Lesson 1, Building Number Concepts (863-868); Lesson 2, Building Number Concepts (874-877); Lesson 3, Building Number Concepts (883-886); Lesson 6, Building Number Concepts (909-911); Lesson 7, Building Number Concepts (918-920); Lesson 8, Building Number Concepts (928-932); Lesson 9, Building Number Concepts (938-941); Lesson 11, Building Number Concepts (954-956); Lesson 12, Building Number Concepts (962-964); Lesson 13, Building Number Concepts (970-974); Lesson 14, Building Number Concepts (981-983) |
| **B.** solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; and | | | **Unit 3:** Lesson 1, Building Number Concepts (325-330); Lesson 2, Building Number Concepts (339-341); Lesson 3, Building Number Concepts (348-351); Lesson 4, Building Number Concepts (355-357); Lesson 5, Building Number Concepts (365-369); Lesson 7, Building Number Concepts (383- |

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| | | | 386); Lesson 9, Building Number Concepts (400-402) |
| **C.** solve systems of two linear equations with two variables for mathematical and real-world problems. | | | **Unit 9:** Lesson 13, Problem Solving (1121-1123); Lesson 14, Problem Solving (1133-1134) |
| **6.** Quadratic functions and equations. The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations. The student is expected to: | | | |
| **A.** determine the domain and range of quadratic functions and represent the domain and range using inequalities; | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **B.** write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$); and | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **C.** write quadratic functions when given real solutions and graphs of their related equations. | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **7.** Quadratic functions and equations. The student applies the mathematical process standards when using graphs of quadratic functions and their related transformations to represent in multiple ways and determine, with and without technology, the solutions to equations. The student is expected to: | | | |

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| **A.** graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry; | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **B.** describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions; and | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **C.** determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of $a$, $b$, $c$, and $d$. | | | The following help address the standard.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **8.** Quadratic functions and equations. The student applies the mathematical process standards to solve, with and without technology, quadratic equations and evaluate the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to: | | | |
| **A.** solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula; and | | | This is beyond the scope of the program. The following help introduce the concepts.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **B.** write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems. | | | This is beyond the scope of the program. The following help introduce the concepts.<br><br>**Unit 10:** Lesson 4, Problem Solving (1188-1192); |

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| | | | Lesson 6, Problem Solving (1203-1208); Lesson 7, Problem Solving (1215-1217); Lesson 8, Problem Solving (1223-1226) |
| **9.** Exponential functions and equations. The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to: | | | |
| **A.** determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **B.** interpret the meaning of the values of $a$ and $b$ in exponential functions of the form $f(x) = ab^x$ in real-world problems; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **C.** write exponential functions in the form $f(x) = ab^x$ (where $b$ is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **D.** graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems; and | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **E.** write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems. | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **10.** Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions. The student is expected to: | | | |
| **A.** add and subtract polynomials of degree one and degree two; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **B.** multiply polynomials of degree one and degree two; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **C.** determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |

| TEKS | Lesson Subsection (and Page Number) in *TransMath 1* Where Standard is Addressed | Lesson Subsection (and Page Number) in *TransMath 2* Where Standard is Addressed | Lesson Subsection (and Page Number) in *TransMath 3* Where Standard is Addressed |
|---|---|---|---|
| two when the degree of the divisor does not exceed the degree of the dividend; | | | |
| **D.** rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **E.** factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two; and | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **F.** decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial. | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **11.** Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite algebraic expressions into equivalent forms. The student is expected to: | | | |
| **A.** simplify numerical radical expressions involving square roots; and | | | **Unit 10:** Lesson 7, Building Number Concepts (1211-1214); Lesson 8, Building Number Concepts (1220-1222) |
| **B.** simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents. | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **12.** Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to write, solve, analyze, and evaluate equations, relations, and functions. The student is expected to: | | | |
| **A.** decide whether relations represented verbally, tabularly, graphically, and symbolically define a function; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number |

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|---|---|---|---|
| | | | Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **B.** evaluate functions, expressed in function notation, given one or more elements in their domains; | | | **Unit 9:** Lesson 1, Building Number Concepts (1009-1012); Lesson 2, Building Number Concepts (1019-1021); Lesson 3, Building Number Concepts (1028-1031); Lesson 4, Building Number Concepts (1038-1041); Lesson 5, Building Number Concepts (1044-1048); Lesson 6, Building Number Concepts (1053-1055); Lesson 7, Building Number Concepts (1062-1065); Lesson 8, Building Number Concepts (1071-1074); Lesson 9, Building Number Concepts (1079-1082); Lesson 10, Building Number Concepts (1088-1093); Lesson 11, Building Number Concepts (1098-1100); Lesson 12, Building Number Concepts (1109-1111); Lesson 13, Building Number Concepts (1119-1120); Lesson 14, Building Number Concepts (1127-1132) |
| **C.** identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes; | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **D.** write a formula for the $n^{th}$ term of arithmetic and geometric sequences, given the value of several of their terms; and | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |
| **E.** solve mathematic and scientific formulas, and other literal equations, for a specified variable. | This is beyond the scope of the program. | This is beyond the scope of the program. | This is beyond the scope of the program. |