



WASHINGTON
Grade Level Expectations (GLE)
Mathematics Grade 7
Mathematics: Applications and Concepts Course 2 © 2006

| OBJECTIVES | PAGE REFERENCES |
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| EALR 1: The student understands and applies the concepts and procedures of mathematics. | |
| Component 1.1: Understand and apply concepts and procedures from number sense. | |
| Number and numeration | |
| 1.1.1 Understand the concept of rational numbers (integers, decimals, fractions). W <ul style="list-style-type: none"> ■ Create a model when given a symbolic representation of a rational number. [CU, MC] ■ Write the rational number when given a model (e.g., number line, area model, situation, diagram, picture). [CU, MC] ■ Identify and convert between equivalent forms of rational numbers (e.g., fractions to decimals, percents to fractions). [MC] ■ Identify prime, square, or composite numbers. [CU] ■ Explain the meaning of rational numbers and give examples. [CU] | <ul style="list-style-type: none"> SE: 106-108, 140 #2, 218 #2, 242 #1 TWE: A 219, 231 TNT 211, 241 SE: 106-108, 110 e.g. #2, 112-115, 116 #16, 236 #6, #8, 241, 257 #39 TWE: DI 109 PS 235 SE: 210-213, 216-219, 220-223, 233, 234, 312-315, 600 #15-#17 TWE: A 213, 219, 235 ICE 211 DI 211, 221 PS 235 SE: 197-200, 206 #41-#44, 470-473 TWE: A 473 DI 471 ICE 198 WODB 199 SE: 229, 230 #44-#49, 476 |

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| <p>1.1.2 Understand the relative values of rational numbers. W</p> <ul style="list-style-type: none"> ■ Compare and order rational numbers using physical models or implementing strategies (e.g., like denominators, changing to the same form). [RL, MC] ■ Locate symbolic representations of rational numbers on a model (e.g., a number line, fraction line, decimal grid, and circle graph). [MC] ■ Explain the value of a given digit in a rational number (e.g., 2.3 is 2 ones and 3 tenths). [CU] | <p>SE: 109-211, 143 #20-#29, 146 #7, (210 WHEN), 227-231, 237 #19, 556 e.g. #1 TWE: A 111, 223, 231 DI 228 ICE 228</p> <p>SE: 109-111, 113 e.g. #2, 131 #46-#48, 146 #10, 169 #40-#41, 197, 208 e.g. #3, 216-217, 231 #61-#64, 235 #1, 418-419 TWE: ICE 419 PS 235</p> <p>SE: 555 e.g. #1 TWE: B 10</p> |
| <p>1.1.3 Apply properties of addition and multiplication including inverse properties to the rational number system. W</p> <ul style="list-style-type: none"> ■ Use the inverse relationships between multiplication and division to simplify computations and solve problems. [SP, RL] ■ Use the inverse properties of addition and multiplication to simplify computations with integers, fractions, and decimals. [SP, RL, MC] ■ Identify the inverse elements when using the additive inverse and the multiplicative inverse properties (e.g., $8 + -8 = 0$; $2 \times \frac{1}{2} = 1$). ■ Use the additive inverse property to solve problems. [RL] ■ Illustrate or explain the additive and multiplicative inverse properties and why they work. [CU] | <p>SE: 160-165, 169 #45, #46, 187 #29-#35, 258, 282 #6 TWE: B 160 ICE 259</p> <p>SE: 121, 156-159, 160-165, 166-169, 170 #6-#14, 187 #19-#28, 258-261, 262 #16-#18, 279 <i>Hands-On Lab</i> 154-155 TWE: B 160</p> <p>SE: 121, 156-159, 258-261, 279 #38-#40 TWE: A 261 B 260 PA 260</p> <p>SE: 120-124, 131 #56-#59, 137 #54-#57, 144 TWE: B 120 ICE 121</p> <p>SE: 120, 121 <i>Hands-On Mini Lab</i> 258 TWE: A 261 B 258 DI 121</p> |

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| <p>1.1.4 Understand the concept of direct proportion. W</p> <ul style="list-style-type: none"> ■ Express proportional relationships using objects, pictures, and symbols. [CU] ■ Explain the meaning of a proportion. [CU] ■ Represent a new relationship from a given ratio (e.g., height of a totem pole, maypole). [MC] ■ Represent percentages less than 1% or greater than 100% using objects, pictures, and symbols. [CU] ■ Complete or write a proportion for a given situation. [CU] ■ Solve problems involving proportions (e.g., determine the number and kinds of baked goods to bring to a bake sale based on proportions of different goods sold at previous bake sales). [SP, MC] ■ Use ratios to make predictions about proportions in a future situation. [RL, MC] | <p>SE: 297-299, 304-308, 327 #32-#35, 440-443, 464 #21, #22 <i>Hands-on Lab</i> 301 <i>The Game Zone</i> 311</p> <p>TWE: A 443 DI 441 PS 329</p> <p>SE: 297-299 TWE: A 300 TNT 298</p> <p>SE: 286, 291 #34-#36, #37, 330 #5 TWE: DI 289</p> <p>SE: 316-318, 321 #27-#30, 328 #42-#49 TWE: A 318 DI 317 ICE 317</p> <p>SE: 286, 298 e.g. #4, 300 #44 <i>Hands-On Lab</i> 301</p> <p>TWE: DI 298 PS 329</p> <p>SE: 297-299, 304-308, 310 #20, 315 #43, 327, 331 #18, 441 e.g. #1 & #2, 443 #13-#14 <i>Hands-On Lab</i> 301 <i>The Game Zone</i> 311</p> <p>TWE: PS 329</p> <p>SE: 299 #41, 300 #44, 308 #26, 330 #5 <i>Hands-On Lab</i> 301 <i>Spreadsheet Investigation</i> 309</p> <p>TWE: DI 289, 298 ICE 289 #5 PS 329</p> |

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| Computation | |
| <p>1.1.5 Understand the meaning of addition and subtraction on integers. W</p> <ul style="list-style-type: none"> ■ Explain the meaning of addition and subtraction of integers using real-world models (e.g., reducing debt, temperature increase or decrease, yards gained and lost, movement of a hot-air balloon). [CU, MC] ■ Create a problem situation involving addition or subtraction of integers. [CU, MC] ■ Explain or show the meaning of addition or subtraction of integers. [CU] ■ Use technology to demonstrate addition and subtraction with integers. | <p>SE: 120-124, 128-131, 147 #18, 169 #49 <i>Hands-On Lab</i> 118-119, 126-127</p> <p>TWE: A 124 B 120 DI 129 TNT 121</p> <p>SE: 124 #59 TWE: DI 129 PS 145</p> <p>SE: <i>Hands-On Lab</i> 118-119, 126-127 <i>Hands-On Mini Lab</i> 128</p> <p>TWE: B 128 DI 121 TNT 121</p> <p>SE: <i>Study Tip</i> 120, 129</p> |

