



MINNESOTA
Mathematics Academic Standards
Grades 9, 10, 11
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OBJECTIVES	PAGE REFERENCES		
	COURSE 1	COURSE 2	COURSE 3
I. MATHEMATICAL REASONING			
<u>Standard:</u> Apply skills of mathematical representation, communication and reasoning throughout the remaining three content strands. The student will:			
1. Assess the reasonableness of a solution by comparing the solution to appropriate graphical or numerical estimates or by recognizing the feasibility of solutions in a given context and rejecting extraneous solutions.	SE: 502-503 <i>Review 511 #17</i> <i>Review and Practice Your Skills 504 #8-#12</i> ATE: CE 503 EL 502 LW 503 TT 503 <i>Reteaching Worksheet 503</i>	SE: 485 Example 3, 508-509 <i>Problem Solving Tip 123</i> <i>Review 511 #25-#26</i> ATE: 5MW 508 CE 509 EL 508, 509 GS 154 LW 270	SE: 21 #3, 22 #11, 24 #33, 33 #3
2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions, and explain results.	SE: 99 #54, 231 #65, 377 #27, 482-485, 489 Example 2 <i>Math: Who, Where, When 482</i> ATE: CE 483 EL 484 TT 482 <i>Enrichment Worksheet 485</i>	SE: 111 #45, 124 #37, 246 #18, 530, 531 #1-#3, #6-#8, 534 #5-#8, 539, 541 #26 ATE: CE 539 <i>Extra Practice Worksheet 535</i>	SE: 124-125, 126 #2-3, 127 #11, 128-129, 151 #1, 161 #2, 183 #1

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3. Translate a problem described verbally or by tables, diagrams or graphs, into suitable mathematical language, solve the problem mathematically and interpret the result in the original context.	SE: 24 Example 1, 72-73, 85 Example 3, 124-127, 155, 334, 492-495 <i>MathWorks</i> 463 ATE: CE 493	SE: 62-65, 134 Example 4, 245 Example 3, 255 Example 2, 282, 284 #3-#5, 362 Example 1 <i>Alternative Assessment</i> 143 Using Other Resources ATE: CE 63 LS 136	SE: 247 #42, 250 #8, 257 #21, 261 #13, 279 #24, 285 #19, 307 #2, 319 #12, 321 #2, 426 #1
4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.	SE: 26 #15, 68 #28, 104-105, 170-171, 306-307, 357-358 Example 3, Example 4 <i>Alternative Assessment</i> 513 Cooperative Learning ATE: EL 105 I 482	SE: 26 Problem, 31 #23, 134 #10, 136, 138 #13, 276- 277 Example 1 ATE: LW 398 TS 435	SE: 7 #2, 8 #4, 12 #3, 21 #3, 39 #3, 73 #2, 179 #1, 203 #3, 268 #1, 384 #1
5. Determine whether or not relevant information is missing from a problem and if so, decide how to best express the results that can be obtained without that information.	SE: 6-9 ATE: EL 7 <i>Extra Practice Worksheet</i> 9	SE: 31 #28, 400-401	SE: 215 #27, 227 #15

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6. Know and use the relationship that exists among a logical implication of the form “if A, then B,” its converse “if B, then A,” its inverse “if not A, then not B,” and its contrapositive “if not B, then not A.”	SE: 488-491 <i>Alternative Assessment 513</i> Portfolio <i>Review and Practice Your Skills 496 #1-#13</i> ATE: 5MW 488 CE 489 EL 489 IC 491 <i>Enrichment Worksheet 491</i> <i>Extra Practice Worksheet 491</i> <i>Reteaching Worksheet 490</i>	SE: 530-531, 532-535 <i>Alternative Assessment 555</i> Technology <i>MathWorks 547</i> ATE: 5MW 530 CE 531, 533, 536 LW 531, 534 <i>Extra Practice Worksheet 535</i>	SE: 128-129, 130 #5, 131 #17-20, 132 #13, 134-135, 136 #4, 137 #7-9
II. NUMBER SENSE, COMPUTATION, AND OPERATIONS			
A. Number Sense Standard: Use real numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems. The student will:	SE: 104-107, 118-121 <i>Alternative Assessment 149</i> Connections <i>Review 146 #21-#24</i> ATE: CE 105, 119 PE 121 TT 106 <i>Extra Practice Worksheet 107</i> <i>Reteaching Worksheet 106</i>	SE: 52-55, 63 Example 3, 111 #46, 270 #19-#23 <i>Alternative Assessment 97</i> Portfolio <i>MathWorks 113</i> ATE: CE 53 LW 54 <i>Enrichment Worksheet 55</i>	SE: 10-11, 12 #11-14, 13 #28, 21 #3, 22 #22, 23 #27, 29 #37, 37 #42, 39 #3

