



CONNECTICUT
Mastery Test – 3rd Generation
Grade 8 Mathematics Content
Mathematics: Applications and Concepts
Courses 1 and 2 © 2004

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
Number Sense		
1. Place Value		
1a. Solve problems involving 0.1 and 0.01 more or less	SE: 21 #45-46, 108-110, 142 (e.g. 4) <i>Web Quest 97</i> <i>Spreadsheet Investigation</i> 165 TWE: A 110, 479 B 108	SE: 555, 561
1b. Identify alternative forms of expressing numbers using expanded notation	SE: 102-105, 127 #6-8, 129 #7-9, 202-203, 587 (e.g. 4) TWE: ICE 103 NS 123	SE: 555
1c. Identify alternative forms of expressing numbers using scientific notation	SE: 136-138, 171 #13 TWE: A 138 ICE 136	SE: 43-45, 48 TWE: B 43 PS 49
2. Pictorial Representations of Numbers		
2a. Relate fractions, decimals and percents to their pictorial representations and vice versa	SE: 202-205, 206-209, 400-403, 404-406, 422 #7 <i>Spreadsheet Investigation</i> 165 TWE: DI 410 ICE 203, 207 TNT 203	SE: 210, 216-217 TWE: A 219, 315 PS 235
2b. Construct pictorial representations of fractions, decimals and percents	SE: 215 #20, 396 #10 <i>Hands-On Lab</i> 407-408 <i>Spreadsheet Investigation</i> 165 TWE: A 189, 209, 231, 397 DI 203 TNT 220	TWE: A 219 TNT 211, 313
3. Equivalent Fractions, Decimals and Percents		
3a. Rename fractions and mixed numbers as equivalent decimals and vice versa	SE: 202-205, 206-209, 212, 213 #13-18, 214 #5, 215 #14-18 TWE: ICE 203 TNT 203	SE: 210-213, 214 #13-15 TWE: A 213 ICE 211

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
3b. Rename fractions and decimals as equivalent percents and vice versa	SE: 400-403, 404-406, 420, 421 #10-18 TWE: DI 401, 404 ICE 401, 405	SE: 216-219, 220-223, 228, 312-315 TWE: A 223 B 220 DI 221 ICE 221, 313
4. Order, Magnitude and Rounding of Numbers		
4a. Order whole numbers and decimals	SE: 108-110, 114 #14, 127 #10-13, 129 #13-14 TWE: A 110 DI 108	SE: 556 <i>Web Quest 3</i> TWE: DI 228
4b. Order fractions and mixed numbers	SE: 198-201, 205 #37-40, 212 TWE: DI 199 ICE 199 <i>Practice Skills 242</i> <i>Study Guide & Intervention 241</i> <i>Practice: Word Problems 243</i>	SE: 227-231 <i>Web Quest 3, 193</i> TWE: A 231 DI 228
4c. Describe the magnitude of whole numbers and decimals	SE: 105 #42-44, 108-110, 119 #38, 281 #9, 342 #35, 586, 588 TWE: A 110 B 108	SE: 111 #29, 205 #30-31, 237 #18-19, 295 #27-28, 367 #8, 380 #16, 509 #20 <i>Web Quest 3</i> TWE: DI 139 ICE 228
4d. Describe the magnitude of fractions and mixed numbers	SE: 200 #3, 221 #31-35, 288 #5 <i>Hands-On Mini-Lab 219</i> TWE: B 223 DI 220	SE: <i>Web Quest 193</i> TWE: ICE 228
4e. Round whole numbers, fractions and decimals in a context	SE: 111-113, 129 #15-18, 130 #7, 219-222, 253 #12, 251 #4-7 TWE: DI 112 ICE 220	SE: 8 (e.g. 2), 231 #44-45, 240-243, 273 #26-27, 367 #12, 557-558
4f. Locate points on number lines and scales, including fractions, decimals and integers	SE: 108, 130 #5, 186, 197 #38-43, 294-298 TWE: A 307 B 111 ICE 295 TNT 220	SE: 25, 106-107, 109-110, 112-115, 131 #46-48, 146 #10, 240, 269 #33 <i>Problem-Solving Strategy 302-303</i> TWE: A 111 BBS 104 C DI 106 ICE 113 PC 104 F