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| <p>1.1.6 Apply computational procedures with fluency for multiplication and division on non-negative rational numbers. W</p> <ul style="list-style-type: none"> ■ Find the product or quotient using nonnegative decimals and fractions with unlike denominators. ■ Apply percentages to solve a problem in a variety of situations (e.g., taxes, discounts, interest). [SP, MC] ■ Use multiplication and division to solve real-world problems involving non-negative rational numbers. [SP] ■ Multiply non-negative decimal numbers to the hundredths place. ■ Divide non-negative decimal numbers to the thousandths place by non-negative decimal numbers to the hundredths place. | <p>SE: 5 #11-#18, 195 #10-#11, 239 #7-#10, 245, 246, 248, 249, 250, 254-257, 261 #40-#43, 264-266, 282 #4, 560, 562, 602 #16</p> <p>TWE: DI 249 ICE 245, 255</p> <p>SE: 315 #39, 320 #8, 339 #10-#11, 350-353, 354-357, 358-360 <i>Spreadsheet Investigation</i> 361</p> <p>TWE: A 353 B 319 DI 324, 355 ICE 313, 351 PS 235, 365</p> <p>SE: 9 #7, 51 #18, 256 #24, 260 #35, 283 #8, 357 #31, 560 #38, 562 #32, #33, 602 #16 <i>Problem-Solving Strategy</i> 338-339</p> <p>SE: 239 #7-#10, 357 #31, 365 #15, #16, 367 #14, 411 #3-#8, 560 <i>Problem-Solving Strategy</i> 338-339</p> <p>TWE: ICE 359</p> <p>SE: 562, #4, #5, #6, #11, #26</p> |

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| <p>1.1.7 Understand and apply strategies and tools to complete tasks involving addition and subtraction on integers and the four basic operations on non-negative rational numbers.</p> <ul style="list-style-type: none"> ■ Select and justify the selection of appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, RL] ■ Convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator. [MC] ■ Use calculators to add and subtract with integers of two or more digits. ■ Use calculators to compute with decimal numbers with precision from the thousandths place and beyond. | <p>SE: 17 #51, #52, #55, 21 #43, 33 #39, #40, 44 e.g. #3, 49 #11-#14, 50 #1, #3, 210-211, 242 #2, 551 #20, 561 <i>Problem-Solving Strategy</i> 22-23, 252-253 <i>WebQuest</i> 3, 103, 193</p> <p>SE: 210-213, 216-219, 220-223, 233-234, 312-315 TWE: A 213, 219 B 220, 312 DI 221, 317 ICE 221 TNT 313</p> <p>TWE: DI 129 could be used to fulfill this objective.</p> <p>SE: 44 e.g. #3, 213 #44-#45, 544 #21 TWE: A 543 DI 543</p> |

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| Estimation | |
| <p>1.1.8 Apply estimation strategies to predict or determine the reasonableness of answers in situations involving addition and subtraction of integers and the four basic operations on non-negative rational numbers. W</p> <ul style="list-style-type: none"> ■ Identify when an approximation is appropriate in situations. [MC] ■ Use estimation strategies prior to operations on non-negative rational numbers to approximate an answer. [RL] ■ Justify why estimation would be used rather than an exact computation. [CU] ■ Describe a situation where estimation is sufficient in real-life contexts. [CU, MC] ■ Use estimation to verify the reasonableness of calculated results. [RL] ■ Evaluate the appropriateness of estimation in a situation and support the evaluation. [RL] | <p>SE: 21 #43, 50 #3, 242 #2, 295 #23, #24, 343 #37, 551 #20 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 252-253, 338-339</p> <p>TWE: DI 335</p> <p>SE: 44 e.g. #3, 242 #2, 366 #5 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 252-253 <i>Study Tip</i> 242</p> <p>SE: 50 #3, 242 #2, 295 #23, #24, 343 #37 <i>Hands-On Lab</i> 301, 304 <i>Problem-Solving Strategy</i> 22-23, 252-253, 338-339 <i>WebQuest</i> 193</p> <p>SE: 242 #2, 295 #23, #24, 343 #37 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 133 #14, 165 #9, 252-253, 338-339 <i>WebQuest</i> 103, 193</p> <p>SE: 343 #37 <i>Hands-On Lab</i> 344 <i>Problem-Solving Strategy</i> 22-23, 252-253, 338-339</p> <p>SE: 242 #2, 262 #19, 295 #23-#24 <i>Hands-On Lab</i> 344 <i>Problem-Solving Strategy</i> 133 #13, 165 #15, 338-339</p> |

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| Component 1.2: Understand and apply concepts and procedures from measurement. | |
| Attributes, units, and systems | |
| <p>1.2.1 Analyze how a change in a linear dimension affects other linear measurements (perimeter, circumference) and area measurements. W</p> <ul style="list-style-type: none"> ■ Describe the relationships among linear dimensions (e.g., radius of a circle, length of a side or base, changes in the diameter affects the amount of deer hide needed to cover a drum face) and area of the figure (e.g., change the radius or length of a side, and check the change in area; describe that change). [CU] ■ Explain changing one, two, or three dimensions in a rectangular prism and how it affects the surface area and volume; give three examples. ■ Solve problems involving the effects of changes in one dimension on area (e.g., given a garden with certain dimensions, make the area of the garden x square units by changing only one dimension of the garden). [SP] | <p>SE: 177-181, 269 #33, 276 #1, 277 #25, #26, 495 #26, #27 <i>Hands-On Lab</i> 176 #5, 274, 296</p> <p>TWE: DI 177 ICE 178-179</p> <p>SE: 521 #3 <i>Hands-On Lab</i> 530-531, 536-537 <i>Spreadsheet Investigation</i> 523</p> <p>TWE: A 535</p> <p>SE: 303 #11, 484 #2, 485 #22 TWE: DI 490, 493</p> |
| <p>1.2.3 Understand how the unit of measure affects the precision of measurement. W</p> <ul style="list-style-type: none"> ■ Select the appropriate measurement tool to match the precision needed (e.g., if needing measurement to the nearest $\frac{1}{16}$ inch, select a ruler that has $\frac{1}{32}$ increments). ■ Explain how the unit selected for a situation can affect the precision of the measurement (e.g., when you have a ruler that has only $\frac{1}{10}$ increments, you cannot measure something to the nearest hundredth with confidence of precision). ■ Explain how measurement systems allow for different levels of precision (e.g., millimeters give more precise measurement than centimeters). [CU] | <p>SE: 38-41, 51 #15, #18, 267-269, 273 #27, 542-545, 548, 551 #20, 607 #14-#15 <i>Hands-On Lab</i> 412 <i>WebQuest</i> 3</p> <p>TWE: DI 39, 267, 543</p> <p>SE: 38-41, 51 #15, #18, 267-269, 273 #27, 544 #19, #20, 607 #14, #15 <i>WebQuest</i> 3</p> <p>TWE: DI 39, 267 A 545</p> <p>SE: 38-41, 51 #18, 267-269, 273 #27, 551 #20 <i>WebQuest</i> 3</p> <p>TWE: A 545 DI 39</p> |