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	COURSE 1	COURSE 2	COURSE 3
B. Computation and Operation			
<u>Standard:</u> Appropriately use calculators and other technologies to solve algebraic, geometric, probabilistic and statistical problems. The student will:			
1. Apply the correct order of operations and grouping symbols when using calculators and other technologies.	SE: 114-117 <i>Review</i> 146 #17-#20 ATE: 5MW 114 CE 115 EL 115, 124 LS 114 <i>Enrichment Worksheet</i> 117 <i>Extra Practice Worksheet</i> 117 <i>Reteaching Worksheet</i> 115	SE: 58 #11 Calculators could be used with the following examples. SE: 56-59, 76-79 <i>Algebra Reference Guide</i> 596 ATE: CE 57 EL 57 <i>Enrichment Worksheet</i> 59 <i>Extra Practice Worksheet</i> 59 <i>Reteaching Worksheet</i> 58	SE: 30, 31 #6, 32 #1-9, 33 #40-45, 464, 670 ATE: EL 75
2. Know, use and translate calculator notational conventions to mathematical notation.	SE: 111 #50, 115 Example 3, 214 #43, 220 #37-#39, 262 #11, 266 #9 <i>Problem Solving Tip</i> 260 <i>Technology Note</i> 81, 105, 137	SE: 58 #11, 129 #49-#56, 139 #44-#51, 155 #3, 490 #10-#12 <i>Review and Practice Your Skills</i> 492 #17-#24 <i>Technology Note</i> 88, 172, 173, 178	SE: 30, 31 #6, 32 #19-23, 39 #3, 40 #29-30, 605 #3 <i>Technology Note</i> 500, 615 ATE: EL 33
3. Recognize the impact of units such as degrees and radians on calculations.	SE: 52-55, 56-59, 157-158 <i>MathWorks</i> 61 #1 ATE: CE 57 EL 63 GS 56 <i>Enrichment Worksheet</i> 65, 311 <i>Reteaching Worksheet</i> 63	SE: 196-199, 204 #32-#34, 207 Example 1 <i>MathWorks</i> 201 <i>Review and Practice Your Skills</i> 200 #13-#29 ATE: CE 197, 207 TT 196 <i>Enrichment Worksheet</i> 199 <i>Extra Practice Worksheet</i> 199 <i>Reteaching Worksheet</i> 198	SE: 203 #2-4, 309 #21, 314 #10-19, 351 #19-27, 605 #2 ATE: TS 204

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	COURSE 1	COURSE 2	COURSE 3
4. Recognize that applying an inverse function with a calculator may lead to extraneous or incomplete solutions.	See <i>MathMatters Courses 2 or 3</i> .	This objective can be covered with Lesson 11-6 on pages 498-501.	SE: 605 #3
5. Understand the limitations of calculators such as missing or additional features on graphs due to viewing parameters or misleading representations of zero or very large numbers.	SE: 88, 143, 144 #13-#16 <i>Reteaching Worksheet 81</i>	Discussion about limitations of calculators can be covered with Lesson 1-7 on pages 34-37.	SE: 30, 588 #17, 660-662 ATE: TS 586
6. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.	This objective can be covered whenever calculators are used.	This objective can be covered whenever calculators are used and with the following references that use mental math. SE: 87, 105, 106 #4-#9, 107 #21-#24	SE: 84 #3, 660-662 <i>Workplace Knowhow 33</i> ATE: LS 30
III. PATTERNS, FUNCTIONS, AND ALGEBRA			
A. Patterns and Functions			
<u>Standard:</u> Represent and analyze real-world and mathematical problems using numeric, graphic and symbolic methods for a variety of functions.			
The student will:			
1. Know the numeric, graphic and symbolic properties of linear, step, absolute value and quadratic functions. Graphic properties may include rates of change, intercepts, maxima and minima.	SE: 306-307, 314-317, 318-321, 338-341 ATE: CE 339 EL 306, 317, 340, 341 TT 338, 339	SE: 54 Example 4, 55 #48, 264-267, 268-271 <i>Review and Practice Your Skills 272-273 #14-#37</i> ATE: CE 265, 269 EL 264 <i>Reteaching Worksheet 266, 270</i>	SE: 62-64, 67 #4, 244-245, 254-255, 282-283, 520-521, 522 #13, 523 #23-24, 526 #1-4, 670-672