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
Operations		
5. Models for Operations		
5a. Identify the appropriate operation or number sentence to solve a story problem	SE: 26 #34-35, 27 #36-37, 31 #49-51, 94 #2, 339 <i>Practice: Word Problems 28</i>	SE: 25 (e.g. 3), 49 #25, 141 #38, 150-152 <i>Study Skill 153</i> TWE: A 17 DI 15
5b. Write story problems from equations involving fractions, decimals and unknowns	SE: 303 #40, 341 #2, 347 #37, #41, 351 #2 <i>Problem-Solving Strategy 358-359</i> TWE: A 359 DI 345	SE: 141 #38, 150-152, 231 #54-56 TWE: A 153 DI 129
6. Basic Facts Not tested at Grade 8		
7. Computation with Whole #s and Decimals		
7a. Add and subtract 2-, 3- and 4- digit whole numbers and decimals	SE: 7 (e.g. 1), 123 #32, 124 #36-39, 131 #17, 171 #12 <i>Web Quest 3, 97</i> TWE: A 9 ICE 122	SE: 147 #11, 169 #38, 559 <i>Web Quest 3, 103</i> <i>Problem-Solving Strategy 132</i>
7b. Multiply and divide whole numbers and decimals by 10, 100 and 1000	SE: 135-138, 141-143, 144-147, 152-155, 169 <i>Hands-On Lab 134, 139-140, 150-151</i> <i>Study Tip 405</i> <i>Web Quest 97</i> TWE: B 135, 152	SE: 38-41, 560-561 <i>Web Quest 3, 103</i> TWE: DI 39 ICE 39
7c. Multiply and divide 2- and 3-digit whole numbers, money amounts and decimals by 1-digit numbers and decimals	SE: 135-138, 141-143, 144-147 <i>Hands-On Lab 134, 139-140, 150-151</i> <i>Web Quest 97</i> TWE: ICE 136, 142, 145	SE: 7 (e.g. 1), 147 #11, 162 #28, 560-562 <i>Problem-Solving Strategy 132-133</i> <i>Web Quest 3, 103</i>
8. Computation with Fractions		
8a. Add and subtract fractions and mixed numbers with reasonable and appropriate denominators	SE: 228-231, 235-238, 240-243, 244-247, 249, 250, 251, 253 #15-16 <i>Hands-On Lab 234</i> TWE: A 238 DI 241 ICE 236, 241	SE: 244-247, 248-251, 278-279, 281, 282 #5, 283 #12 <i>Web Quest 193</i> TWE: A 251 ICE 245, 249
8b. Multiply whole numbers and fractions by fractions and mixed numbers	SE: 261-264, 265-267, 268, 285, 287, 288 #7 <i>Hands-On Lab 259-260</i> TWE: ICE 262, 266	SE: 254-257, 264-266, 279, 281, 283 #14 <i>Web Quest 193</i> TWE: DI 265 ICE 255 PC 332 F

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
9. Solve Word Problems		
9a. Solve 1-step problems involving whole numbers, decimals and money amounts	SE: 7, 8, 77 #6-8, 95 #12, 142 (e.g. 4) <i>Problem-Solving Strategy</i> 32-33, 156-157, 192-193 <i>Spreadsheet Investigation</i> 165 TWE: A 9 DI 76	SE: 26 #40, 27 #41, 32 #29, 162 #28, 213 #48 TWE: DI 25
9b. Solve 1-step problems involving fractions and mixed numbers	SE: 220 (e.g. 3), 224 (e.g. 5), 229 (e.g. 3), 236 (e.g. 3), 241 (e.g. 3), 245 (e.g. 4), 253 #16 TWE: ICE 229, 236, 241	SE: 246 #14, 249 (e.g. 3), 256 #3, 261 #39, 262 #15, 281 #25 TWE: A 175
9c. Solve multi-step problems involving whole numbers, decimals, fractions and mixed numbers, including averaging	SE: 8 #4, 9 #12, 68 #14-18, 138 #42, 171 #12, 204 #30, 225 #22, 253 #17 <i>Web Quest</i> 97 <i>Data Update</i> 279 TWE: A 9 DI 262	SE: 9 #10, 41 #39-40, 93 #3-6, 124 #58, 141 #37, 147 #16-17, 253 #6, 295 #27-28, 356 #25 <i>Hands-On Lab</i> 73
9d. Solve multi-step problems involving whole numbers, decimals, fractions and mixed numbers with extraneous information	SE: <i>Web Quest</i> 3, 97, 173, 291, 461	SE: 6 <i>Problem-Solving Strategy</i> 164-165 <i>Study Skill</i> 153 TWE: A 153 DI 293
9e. Solve multi-step problems and explain how the solution was determined	SE: 75 #34, 124 #38-39, 131 #17, 253 #17 <i>Problem-Solving Strategy</i> 32-33, 156-157, 192-193 TWE: B 121, 276 DI 156	SE: 17 #51-52, 167 (e.g. 4), 219 #54, 247 #40-41, 367 #17 <i>Problem-Solving Strategy</i> 132-133, 164-165 TWE: DI 164 PC 148 F
Estimation and Approximation		
10. Numerical Estimation Strategies		
10a. Identify the best expression to find an estimate	SE: 116-119, 130 #8, 256, 477 (e.g. 5), 592-593 <i>Problem-Solving Strategy</i> 125-126, 156-157 TWE: A 119, 157 DI 125 ICE 117	SE: 240-243, 295 #33, 334, 558 <i>Hands-On Lab</i> 301 TWE: DI 241, 335