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| Procedures, precision, and estimation | |
| <p>1.2.5 Apply formulas to find measurements of circles, triangles, and rectangular prisms. W</p> <ul style="list-style-type: none"> ■ Apply formulas to determine missing measurements for circles, rectangular prisms, and triangles. ■ Explain how to use a formula for finding the area and circumference of a circle (e.g, calculate the area needed to cover a drum face). [CU] ■ Find and compare the volumes of rectangular prisms that have a given volume (e.g., if two rectangular prisms have the same volume and one has twice the height of the other, determine how the areas of their bases compare). [RL] ■ Justify the standard formula for finding the area of a right triangle (e.g., $1/2$ of a rectangle). [CU] ■ Use given dimensions to determine surface area and volume. | <p>SE: 275-277, 283 #16, 295 #36, 343 #38, 366 #4, 477 #34, 489-492, 493-495, 509 #16, 601 #16, #17 <i>Hands-On Lab 488</i></p> <p>TWE: DI 490, 493 ICE 276 PS 281</p> <p>SE: 275-277, 283 #16, 493-495, 509 #16, 601 #16, #17 <i>Hands-On Lab 274</i></p> <p>TWE: A 495 ICE 276</p> <p>SE: 521 #2, #3 TWE: PA 521</p> <p>SE: 606 #4 can be used with Teacher/Student discussion to help meet this objective</p> <p>SE: 510, 520-522, 524-527, 528, 532-535, 538-541, 545 #30, 547-548, 607 <i>Spreadsheet Investigation 523</i></p> <p>TWE: A 541 DI 533 ICE 533</p> |

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| <p>1.2.6 Understand and apply strategies to obtain reasonable estimates of circle measurements, right triangles, and surface area for rectangular prisms. W</p> <ul style="list-style-type: none"> ■ Identify situations in which estimated measures are sufficient. [MC] ■ Estimate circle and triangle measurements. ■ Use common approximations of pi (3.14; 22/7) to calculate the approximate circumference and the area of circles. ■ Use or describe a process to find a reasonable estimate of circle measurements (e.g., wrap a string around it). [RL] ■ Explain why estimation or precise measurement is appropriate in a given situation. [CU] | <p>SE: 21 #3, 44 e.g. #3, 50 #3, 295 #23, #24, 366 #5, 551 #20 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 133 #14, 165 #9, 338-339</p> <p>SE: 275-277, 477 #34, 551 #20</p> <p>SE: 275-277, 295 #36, 366 #4, 493-495 <i>Hands-On Lab</i> 274</p> <p>TWE: A 495 DI 275</p> <p>SE: <i>Hands-On Lab</i> 274 TWE: T 274</p> <p>SE: 242 #2, 307 #20, 542-545, 551 #20 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 133 #14, 338-339</p> <p>TWE: A 545 DI 543</p> |
| Component 1.3: Understand and apply concepts and procedures from geometric sense. | |
| Properties and relationships | |
| <p>1.3.1 Understand the concept of similarity. W</p> <ul style="list-style-type: none"> ■ Identify corresponding sides and angles of two similar figures. ■ Determine and justify if two figures are similar using the definition of similarity. [CU, RL] ■ Differentiate between similar and congruent figures, either geometric figures or real-world objects, and justify the conclusion. [RL, MC] ■ Explain how a scale drawing is an example of similarity. [CU] | <p>SE: 440-443 <i>Problem-Solving Strategy</i> 444-445 <i>WebQuest</i> 409</p> <p>TWE: MIC 409 (Math & Art)</p> <p>SE: 440-443, 454 #22, 466 #6 TWE: DI 441 TNT 440</p> <p>SE: 440 TWE: TNT 440</p> <p>SE: 441 e.g. #2, 443 #13-#14 <i>WebQuest</i> 409</p> <p>TWE: A 443 B 440 DI 441 MIC 409</p> |

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| <p>1.3.2 Apply understanding of the characteristics of rectangular prisms and circles. W</p> <ul style="list-style-type: none"> ■ Identify, describe, compare, and sort figures. ■ Draw rectangular prisms and circles with specified properties (e.g., circumference of an 18-centimeter quadrilateral having equal sides but no right angles; a triangle with no equal sides). [CU] ■ Use the properties of rectangular prisms and circles to solve problems (e.g., determine which of two rectangular prism-shaped boxes will hold the most cans of food at the food drive and explain how the geometric characteristics affect capacity). [SP, RL, CU, MC] ■ Compare two rectangular prisms based on their characteristics (e.g., compare the geometric characteristics of two rectangular prisms with different dimensions and the same volume). [RL] | <p>SE: 275-277, 493-495, 498-500, 514-517, 522 #18 <i>The Game Zone</i> 529 <i>Hands-On Lab</i> 274</p> <p>TWE: B 275, 493 DI 499 PS 281, 507</p> <p>SE: 275-277, 283 #16, 494 #1 <i>Hands-On Lab</i> 530-531 <i>Hands-On Mini Lab</i> 532 <i>Problem-Solving Strategy</i> 497 #4</p> <p>SE: 275-277, 283 #16, 468, 493-495, 514-517, 520, 522 #18, 540 #17</p> <p>SE: 521 #3 TWE: A 535 PA 521</p> |

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| Locations and transformations | |
| <p>1.3.3 Understand the location of points on a coordinate grid in any of the four quadrants. W</p> <ul style="list-style-type: none"> ■ Identify the coordinates of the fourth point to make a rectangle given three points. [RL] ■ Plot and label ordered pairs in any of the four quadrants. [CU] ■ Name the coordinates of a given point in any of the four quadrants. ■ Identify objects or the location of objects on a coordinate grid using coordinates or labels. ■ Use technology to locate objects on a two-dimensional grid. ■ Use ordered pairs to describe the location of objects on a grid. | <p>SE: 191 #13</p> <p>SE: 112-115, 124 #64-#67, 143, 145, 147 #20, 450 #42-#45 TWE: ICE 113</p> <p>SE: 112-115, 124 #64-#67, 143, 145, 283 #19</p> <p>SE: 112 (WHEN), 113 e.g. #3, e.g. #4, 115 #37-#41, #44, #45, 467 #18, 453 #12, 457 TWE: DI 113, 456</p> <p>SE: 454 #14 <i>Spreadsheet Investigation 455</i></p> <p>SE: 113 e.g. #3, e.g. #4, 115 #37-#41, #44, #45, 452 e.g. #2, 467 #18 TWE: B 451 DI 113 TNT 114</p> |
| <p>1.3.4 Understand and apply combinations of translations (slides) and reflections (flips) to two-dimensional figures. W</p> <ul style="list-style-type: none"> ■ Identify and explain whether a shape has been translated (slid) or reflected (flipped) with or without a grid. [RL, CU] ■ Use transformations to create congruent figures and shapes in multiple orientations. ■ Find the coordinate pairs for a translation or a reflection across an axis given a shape on a coordinate grid. [RL] ■ Match a shape with its image following one or two transformations (sliding or flipping). [RL] ■ Use combinations of translations and reflections to draw congruent figures. [RL] ■ Use ordered pairs to describe the location of an object on a coordinate grid after a translation and reflection. [CU] | <p>SE: 451-454, 456-459, 464, 467 #17-#18e TWE: DI 456 ICE 452, 457 PA 458</p> <p>SE: 451-454, 456-459 <i>Hands-On Lab 460-461</i> TWE: ICE 452, 457 #4, #5</p> <p>SE: 451-454, 456-459, 467 #17, #18, 477 #40 TWE: A 454 DI 456</p> <p>SE: 452 e.g. #2, 453 #4-#11, 457 5a, 5b, 458 #13-#14, 467 #18 TWE: ICE 452, 457</p> <p>SE: 451-454, 456-459, 473 #48-#49 TWE: DI 451</p> <p>SE: 459 #18, 473 #48-#49 TWE: PA 458</p> |