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	COURSE 1	COURSE 2	COURSE 3
2. Model exponential growth and decay, numerically, graphically and symbolically, using exponential functions with integer inputs.	See <i>MathMatters Courses 2 or 3.</i>	SE: 82-85, 277, 381 Example 3, 386 Example 1 ATE: CE 83 EL 84 GS 82 LW 84 <i>Enrichment Worksheet 85</i>	SE: 37 #47, 581 #2, 582 #10, 586 #3, 587 #14
3. Analyze the effects of coefficient changes on linear and quadratic functions and their graphs.	SE: 314, 316 Example 4, 317 #29-#32, 330 #7-#11 <i>Chapter 7 Test 343</i> <i>MathWorks 313</i> ATE: TS 316 TT 319	SE: 264 Example 1, 265 Example 2, 267 #22-#25, 268-271, 274-275 ATE: CE 265 EL 264 GS 264 LW 270 <i>Extra Practice Worksheet 271</i>	SE: 64 #5, 65 #17-19, 248, 522 #13
4. Apply basic concepts of linear, quadratic and exponential expressions or equations in real-world problems such as loans, investments and the path of a projectile.	SE: 305, 314, 317 #29-#32, 321 #31-#32, 331 #26-#30 <i>MathWorks 333</i> ATE: CE 319 Supplementary Example 4, 339 Supplementary Example 3 EL 306	SE: 84 #34, 85 #35-#36, #46-#48, 264 Example 1, 267 #24-#25, 270 #19-#23 <i>Review 272 #24-#27</i> ATE: CE 265 Supplementary Example 1	SE: 64 #5, 247 #42, 256 #14, 257 #25, 567 #2, 569 #26, 577 #9, 581 #3, 582 #7, 587 #16
5. Distinguish functions from other relations using graphic and symbolic methods.	ATE: EL 317, 340	SE: 264-267 <i>Review and Practice Your Skills 272 #5-#7, 281 #25-#28</i> ATE: LW 266 <i>Extra Practice Worksheet 267</i>	SE: 56-57, 58 #9-10, 59 #31-33, 60 #34-35, 62-64, 65 #12-14, 516-517, 520-521, 524-526, 528 #1

OBJECTIVES	PAGE REFERENCES		
	COURSE 1	COURSE 2	COURSE 3
B. Algebra (Algebraic Thinking) <u>Standard:</u> Solve simple equations and inequalities numerically, graphically, and symbolically. Use recursion to model and solve real-world and mathematical problems. The student will:			
1. Translate among equivalent forms of expressions, such as: simplify algebraic expressions involving nested pairs of parentheses and brackets, simplify rational expressions, factor a common term from an expression and apply associative, commutative and distributive laws.	SE: 132, 136-137, 208-211, 212-215, 218-221 <i>Are You Ready?</i> 205 #37-#42 ATE: CE 119 Supplementary Example 4 LS 118 <i>Reteaching Worksheet</i> 119	SE: 66-69, 76-79, 404-407 ATE: CE 67, 77 LS 77 LW 68 TT 67, 405 <i>Extra Practice Worksheet</i> 69, 407 <i>Reteaching Worksheet</i> 68	SE: 27 #1, 28 #17-25, 35 #2, 36 #27-34, 464, 472-473, 474 #18-37, 475 #45-50, 476 #43-45, 480 #4-6
2. Understand the relationship between absolute value and distance on the number line and graph simple expressions involving absolute value such as $ x - 3 = 6$ or $ x + 2 < 5$.	SE: 105 Example 2, 340 #8, #14, 341 #22 ATE: EL 341 <i>Extra Practice Worksheet</i> 341	SE: 54 Example 4, #10-#12, #14, 55 #48, 261 #39, 267 #14 <i>Are You Ready?</i> 49 #27-#34 <i>Review and Practice Your Skills</i> 28 #25 ATE: CE 265 Supplementary Example 2	SE: 12, 13 #30, 14 #38, 65 #21-23
3. Find equations of a line given two points on the line, a point and the slope of the line or the slope and the y-intercept of the line.	SE: 328-331 <i>Review and Practice Your Skills</i> 332 #30-#33 ATE: CE 329 EL 329 TS 315, 316 <i>Extra Practice Worksheet</i> 331	SE: 251 #31-#32, 255 Example 2, 256 Example 4, #1-#10, 257 #16-#33 Linear equations can be found in the following examples. SE: 249 Example 2, 250 #4-#12, 251 #21-#30 ATE: CE 249 TT 248 <i>Enrichment Worksheet</i> 251	SE: 254-255, 256 #1-8, 257 #15-20, 262 #1-27, 263 #54-59, 272 #36-41, 273 #47-52, 281 #44-49