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| Component 1.4: Understand and apply concepts and procedures from probability and statistics. | |
| Probability | |
| <p>1.4.1 Understand the concepts of complementary, independent, and mutually exclusive events. W</p> <ul style="list-style-type: none"> ■ Determine and explain when events are mutually exclusive (e.g., your grade on a test is an A, B, or C). [CU, MC] ■ Determine and explain when events are complementary (e.g., a person awake or asleep, you pass or fail a test, coin throw — heads or tails). [CU, MC] ■ Identify or explain when events are complementary, mutually exclusive, or neither (e.g., spinning a 4 or a 5 but with the possibility of spinning 1, 2, 3, or 6) and explain. [CU] | <p>SE: 401 (Extending the Lesson) TWE: PS 405</p> <p>SE: 371, 372 #17 TWE: PS 405</p> <p>This objective can be met by using the examples listed above during teacher/student discussion.</p> |
| <p>1.4.2 Understand and apply the procedures for determining the probabilities of multiple trials. W</p> <ul style="list-style-type: none"> ■ Calculate the probabilities of independent or mutually exclusive outcomes or events. ■ Calculate the probability of an event given the probability of its complement. ■ Create a game that has an equal probability for all players to win. [SP, MC] ■ Revise a game with unequal probabilities for all players and make it a fair game. [SP, MC] ■ Determine, interpret, or express probabilities in the form of a fraction, decimal, or percent. [CU, MC] ■ Predict the probability of outcomes of experiments and test the predictions. [RL] ■ Predict the probability of future events based on empirical data. [RL] | <p>SE: 398-401 TWE: PS 405</p> <p>SE: 371, 372 #17</p> <p>The following references can be used with teacher/student discussion to meet this objective. SE: 368 <i>Interdisciplinary Project 285</i></p> <p>SE: 374, 377 #21, #22</p> <p>SE: 368, 370-373, 379 #8, 380 #23-#25, 393-396, 398-401, 402, 503 e.g. #2 <i>Hands-On Lab 397</i> <i>The Game Zone 385</i> TWE: ICE 371, 394, 399</p> <p>SE: 393-395, 398-401 <i>Hands-On Lab 374, 397</i> <i>Problem-Solving Strategy 391-392</i> TWE: B 391 DI 391</p> <p>SE: 393, 394 e.g. #4 <i>Hands-On Lab 397</i> TWE: DI 394</p> |

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| Statistics | |
| <p>1.4.3 Apply data collection processes to inform, persuade, or answer questions. W</p> <ul style="list-style-type: none"> ■ Formulate a question and collect data from a population, describing how the questions, collection method, and sample population affect the results. [CU] ■ Present collected data to support an opinion to inform or persuade an identified audience. [CU, MC] ■ Determine whether given data provides useful information for a situation (e.g., given a set of data, decide whether all of the information provided is necessary). [SP] ■ Determine whether data supports a given opinion and explain the decision. [CU] ■ Identify a sample relevant to a given question and population. | <p>SE: <i>Hands-On Lab</i> 301, 344 TWE: A 59, 79</p> <p>SE: 89 #18, #19, 319 (WHEN), 605 #3 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 58-59, 445 #14 TWE: DI 59</p> <p>SE: 66 #1, 87 #3-#6, 89 #18-#19, 169 #40-#41, 231 #56, 373 #35 <i>Hands-On Lab</i> 301, 344 TWE: B 22</p> <p>SE: 89 #18-#19, 101 #16, 230 #50, 319 (WHEN) <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 58-59</p> <p>SE: 337 #37, 345-347, 445 #14 <i>Hands-On Lab</i> 301, 344</p> |

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| <p>1.4.4 Understand how variations in data may affect the choice of data analysis techniques used. W</p> <ul style="list-style-type: none"> ■ Determine and use range and measures of central tendency to describe a set of data. ■ Describe the effects of extreme values on means in a population. [CU, MC] ■ Explain the difference between median or mean as a measure of central tendency in a given situation (e.g., when an extreme value skews the mean). [RL, CU, MC] ■ Describe how additional data added to data sets may affect the result of measures of central tendency. [SP, CU] ■ Find the range of a set of data. ■ Explain what the range adds to measures of central tendency. [CU] | <p>SE: 65, 66 #8, 67 #17, #20, #22, 69-72, 76-79, 93 #3-#6, 94 #9-#11, 105 #19, #20, 116 #16, 129 e.g. #6, 151 #9, 237 #11, #12 <i>Hands-On Lab 73</i></p> <p>TWE: A 68 DS 66 ICE 65, 70, 77</p> <p>SE: 77 e.g. #3, 78 #7-#10, 80 e.g. #1, 81 e.g. #2, 98 #24, 101 #13</p> <p>TWE: DI 80 ICE 81</p> <p>SE: 69-72, 80 e.g. #1, 81 e.g. #2, 93 e.g. #2, 94 #9-#11, 101 #12 <i>Hands-On Lab 73</i></p> <p>TWE: DI 69 ICE 70</p> <p>SE: 57 #13-#15, #16-#18, 93 #3-#6 <i>Hands-On Mini Lab 69</i></p> <p>TWE: A 72</p> <p>SE: 65 e.g. #2, #3, 66 #4, #8, #11, 67 #17, #20, #22, 78 #16, 83 #17, 129 e.g. #6, 100 #5 <i>Hands-On Lab 73</i></p> <p>SE: 65, 67 #22</p> |

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| <p>1.4.5 Understand and apply various data display techniques including box-and-whisker plots. W</p> <ul style="list-style-type: none"> ■ Read and interpret various data displays. ■ Determine the appropriate representation for given data. [RL, CU] ■ Construct bar graphs, circle graphs, line graphs, box-and-whisker and scatter plots using collected data. [CU, MC] ■ Use scatter plots to describe trends and interpret relationships. [RL, CU] ■ Read and interpret data from box-and-whisker plots and determine when using this type of graph is appropriate. [RL, CU] ■ Describe statistical information given a box-and-whisker plot (e.g., median, range, interquartile range). [CU] ■ Compare different graphical representations of the same data. [RL, MC] ■ Make and justify an inference drawn from a sample. [RL, CU, MC] | <p>SE: 54-57, 60-63, 76-79, 80-83, 85-89, 418-421 <i>Graphing Calculator Investigation 84</i> <i>Problem-Solving Strategy 58-59</i></p> <p>TWE: DI 59</p> <p>SE: 79 #23, 85-89, 421 #16 <i>Hands-On Lab 73</i></p> <p>TWE: A 88, 421 ICE 87</p> <p>SE: 61 e.g. #2, 80-83, 85-89, 101 #15, #16, 418-421 <i>Problem-Solving Strategy 58-59</i> <i>Spreadsheet Investigation 90-91</i></p> <p>TWE: ICE 61 #2, 65, 419</p> <p>SE: 61 e.g. #2, 62 #10-#12, 63 #13, 68 #27 <i>Problem-Solving Strategy 58</i></p> <p>TWE: ICE 61 #2</p> <p>SE: 80-83, 100 #8 <i>Graphing Calculator Investigation 84</i></p> <p>TWE: A 82 ICE 81</p> <p>SE: 80-83, 89 #22, 100 #8, 101 #13 TWE: A 82 DI 80 ICE 81</p> <p>SE: 62 #10-#12, 68 #24, 77 e.g. #3, 86 e.g. #3, 101 #15, 419 e.g. #2, 463 #11 TWE: A 421 ICE 86 e.g. #2, 87</p> <p>SE: 345-347, 366 #7, 367 #10 <i>Hands-On Lab 301, 344</i></p> <p>TWE: DI 346</p> |

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| <p>1.4.6 Evaluate how different representations of the same set of data can support different points of view. W</p> <ul style="list-style-type: none"> ■ Critique the use of data and data displays for univariate data. ■ Judge the reasonableness of conclusions drawn from a set of data and support that position with evidence (e.g., from newspapers, Web sites, opinion polls). [MC, RL] ■ Determine the accuracy and completeness of the data in a table or graph. [RL, CU] ■ Explain how different representations of the same set of data can support different points of view. [RL, CU] ■ Describe how statistics or graphics have been used or misused to support a point of view. | <p>SE: 60-63, 76-79, 80-83, 87 #2, 418-421 <i>Problem-Solving Strategy</i> 58-59, 201-202 <i>WebQuest</i> 3, 103, 193</p> <p>TWE: B 76, 418 DI 55, 59, 346 ICE 61, 87</p> <p>SE: 60-63, 87 #2, 93 #2, 101 #15-#16, 345-347, 357 #38, 418-421 <i>Problem-Solving Strategy</i> 22-23, 58-59 <i>WebQuest</i> 3</p> <p>TWE: A 63, 79 B 418 DI 55</p> <p>SE: 51 #16, 87 #2, 89 #19 <i>Problem-Solving Strategy</i> 22-23, 58-59, 201-202</p> <p>TWE: A 82 DI 55</p> <p>SE: 62 #10-#12, 68 #24, 77 e.g. #3, 86 e.g. #3, 89 #19, 101 #16, 419 e.g. #2, 463 #11 <i>WebQuest</i> 3, 193</p> <p>TWE: A 88, 421 ICE 86 e.g. #2, 420</p> <p>SE: 92-95, 345-347 <i>Hands-On Lab</i> 73 <i>WebQuest</i> 3</p> <p>TWE: A 95, 347 PS 99</p> |

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| Component 1.5: Understand and apply concepts and procedures from algebraic sense. | |
| Patterns, functions, and other relations | |
| <p>1.5.1 Apply understanding of linear relationships to analyze patterns, sequences, and situations. W</p> <ul style="list-style-type: none"> ■ Identify patterns that are linear relations and provide missing terms. [RL] ■ Describe the relationship between the terms in a sequence and their positions in the sequence. [CU] ■ Identify, extend, or represent patterns and sequences using tables, graphs, or expressions. [RL, MC] ■ Use technology to generate graphic representations of linear relationships. [SP] ■ Make predictions using linear relationships in situations. [RL] ■ Identify a linear relationship that has the same pattern as another linear relationship. ■ Create a representation of a linear relationship given a rule. [MC] | <p>SE: 177-181, 182-185, 599 #8-#9, #13-#16 <i>Hands-On Lab</i> 176 TWE: ICE 178-179</p> <p>SE: 34-36, 51 #17, 136 #45, 140 #35 <i>Hands-On Lab</i> 37 <i>Problem-Solving Strategy</i> 132-133 TWE: B 34 ICE 35</p> <p>SE: 8 e.g. #2, 10 (WHEN), 13 #62, 34-36, 51 #17, 88 #14-#16, 140 #35, 191 #20, 226 #21, 291 #38, 331 #12, 339 #11, 392 #10 <i>Hands-On Lab</i> 37 <i>Problem-Solving Strategy</i> 132-133</p> <p>SE: <i>Spreadsheet Investigation</i> 523</p> <p>SE: 177-181, 182-185, 188, 191 #20 <i>Hands-On Lab</i> 176, 274 TWE: DI 183</p> <p>SE: 177-181, 182-185, 188, 191 #20 <i>Hands-On Lab</i> 274 TWE: A 181 DI 183</p> <p>SE: 177-181, 182-185, 188, 191 #20 <i>Hands-On Lab</i> 274 TWE: DI 183</p> |

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| <p>1.5.2 Apply understanding of linear patterns in a table, graph, or situation to develop a rule. W</p> <ul style="list-style-type: none"> ■ Describe the rule and/or construct a table to represent a pattern with combinations of two arithmetic operations in the rule. ■ Write an expression or equation with a single variable representing a situation or real-world problem. [CU, MC] ■ Write a story about a situation that represents a given linear equation, expression, or graph. [CU, MC] ■ Describe the rule or construct a table to represent a pattern with combinations of two arithmetic operations in the rule. [RL, CU] ■ Use technology to determine the rule for a linear relationship. [SP, RL] | <p>SE: 36 #26, 189 #16-#18, 266 #21 <i>Hands-On Lab</i> 154-155, 274 TWE: A 133</p> <p>SE: 20 #38-#40, 25 e.g. #3, 27 #42-#43, 189 #17, 191 #20, 237 #14 TWE: DI 25</p> <p>SE: 177 e.g. #1 <i>Hands-On Lab</i> 176</p> <p>SE: 189 #16-#18 <i>Hands-On Lab</i> 274</p> <p>This objective can be met during teacher/class discussion.</p> |
| Symbols and representations | |
| <p>1.5.3 Understand relationships between quantities using squares and square roots. W</p> <ul style="list-style-type: none"> ■ Represent relationships between quantities using exponents (squares) and radicals (roots). [CU] ■ Simplify square roots of square numbers (e.g., the square root of 9 is 3). [RL] ■ Demonstrate understanding of square roots with physical models and examples. [CU] ■ Use exponents (squares) and radicals (square roots) to represent relationships (e.g., finding the area of a square with a side of 5 could be represented by 5²). [CU] | <p>SE: 10-13, 21 #54, 47, 470-473, 477 #37#-39, 479-482, 606 #1 TWE: DI 11, 471 ICE 11 PC 468F</p> <p>SE: 470-473, 477 #37-#39, 508 #8 TWE: B 475 DI 471 ICE 471 PC 468F</p> <p>SE: 470, 471 e.g. #6, 472 #34-#36, 473 #45, #47, 606 #1 TWE: A 473 B 470 DI 471 PC 468F</p> <p>SE: 470, 471 e.g. #6, 472 #34-#36, 473 #45, #47</p> |