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	COURSE 1	COURSE 2	COURSE 3
4. Translate among equivalent forms of linear equations and inequalities.	SE: 132, 136-137, 208-211, 212-215, 218-221, 240 ATE: EL 248 LS 118, 240 <i>Reteaching Worksheet 119</i>	SE: 104-107, 109, 116-119, 259 Example 2, 264 Example 1, 276 Example 1 ATE: CE 105, 117 LS 116 TT 105	SE: 244-245, 254-255, 257 #22, 258 #1, 259 #3
5. Use a variety of models such as equations, inequalities, algebraic formulas, written statements, tables and graphs or spreadsheets to represent functions and patterns in real-world and mathematical problems.	SE: 306-307, 314-317, 318-321, 324-327, 328-331, 338-341 ATE: CE 319, 325 EL 326	SE: 10 #1-#3, 11, 17, 21 Example 2, 40 Example 4, 41 #12-#20, 251 #36-#40, 257 #35-#37 <i>MathWorks 33, 253</i>	SE: 64 #5, 65 #17-19, 247 #42, 255 #3, 257 #25, 261 #13, 567 #2, 581 #3, 586 #5
6. Apply the laws of exponents to perform operations on expressions with integer exponents.	SE: 114, 132-135, 136-141, 405 ATE: CE 133, 137 EL 133, 137 LS 136 LW 138	SE: 82-85, 86-89, 380-381, 386 Example 1 ATE: CE 83, 87 LW 84, 88 TT 82, 86	SE: 34-35, 36 #19-26, 37 #38-40, 38-39, 41 #34-36, 43 #19-21
7. Solve linear equations and inequalities in one variable with numeric, graphic and symbolic methods.	SE: 212-215, 218-221, 222-225, 228-231, 240-243, 246-249 ATE: EL 213 TT 217 <i>Extra Practice Worksheet 215</i> <i>Reteaching Worksheet 213</i>	SE: 104-107, 111 #47, 117 Example 3, 122-125 <i>Are You Ready?</i> 101 #22-#29 <i>MathWorks 113</i> ATE: CE 105, 123 EL 107 TT 105	SE: 66-67, 68 #1-9, 69 #38, 74 #2-7, 75 #25-30, 76-78, 79 #26, 80 #30-44, 91 #53-55

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	COURSE 1	COURSE 2	COURSE 3
8. Find real solutions to quadratic equations in one variable with numeric, graphic and symbolic methods.	SE: 338 Example 1, 340 #6, 341 #24 <i>Extra Practice Worksheet 341</i>	SE: 268-271 <i>Assessment 288 #20-#22</i> <i>Review and Practice Your Skills 272 #12, #14, #16, #18, #20-#23</i> ATE: CE 269 GS 268 LW 270 <i>Extra Practice Worksheet 271</i> <i>Reteaching Worksheet 270</i>	SE: 494, 495 #32, 522 #3-5, 530-531, 532 #7-15, 533 #20-25, 534-535, 536 #20-31, 537 #39, 540-541
9. Use appropriate terminology and mathematical notation to define and represent recursion.	SE: 286 #10-#20 Technology could be used with the following references. SE: 128 #3-#4, 139 #60, 264-267, 311 #40-#42, 318-321	SE: 92 #7-#9 Technology could be used with the following references. SE: 92-93, 274-275 <i>Are you Ready?</i> 240 #39-#48 ATE: CE 93, 275 <i>Reteaching Worksheet 93</i>	SE: 52-53, 54 #13, 55 #22, 124-125, 126 #1, 127 #12-14
10. Create and use recursive formulas to model and solve real-world and mathematical problems.	SE: 128 #3-#4, 139 #60, 264-267, 311 #40-#42, 318-321 <i>MathWorks 333</i>	SE: 274, 275 #5-#7, #9-#12, #15, #20 <i>Review and Practice Your Skills 280 #1-#3, #8-#11</i> ATE: CE 275 EL 276 LW 275	SE: 52-53, 54 #15, 55 #18, 125 #2, 126 #2-3, 127 #10
11. Solve systems of two linear equations and inequalities with two variables using numeric, graphic and symbolic methods.	<i>Enrichment Worksheet 331</i>	SE: 338-341, 344-347, 348-351 <i>Review and Practice Your Skills 343 #37-#39</i> ATE: CE 339, 345 EL 346 <i>Enrichment Worksheet 341</i> <i>Extra Practice Worksheet 347</i> <i>Reteaching Worksheet 340, 346</i>	SE: 258-260, 261 #8-12, 264-265, 267 #21-24, 268-269, 270 #9-16, 274-275, 276-277, 278 #13-16, 282-284

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12. Understand how slopes can be used to determine whether lines are parallel or perpendicular. Given a line and a point not on the line, find the equations for the lines passing through that point and parallel or perpendicular to the given line.	SE: 331 #33-#37	SE: 250 #10-#12 <i>MathWorks</i> 253 ATE: CE 249 Supplementary Example 3, 255 Supplementary Example 1 <i>Enrichment Worksheet</i> 257	SE: 248-249, 250 #1-4, 251 #20-23, 252 #37-45, 256 #4, 259 #2, 262 #28-30
IV. DATA ANALYSIS, STATISTICS, AND PROBABILITY			
A. Data and Statistics			
Standard: Represent data and use various measures associated with data to draw conclusions and identify trends. Understand the effects of display distortion and measurement error on the interpretation of data.			
The student will:			
1. Construct and analyze circle graphs, bar graphs, histograms, box-and-whisker plots, scatter plots and tables, and demonstrate the strengths and weaknesses of each format by choosing appropriately among them for a given situation.	SE: 10-13, 20-21, 27 #29-#34, 28-31, 40 #11-#15 <i>Assessment</i> 44 #3-#18 <i>Extra Practice</i> 569 #1-#9 <i>Review</i> 43 #17-#22 ATE: CE 21	SE: 16-19, 20-23, 29 Example 2, 31 #10-#16, 36 #8-#12, 75 #66-#68, 79 #52-#56, 111 #60-#62, 251 #41-#44, 232-233 <i>Are You Ready?</i> 2 #1-#4, #9-#12	SE: 86-87, 88 #6, 89 #19, 406-408, 409 #6-8, 410 #28-29, 446, 447 #1-2,
2. Use measures of central tendency and variability, such as mean, median, maximum, minimum, range, standard deviation, quartile and percentile, to describe, compare and draw conclusions about sets of data.	SE: 10-13, 169 #38 <i>Cumulative Review</i> 46 #15-#16, 300 #1-#3 <i>Review</i> 42 #9-#12 ATE: CE 11 EL 11 <i>Enrichment Worksheet</i> 13 <i>Extra Practice Worksheet</i> 13 <i>Reteaching Worksheet</i> 12	SE: 10-13, 19 #29-#32, 29 Example 2 <i>Review and Practice Your Skills</i> 14 #9-#14, 25 #21-#23 ATE: CE 11 EL 10, 11 <i>Enrichment Worksheet</i> 13 <i>Extra Practice Worksheet</i> 13 <i>Reteaching Worksheet</i> 12	SE: 49, 82-83, 84 #1-3, 85 #10-12, 88 #7-11, 90 #14-19, 380 #36-41, 670