| OBJECTIVES | PAGE REFERENCES |
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| <p>1.5.4 Apply understanding of equations, tables, and graphs to represent situations involving linear relationships. W</p> <ul style="list-style-type: none"> ■ Represent linear relationships through expressions, equations, tables, and graphs of situations involving nonnegative rational numbers. ■ Graph data to demonstrate relationships in familiar contexts (e.g., conversions, perimeter, area, volume, and scaling). [CU, MC] ■ Develop a situation that corresponds to a given equation or expression. [CU, MC] ■ Create a table or graph given a description of, or an equation for, a situation involving a linear relationship. [CU, MC] ■ Describe a situation involving a linear or non-linear relationship that matches a given graph (e.g., time-distance, time-height). [CU, MC] ■ Explain the meaning of a variable in a formula, expression, or equation. [CU] | <p>SE: 148, 152 #26-#27, 177-181, 189 #16-#18, 191 #19-#20 <i>Hands-On Lab</i> 176 TWE: ICE 178-179</p> <p>SE: 179, 191 #20 <i>Hands-On Lab</i> 176 TWE: A 178-179 ICE 181</p> <p>SE: 148, 177-181, 191 #20</p> <p>SE: 188 #60-#62 TWE: A 176</p> <p>SE: 181 #36, 185 #21-#23, 599 #9-#12, #14-#16</p> <p>SE: 18, 25, 28 #18, 150-152, 161 e.g. #3, 261 #36, 599 #4 TWE: A 21 DI 19</p> |

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| Evaluating and solving | |
| <p>1.5.5 Understand and apply procedures to evaluate expressions and formulas considering order of operations. W</p> <ul style="list-style-type: none"> ■ Substitute non-negative rational values for variables in order to evaluate expressions and formulas (e.g., length x width when length = 3 and width = 4) ■ Explain the simplification of expressions and equations using order of operations. [CU] ■ Evaluate expressions and formulas considering order of operations. [RL] ■ Determine the expression that represents a given situation. [MC, CU] ■ Describe a situation that fits with a given expression. [RL, MC, CU] ■ Write expressions or equations for a situation. | <p>SE: 18-21, 139 e.g. #4, 140 #34, 161 e.g. #3, 271 e.g. #3, 596 #7, 598 #15, 599 #4</p> <p>SE: 14-17, 18-21 <i>Study Skill</i> 125</p> <p>TWE: DI 15 ICE 15, 19 TNT 15</p> <p>SE: 14-17, 18-21, 28 #20, 139 #4, 140 #34 TWE: A 17 DI 15 ICE 15</p> <p>SE: 4, 15 e.g. #6, 16 #41, 19 e.g. #5, 21 #43, 152 #26-#27, 596 #5-#6</p> <p>SE: 4, 21 #43, 28 #20, 152 #26-#27, 596 #7 TWE: DI 15</p> <p>SE: 20 #2, #39, 25 e.g. #3, 150-152, 170 #15, 186, 189 #3, #4, #11, 191 #20 TWE: DI 25, 150</p> |
| <p>1.5.6 Understand and apply a variety of strategies to solve two-step equations with one variable. W</p> <ul style="list-style-type: none"> ■ Explain and justify the solution to a problem in a given context. [RL, CU, MC] ■ Solve two-step equations with one variable on only one side of the equal sign (e.g., $2x + 4 = 12$). | <p>SE: 166-169, 170, 191 #15-#16, 599 #5 <i>The Game Zone</i> 171</p> <p>TWE: B 166 DI 168 ICE 167 TNT 167</p> <p>SE: 166-169, 191 #15-#16</p> |

| OBJECTIVES | PAGE REFERENCES |
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| EALR 2: The student uses mathematics to define and solve problems. | |
| Component 2.1: Understand problems. | |
| Example: On the playground, Juan made 13 free throws out of 18 tries. If Bonita shoots 25 free throws, what is the lowest number she has to make in order to have a better free throw percentage than Juan? | |
| <p>2.1.1 Analyze a situation to define a problem. W</p> <ul style="list-style-type: none"> ■ Use strategies to become informed about the situation (e.g., listing information, asking questions). ■ Summarize the situation (e.g., two people are shooting free throws, one shot 18, the other 25; we are trying to find the percentage made for each). ■ Determine whether enough information is given to find a solution (e.g., list what is needed to find the percentage of free throws made). ■ Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed — names, location). ■ Define the problem (e.g., find the smallest number of free throws Bonita needs to make out of 25 attempts in order to top Juan's percentage). | <p>SE: 6-8, 46, 140 #35 <i>Problem-Solving Strategy</i> 22-23, 58-59, 132-133, 201-202, 252-253, 444-445, 496-497 <i>Study Skill</i> 153</p> <p>TWE: A 273 B 64 DI 7, 22, 252, 445 TNT 61</p> <p>SE: 6-8, 46 <i>Problem-Solving Strategy</i> 132-133, 201-202, 252-253, 444-445 <i>Study Skill</i> 42, 125, 153</p> <p>TWE: B 6, 64 DI 324, 355, 445 PC 468F PS 235</p> <p>SE: 6-8, 46, 231 #46 <i>Problem-Solving Strategy</i> 22-23, 164-165, 201-202, 252-253, 444-445 <i>Hands-On Lab</i> 344 <i>Study Skill</i> 125, 153</p> <p>TWE: A 202 B 6, 22, 64 DI 22, 324, 355</p> <p>SE: 6-8, 46, 92-95 <i>Hands-On Lab</i> 344 <i>Problem-Solving Strategy</i> 22-23, 201-202, 252-253, 338-339, 444-445 <i>Study Skill</i> 125, 153</p> <p>TWE: A 202 B 6, 64 DI 22, 355</p> <p>SE: 6-8, 46, 231 #56 <i>Hands-On Lab</i> 344 <i>Problem-Solving Strategy</i> 132-133, 201-202, 252-253, 496-497 <i>Study Skill</i> 153</p> <p>TWE: A 133, 202 B 22 DI 7, 66, 324, 355</p> |

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| Component 2.2: Apply strategies to construct solutions. | |
| <p>2.2.1 Apply strategies, concepts, and procedures to devise a plan to solve the problem. W</p> <ul style="list-style-type: none"> ■ Organize relevant information from multiple sources (e.g., describe how to calculate percents, set limits on the number that Bonita could make). ■ Select and apply appropriate mathematical tools for a situation (e.g., guess and check, calculate Juan's percentage and create a table of values [with or without technology] for Bonita's percentage). | <p>SE: 6-9, 20 #38-#40, 57 #15, 77 e.g. #3, 231 #54-#56 <i>Problem-Solving Strategy</i> 201-202, 444-445 <i>WebQuest</i> 3, 103, 193</p> <p>TWE: B 54, 64, 444 DI 7, 55 ICE 55, 77 PC 148F PS 235</p> <p>SE: 50 #1, 52, 79 #23, 85-89 <i>Graphing Calculator</i> 84 <i>Problem-Solving Strategy</i> 22-23, 58-59, 132-133, 164-165, 201-202, 256-257 <i>Spreadsheet Investigation</i> 90-91 <i>Study Skill</i> 125, 153</p> <p>TWE: A 213, 231 DI 211 PS 235 TNT 241, 313</p> |
| <p>2.2.2 Apply mathematical tools to solve the problem. W</p> <ul style="list-style-type: none"> ■ Implement the plan devised to solve the problem or answer the question posed (e.g., in a table of values of percentages for Bonita's possible results and percentages, find the range of values that yield a percentage larger than Juan's; find the smallest of those and use that number). ■ Identify when an approach is unproductive and modify or try a new approach (e.g., if a result is larger than 25, return to see if the percentage computation is accurate and if it is computed correctly). ■ Check the solution to see if it works (e.g., if the solution is larger than 25, it makes no sense in the given problem). | <p>SE: 6-9, 50 #1, 66 #1, 82 #3-#6 <i>Problem-Solving Strategy</i> 58-59, 164-165, 201-202, 338-339 <i>Study Skill</i> 42, 125 <i>WebQuest</i> 3, 103, 193</p> <p>TWE: A 251, 273 DI 66 PC 4F, 332F TNT 217</p> <p>SE: 6-9 <i>Problem-Solving Strategy</i> 22-23, 164-165, 252-253, 391-392, 444-445, 496-497, 518-519 <i>Hands-On Lab</i> 125, 153, 397</p> <p>TWE: DI 161, 320 PS 189, 329</p> <p>SE: 6-9, 50 #1, 65 e.g. #2, #3, 68 #27, 77 e.g. #3 <i>Problem-Solving Strategy</i> 22-23, 132-133, 164-165, 201-202, 252-253, 338-339, 444-445, 496-497, 518-519 <i>Study Skill</i> 153</p> <p>TWE: DI 201, 211</p> |

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| EALR 3: The student uses mathematical reasoning. | |
| Component 3.1: Analyze information. | |
| <p>3.1.1 Analyze information from a variety of sources to interpret and compare information. W</p> <ul style="list-style-type: none"> ■ Explain and compare conclusions reached from data (e.g., from newspapers, web sites, opinion polls). [1.4.6] ■ Use graphs to describe trends, compare, and interpret relationships from data (e.g., from newspapers, web sites, opinion polls). [1.4.5] | <p>SE: 52, 57 #15, 68 #24, #27, 77 e.g. #3, 79 #23, 89 #17-#19, 365 #10-#11 <i>WebQuest</i> 3, 193</p> <p>TWE: B 92 DI 85</p> <p>SE: 57 #15, #19, 60-63, 68 #24, #27, 88 #11-#13, 101 #15, 253 #12, 261 #45-#47, 312 (WHEN), 319 (WHEN) 346 #4, 418-421 <i>Spreadsheet Investigation</i> 90-91 <i>WebQuest</i> 103, 193</p> <p>TWE: B 92, 418 DI 59</p> |
| Component 3.2: Make predictions, inferences, conjectures, and draw conclusions. | |
| <p>3.2.1 Apply prediction and inference skills to make or evaluate conjectures. W</p> <ul style="list-style-type: none"> ■ Predict the probability of future events based on empirical data. [1.4.2] ■ Predict the probability of outcomes of experiments and test the predictions. [1.4.2] | <p>SE: 368, 370-373, 393-396, 405 #14 <i>Hands-On Lab</i> 397 <i>Hands-On Mini Lab</i> 393 <i>Problem-Solving Strategy</i> 391-392</p> <p>TWE: DI 371</p> <p>SE: 370-373, 374-377, 378-380, 393-396, 398-401, 402 #11-#16, 415 #26-#28 <i>Hands-On Lab</i> 397</p> <p>TWE: A 401</p> |
| <p>3.2.2 Apply the skills of drawing conclusions and support those conclusions using evidence. W</p> <ul style="list-style-type: none"> ■ Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence (e.g., read a newspaper article that includes data, draw a conclusion, and support that conclusion with evidence from the article or elsewhere). | <p>SE: 57 #15, 62 #7, 88 #11-#13, 93 #3-#6, 101 #15, 345-347, 418-421 <i>Problem-Solving Strategy</i> 444-445</p> <p>TWE: B 418 DI 418 TNT 419</p> |
| <p>3.2.3 Analyze procedures and results in various situations. W</p> <ul style="list-style-type: none"> ■ Describe how additional data added to data sets may affect the computations of measures of central tendency in various situations. [1.4.4] | <p>SE: 93 #3-#6, 94 #9-#11 <i>Hands-On Lab</i> 73</p> <p>TWE: A 72</p> |

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| Component 3.3: Verify results. | |
| <p>3.3.1 Analyze procedures and information used to justify results using evidence. W</p> <ul style="list-style-type: none"> ■ Justify the reasonableness of an estimate. [1.2.6] ■ Apply a process that can be used to find a reasonable estimate of circle measurements (e.g., wrap a string around the circle). [1.2.6] ■ Apply estimation strategies prior to computing addition and subtraction of integers and operations on non-negative rational numbers to determine reasonableness of answers. [1.1.8] | <p>SE: 50 #3, 242 #2, 295 #23, 343 #37 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 252-253, 338-339 <i>WebQuest</i> 193</p> <p>SE: 493, 509 #16 <i>Problem-Solving Strategy</i> 497 #4, #9</p> <p>TWE: DI 497</p> <p>SE: 44 e.g. #3, 240 (WHEN), 242 #2, 243 #37, #38, 366 #5, 558 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 252-253</p> |
| <p>3.3.2 Analyze thinking and mathematical ideas using models, known facts, patterns, relationships, or counter examples. W</p> <ul style="list-style-type: none"> ■ Explain how different representations of the same set of data can support different points of view. [1.4.6] | <p>SE: 62 #10-#12, 68 #24, 77 e.g. #3, 86 e.g. #3, 89 #19, 101 #16, 419 e.g. #2, 463 #11 <i>WebQuest</i> 3, 193</p> <p>TWE: A 88, 421 ICE 86 e.g. #2, 420</p> |
| EALR 4: The student communicates knowledge and understanding in both everyday and mathematical language. | |
| Component 4.1: Gather information. | |
| <p>4.1.1 Apply a planning process to collect information for a given purpose. W</p> <ul style="list-style-type: none"> ■ Formulate a question and collect data from a population considering how the questions, collection method, and sample population affect the results. [1.4.3] | <p>SE: <i>Hands-On Lab</i> 73, 301, 344</p> |
| <p>4.1.2 Understand how to extract information from multiple sources using reading, listening, and observation. W</p> <ul style="list-style-type: none"> ■ Create a table or graph given a description of, or an equation for, a situation involving a linear or non-linear relationship. [1.5.4] | <p>SE: 188 #60-#62</p> <p>TWE: A 181</p> |
| Component 4.2: Organize, represent, and share information. | |
| <p>4.2.1 Apply organizational skills for a given purpose. W</p> <ul style="list-style-type: none"> ■ Identify, determine, interpret, or express probabilities in the form of a fraction, decimal, or percent. [1.4.2] | <p>SE: 368, 370-373, 379 #8, 380 #23-#25, 393-396, 398-401, 402 <i>Hands-On Lab</i> 397 <i>The Game Zone</i> 385</p> <p>TWE: ICE 371, 394, 399</p> |