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	COURSE 1	COURSE 2	COURSE 3
3. Determine an approximate best-fit line from a given scatter plot and use the line to draw conclusions.	SE: 34-37, 83 #44-#46 ATE: CE 35, 339 Supplementary Example 3 EL 35 LW 36 <i>Extra Practice Worksheet 37</i> <i>Reteaching Worksheet 36</i>	SE: 20-23, 79 #52-#56 <i>Cumulative Review 144</i> #1-#8 ATE: CE 21 EL 21 LW 22 <i>Extra Practice Worksheet 23</i> <i>Reteaching Worksheet 23</i>	SE: 406, 407 #2, 408 #1-3, 409 #6-8, 410 #25-27
4. Know the influence of outliers on various measures and representations of data about real-world and mathematical problems.	SE: 16 ATE: CE 17 <i>Reteaching Worksheet 17</i>	SE: 17, 19 #26-#27, 29 <i>Reteaching Worksheet 18</i>	SE: 86-87, 89 #19
5. Understand the relationship between correlation and causation.	Causation can be taught with correlation. SE: 35 <i>Reteaching Worksheet 36</i>	SE: 21, 23 #8, #11, #13, 26 ATE: CE 21, 27 EL 27 <i>Extra Practice Worksheet 23</i> <i>Reteaching Worksheet 22</i>	SE: 406 ATE: EL 409 TS 408
6. Interpret data credibility in the context of measurement error and display distortion.	SE: 6-9, 37 #26 ATE: CE 7 EL 7 LS 6 LW 8 <i>Enrichment Worksheet 9</i> <i>Extra Practice Worksheet 9</i> <i>Reteaching Worksheet 8</i>	SE: 34-37, 478-479 <i>MathWorks 483</i> ATE: CE 35 EL 34 GS 34 LW 36 <i>Enrichment Worksheet 37</i> <i>Extra Practice Worksheet 37</i> <i>Reteaching Worksheet 36</i>	SE: 82, 85 #16, 89 #19, 92-93, 202, 204 #10, 205 #31 ATE: EL 86
7. Compare outcomes of voting methods such as majority, plurality, ranked by preference, run-off and pairwise comparison.	SE: 460 ATE: TT 460 Voting methods can also be introduced with Lesson 1-1.	SE: 152 #9 ATE: EL 152 Voting methods can also be introduced with Lesson 1-1.	SE: 86-87

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B. Probability <u>Standard:</u> Use appropriate counting procedures, calculate probabilities in various ways and apply theoretical probability concepts to solve real-world and mathematical problems. The student will:			
1. Select and apply appropriate counting procedures to solve real-world and mathematical problems, including probability problems.	SE: 435, 436-437 Example 1, 446-449, 450-453 <i>MathWorks</i> 445 ATE: CE 451 EL 442 LW 438 TT 452 <i>Reteaching Worksheet</i> 451	SE: 150-153, 154-155, 158-161, 162-165, 168-171 ATE: CE 151, 159, 163, 169 <i>Extra Practice Worksheet</i> 171	SE: 384-385, 386 #2, 387 #12, 390 #31, 391 #40, 392-393, 394 #1
2. Use area, trees, unions and intersections to calculate probabilities and relate the results to mutual exclusiveness, independence and conditional probabilities, in real-world and mathematical problems.	SE: 446-449 ATE: CE 447 EL 458 LS 456 LW 448 TT 446 <i>Enrichment Worksheet</i> 449 <i>Reteaching Worksheet</i> 448	SE: 159 Example 2, 160 #3, #10, 162-165, 168 #2 ATE: CE 163 EL 153, 169 <i>Enrichment Worksheet</i> 171 <i>Extra Practice Worksheet</i> 161 <i>Reteaching Worksheet</i> 160	SE: 212-213, 214 #8-13, 215 #22-24, 385 #2, 392-393, 394 #6-10, 396-397, 398 #6-8, 399 #25
3. Use probability models, including area and binomial models, in real-world and mathematical problems.	SE: 435, 439 #47-#48, 451 Example 2, 456-457, 460-461, 467 #19 <i>Alternative Assessment</i> 471 <i>MathWorks</i> 463 ATE: EL 458	SE: 152 Example 3 #5-#8, 153 #16-#19, 172-175, 178-181 ATE: CE 173, 179 EL 153, 163 <i>Enrichment Worksheet</i> 175 <i>Extra Practice Worksheet</i> 153	SE: 212-213, 214 #8-13, 215 #17, 218 #1-6, 385 #2
4. For simple probability models, determine the expected values of random variables.	SE: 433-439, 450-453, 456-459, 460-461 <i>MathWorks</i> 463 ATE: CE 457, 461 EL 436 TT 461	SE: 150-153, 158-161, 162-165, 168-171 ATE: CE 151 EL 153, 163 <i>Enrichment Worksheet</i> 165	SE: 384-385, 386 #1, 387 #12, 389 #7, 398 #6-8

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	COURSE 1	COURSE 2	COURSE 3
5. Know the effect of sample size on experimental and simulation probabilities.	SE: 440, 443 #30-#31 ATE: GS 440 TT 441, 460	SE: 150 ATE: TT 151 Sample size can be taught throughout pages 150-153 and 158-161.	SE: 384-385, 388
6. Use a variety of experimental, simulation and theoretical methods to calculate probabilities.	SE: 435, 436-439, 440-443 ATE: CE 441, 444L 461 EL 439 TS 440	SE: 150-153, 154-155, 158-161 ATE: CE 155 <i>Enrichment Worksheet 153</i> <i>Extra Practice Worksheet 153</i> <i>Reteaching Worksheet 152</i>	SE: 384-385, 386 #2, 387 #16, 388-389, 390 #9-16
V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT			
A. Spatial Sense			
<u>Standard:</u> Use models to represent and understand two- and three-dimensional shapes and how various motions affect them. Recognize the relationship between different representations of the same shape.			
The student will:			
1. Use models and visualization to understand and represent three-dimensional objects and their cross sections from different perspectives.	SE: 160 #6, 162 Example 3, #4-#7, 166-168, 169 #33, 172-173, 175 Example 2, 177 #30-#40 <i>Alternative Assessment 201 Connections</i> <i>Review and Practice Your Skills 172</i> ATE: CE 161 Supplementary Example 3, 167 EL 172	SE: 422-425, 426-429, 436-439, 442-445, 446-449 ATE: CE 423, 427, 437 EL 426 LS 432	SE: 220-221, 222 #6-8, 223 #19, 224-225, 226 #5-8, 230-231, 233 #14-16, 572-573, 578 #1-4, 624 #1

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	COURSE 1	COURSE 2	COURSE 3
B. Geometry <u>Standard:</u> Apply basic theorems of plane geometry, right triangle trigonometry, coordinate geometry and a variety of visualization tools to solve real-world and mathematical problems. The student will:			
1. Know and use theorems about triangles and parallel lines in elementary geometry to justify facts about various geometrical figures and solve real-world and mathematical problems. These theorems include criteria for two triangles to be congruent or similar and facts about parallel lines cut by a transversal.	SE: 160-161 Example 2, 354 #1-#4, #13-#22, 355 #28, #30 <i>Review and Practice Your Skills</i> 165 #48-#51 <i>Think Back</i> 184, 352 ATE: CE 161 Supplementary Example 2 EL 160	SE: 206-209, 212-214, 215 #28 ATE: CE 207, 213 EL 206, 214 LS 204, 212 LW 214	SE: 135-136, 146-147, 154-155, 157 #4-7, 160-161, 163 #12, 292-293, 310-311, 312 #7, 320-321, 326-327
2. Know and use theorems about circles to justify geometrical facts and solve real-world and mathematical problems. These theorems include the relationships involving tangent lines and radii, the relationship between inscribed and central angles and the relationship between the measure of a central angle and arc length.	SE: 80-83, 169 #34-#36, 366 Problem <i>Geometry Reference Guide</i> 552 ATE: CE 81, 161 EL 80, 83 LW 82	SE: 226-229, 232, 233 ATE: CE 227 EL 226, 227, 228 LW 228 <i>Enrichment Worksheet</i> 229 <i>Extra Practice Worksheet</i> 229 <i>Reteaching Worksheet</i> 228	SE: 440-442, 443 #9, 444 #17-22, 445 #12-15, 448-450, 451 #14, 452 #7-12, 455 #4, 459, 460 #9-17