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| <p>4.2.2 Apply communication skills to clearly and effectively express or present ideas and situations using mathematical language or notation. W</p> <ul style="list-style-type: none"> ■ Identify data that may represent sampling errors and explain why the sample (and the display) might be biased. [1.4.4] ■ Explain when estimation might be used rather than computation. [1.1.8] ■ Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose such as to perform or persuade with notation and labels as needed. | <p>SE: <i>Hands-On Lab</i> 301, 344 TWE: PS 99</p> <p>SE: 50 #3, 295 #23, #24, 343 #37 <i>Hands-On Lab</i> 301, 344 <i>Problem-Solving Strategy</i> 22-23, 133 #14, 252-253, 338-339 <i>WebQuest</i> 193</p> <p>SE: 6 (WHEN), 17 #55, 77 e.g. #3, 85-89, 113 e.g. #3, 129 e.g. #6, 169 #41, 219 #37-#38, 304-307, 343 #27-#29 <i>Hands-On Lab</i> 530-531 <i>Problem-Solving Strategy</i> 58-59, 132-133, 201-202, 302-303, 518-519 <i>Spreadsheet Investigation</i> 309 <i>WebQuest</i> 3</p> <p>TWE: A 68, 380, 442 B 58 DI 55, 85, 109, 255</p> |
| <p>EALR 5: The student understands how mathematical ideas connect within mathematics, to other subject areas, and to real-life situations.</p> | |
| <p>Component 5.1: Relate concepts and procedures within mathematics.</p> | |
| <p>5.1.1 Apply concepts and procedures from a variety of mathematical areas in a given problem or situation. W</p> <ul style="list-style-type: none"> ■ Write the rational number when given a model (e.g., number line, area model, situation, diagram, picture). [1.1.1] ■ Given a set of data, compare various representations (e.g., box-and-whisker, bar, circle graph) for a given situation. [1.4.5] | <p>SE: 106-108, 110 e.g. #2, 112-115, 116 #16, 236 #6, #8, 241, 257 #39 TWE: DI 109 PS 235</p> <p>SE: 62 #10-#12, 68 #24, 77 e.g. #3, 86 e.g. #3, 101 #15, 419 e.g. #2, 463 #11 TWE: A 421 ICE 86 e.g. #2, 87</p> |
| <p>5.1.2 Apply different mathematical models and representations to the same situation. W</p> <ul style="list-style-type: none"> ■ Explain how different representations of the same set of data can support different points of view. [1.4.6] ■ Match a situation with a data set or graph. [1.5.4] | <p>SE: 62 #10-#12, 68 #24, 77 e.g. #3, 86 #3, 89 #19, 101 #16, 419 e.g. #2, 463 #11 <i>WebQuest</i> 3, 193 TWE: A 88, 421 ICE 86 #2, 420</p> <p>SE: 51 #11, 64-68, 79 #23, 81 e.g. #2, 85-89 <i>Problem-Solving Strategy</i> 58-59, 201-202 <i>Spreadsheet Investigation</i> 90-91 TWE: A 59, 79</p> |

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| Component 5.2: Relate mathematical concepts procedures to other disciplines. | |
| <p>5.2.1 Analyze mathematical patterns and ideas to extend mathematical thinking and modeling to other disciplines.</p> <ul style="list-style-type: none"> ■ Evaluate and explain conclusions of plant growth drawn from data (e.g., from magazines, newspapers, web sites). [1.4.6] ■ Write a story about a situation that represents a given linear equation, expression, or graph. [1.5.2] ■ Determine the target heart zone for participation in aerobic activities. ■ Chart a one-week physical activity log based on calories expended/minute of activity. ■ Determine adjustments needed to achieve a healthy level of fitness. ■ Create a perspective drawing using vanishing point. ■ Mix paint in the correct proportions to create a particular color. | <p>SE: The following references could be used during teacher/student discussion to meet this objective. <i>Problem-Solving Strategy</i> 58-59, 132-133</p> <p>TWE: A 133 B 132 DI 59, 133</p> <p>SE: 177 e.g. #1 <i>Hands-On Lab</i> 176</p> <p>SE: The following references could be used during teacher/student discussion to meet this objective. 173 e.g. #7 <i>Real-Life Career</i> 19 <i>WebQuest</i> 193</p> <p>SE: The following references could be used during teacher/student discussion to meet this objective. 57 #16-#19 <i>WebQuest</i> 193</p> <p>SE: The following references could be used during teacher/student discussion to meet this objective. 21 #43, 173 e.g. #7 <i>WebQuest</i> 193</p> <p>SE: Note: The following could be used with Teacher/Student discussion 454 #14</p> <p>TWE: MIC 409 (Math & Art)</p> <p>SE: The following references could be used during teacher/student discussion to meet this objective.</p> <p>TWE: PS 329</p> |
| <p>5.2.2 Know the contributions of individuals and cultures to the development of mathematics.</p> <ul style="list-style-type: none"> ■ Recognize the contributions of a variety of people to the development of mathematics (e.g., research and report on the history of pi). | <p>SE: 213 #44-#45, 392 #10, 477 #34 <i>Hands-On Lab</i> 478</p> |

| OBJECTIVES | PAGE REFERENCES |
|--|---|
| Component 5.3: Relate mathematical concepts and procedures to real-world situations. | |
| <p>5.3.1 Understand that mathematics is used in daily life and extensively outside the classroom.</p> <ul style="list-style-type: none"> ■ Describe a situation where estimation is sufficient in real-life contexts. [1.1.8] ■ Use properties of polygons and circles to solve real-world problems (e.g., find the amount of fencing needed for a pasture). [1.3.2] ■ Compare the unit prices of various soft drinks. | <p>SE: 242 #2, 295 #23, #24, 343 #37 <i>Hands-On Lab</i> 301, 304 <i>Problem-Solving Strategy</i> 22-23, 133 #14, 165 #9, 252-253, 338-339 <i>WebQuest</i> 103, 193</p> <p>SE: 261 #37, 270-273, 275-277, 283 #16, 303 #11, 307 #17-#21, 446-449, 468, 498 (WHEN)</p> <p>TWE: A 443 B 440 DI 441, 447 MIC 409 (Math & Art)</p> <p>SE: 292-297 TWE: DI 293 ICE 293</p> |
| <p>5.3.2 Understand that mathematics is used within many occupations or careers.</p> <ul style="list-style-type: none"> ■ Explain how mathematics is used in careers or occupations of interest (e.g., complete a mathematically based project). | <p>SE: <i>Real-Life Careers</i> 77, 113, 298, 480, 539 TWE: MIC 3, 285 (Math & Art)</p> |

Codes Used for TWE Pages

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|------|------------------------------------|
| A | Assess |
| B | Bellringer |
| DI | Daily Intervention |
| DS | Data Sense |
| ICE | In-Class Examples |
| MIC | More Interdisciplinary Connections |
| PA | Practice/Apply |
| PC | Project Criss |
| PS | Portfolio Suggestion |
| TNT | Tips for New Teachers |
| WODB | Which One Doesn't Belong? |