OBJECTIVES	PAGE REFERENCES		
	COURSE 1	COURSE 2	COURSE 3
3. Know and use properties of two- and three-dimensional figures to solve real-world and mathematical problems such as: finding area, perimeter, volume and surface area; applying direct or indirect methods of measurement; the Pythagorean theorem and its converse; and properties of 45° - 45° - 90° and 30° - 60° - 90° triangles.	SE: 69 #40, 160-163, 334, 362-365, 366-367 <i>MathWorks</i> 165 ATE: EL 161 LW 162 <i>Enrichment Worksheet</i> 163 <i>Extra Practice Worksheet</i> 163 <i>Reteaching Worksheet</i> 162	SE: 426-429, 432-435, 456-459, 462-463 <i>Are You Ready?</i> 418-419 ATE: CE 427, 457 EL 426 LS 432 TT 457	SE: 178-179, 182-183, 188-191, 430-431, 433 #24, 436-438, 439 #15, 491 #40-42, 544-545, 667-669
4. Apply the basic concepts of right triangle trigonometry including sine, cosine and tangent to solve real-world and mathematical problems.	SE: 334-337 ATE: CE 335 EL 335	SE: 484-487, 488-491, 494-497, 498-501 ATE: 5MW 508 CE 485, 489, 499 LS 484 TT 488, 490	SE: 604-605, 606 #19, 607 #25, 609 #2, 610 #7, 611 #21, 612 #11, 613 #35, 617 #42, 625 #8
5. Use coordinate geometry to represent and examine geometric concepts such as the distance between two points, the midpoint of a line segment, the slope of a line and the slopes of parallel and perpendicular lines.	SE: 324-327, 328-331, 334-336 ATE: CE 325, 329, 335 EL 325, 329 LW 326 <i>Extra Practice Worksheet</i> 337	SE: 52-53, 248-251 <i>Review and Practice Your Skills</i> 252 ATE: CE 53, 249 TT 248 <i>Enrichment Worksheet</i> 251 <i>Extra Practice Worksheet</i> 55, 251 <i>Reteaching Worksheet</i> 250	SE: 114, 116 #6-9, 244-245, 246 #15-17, 247 #42, 248-249, 250 #14-16, 544-545, 546 #4-6, 547 #25
6. Use numeric, graphic and symbolic representations of transformations such as reflections, translations and change of scale in one, two and three dimensions to solve real-world and mathematical problems.	SE: 370-373, 374-377 ATE: CE 371, 375 EL 374 <i>Enrichment Worksheet</i> 373, 377 <i>Extra Practice Worksheet</i> 373, 377 <i>Reteaching Worksheet</i> 372, 376	SE: 296-299, 300-303, 306-309, 310-313, 316-319, 320-321 ATE: EL 297, 301, 307, 310	SE: 338-339, 340 #6-8, 341 #15, 342-343, 344 #8, 345 #14, 348-349, 350 #14, 351 #15, 352-354

OBJECTIVES	PAGE REFERENCES		
	COURSE 1	COURSE 2	COURSE 3
7. Perform basic constructions with a straightedge and compass.	SE: 80, 356-359 <i>MathWorks</i> 361 ATE: CE 357 EL 357 <i>Extra Practice Worksheet</i> 359 <i>Reteaching Worksheet</i> 358	SE: 206 #1, #5, 222 #1-#4, 224 #12-#14, 226 #1, 232-233 ATE: CE 227 EL 197 TT 196	SE: 118-119, 121 #7, 131 #21-26, 182, 202, 454-456, 457 #12
8. Draw accurate representations of planar figures using a variety of tools.	SE: 80, 356-359 <i>MathWorks</i> 361 <i>Review And Practice Your Skills</i> 165 #44-#47 ATE: CE 357 EL 357 LS 82 <i>Extra Practice Worksheet</i> 358 <i>Reteaching Worksheet</i> 358	SE: 197 Example 3, 222 #1-#4, 226 #1, 229 #27-#28, 232-233 <i>Alternative Assessment</i> 237 Technology, 327 Technology ATE: CE 227 EL 228	SE: 118-119, 121 #7, 131 #21-26, 182, 202, 454-456, 457 #12, 567 #4 <i>Technology Note</i> 575 ATE: TS 565
C. Measurement <u>Standard:</u> Use the interconnectedness of geometry, algebra and measurement to explore real-world and mathematical problems.	SE: 56, 59 #50-#54, 62-64, 66-69, 72-73, 74-77, 80-83, 84-87 <i>MathWorks</i> 61, 79	SE: 432-435, 452-455, 456-459, 462-463, 478-481 <i>Are You Ready?</i> 418-419 ATE: CE 479 LW 463 TT 419, 478	SE: 202-203, 205 #28, 209 #23, 299 #34, 303 #13, 327 #3, 351 #15, 406-407, 454-456, 521

Codes Used for ATE Codes

Course 1		Course 2		Course 3	
5MW	5-Minute Warm-up	5MW	5-Minute Warm-up	EL	Extend the Lesson
CE	Chalkboard Examples	CE	Chalkboard Examples	LS	Learning Styles
EL	Extending the Lesson	EL	Extending the Lesson	TS	Teaching Strategies
GS	Getting Started	GS	Getting Started		
I	Introduction	LS	Learning Styles		
IC	Interdisciplinary Connection	LW	Lesson Wrap-up		
LS	Learning Styles	TS	Teaching Strategies		
LW	Lesson Wrap-up	TT	Teaching Tip		
PE	Predictable Error				
TS	Teaching Strategies				
TT	Teaching Tip				