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
10b. Identify whether and why a particular strategy will result in an overestimate or an underestimate	SE: 119 #38 <i>Problem-Solving Strategy</i> 125-126 TWE: A 222, 258 B 223 NS 221	SE: 295 #33 <i>Hands-On Lab</i> 301 <i>Problem-Solving Strategy</i> 22-23, 338-339 TWE: DI 338 NS 336
10c. Determine a reasonable estimate and describe the strategy used to make the estimate	SE: 6-7, 116-119 <i>Data Update</i> 441 <i>Problem-Solving Strategy</i> 125-126, 156-157 TWE: A 119, 157 DI 142	SE: 21 #43, 240-243, 295 #33, 334-337 <i>Hands-On Lab</i> 301 <i>Problem-Solving Strategy</i> 338-339 TWE: DI 335
11. Estimating Solutions to Problems		
11a. Estimate a reasonable answer to a problem	SE: 6-7, 116-119, 122 (e.g. 5), 416 (e.g. 3), 477 (e.g. 5) <i>Problem-Solving Strategy</i> 125-126, 156-157 <i>Data Update</i> 441 TWE: A 157 B 223 DI 142	SE: 21 #43, 240-243, 295 #33, 334-337, 551 #20, 558 <i>Hands-On Lab</i> 301 <i>Problem-Solving Strategy</i> 22-23, 338-339 TWE: DI 335
11b. Use estimation to make and defend decisions	SE: 119 #38, 417 #20, 477 (e.g. 5) <i>Problem-Solving Strategy</i> 125-126 <i>Data Update</i> 441 TWE: A 119 DI 142	SE: 242 #2, 295 #23, 308 #23 <i>Hands-On Lab</i> 301 TWE: TNT 335
Ratio, Proportion and Percent		
12. Ratios and Proportions		
12a. Solve problems involving ratios	SE: 380-383, 418, 422 #5 <i>Hands-On Lab</i> 384-385 <i>Practice: Word Problems</i> 493	SE: 237 #19, 286, 288-291, 330 #5 <i>Hands-On Lab</i> 274, 296 TWE: A 291 DI 289 PS 329
12b. Solve problems involving proportions	SE: 386-389, 391-393, 419, 422 #6, 423 #21 <i>Spreadsheet Investigation</i> 391 <i>Practice: Word Problems</i> 418	SE: 297-300, 304-308, 323- 325 <i>Hands-On Lab</i> 301 <i>Spreadsheet Investigation</i> 309 <i>The Game Zone</i> 311 TWE: A 443 B 323 DI 298, 320 PS 329

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
13. Computation with Percents		
13a. Find percents of whole numbers or the percent a given number is of another number	SE: 409-412, 420, 421 #9, 423 #20, 459 #13, 502 #7 <i>Hands-On Lab</i> 407-408 <i>Problem-Solving Strategy</i> 413-414 TWE: S 412 B 409 DI 413 ICE 410	SE: 319-321, 323-325, 328, 331 #18, 340-343 <i>Hands-On Lab</i> 322 TWE: A 319
13b. Solve problems involving percents	SE: 403 #34, 410 (e.g. 3), 412 #34-37, 416 (e.g. 4), 423 #20, 459 #13 <i>Problem-Solving Strategy</i> 413-414 TWE: B 404, 415 DI 415	SE: 315 #38-39, 316-318, 323-325, 328, 331 #18, 340-343, 350-353, 354-357 TWE: A 318 B 319
Measurement		
14. Time	Not tested at Grade 8	
15. Approximating Measures		
15. Estimate lengths, areas and angle measures	SE: 41 #16-18, 225 #20, 257 (e.g. 4), 462, 472 #31-32, 477 (e.g. 5), 487 #27, 497 #28, 510-512, 558 #1 <i>Problem-Solving Strategy</i> 488 #3 TWE: DI 507 ICE 257, 511	SE: 283 #16, 413-415, 477 #32, 509 #16, #20, 551 #20 <i>Hands-On Lab</i> 412 TWE: DI 241
16. Customary and Metric Measures		
16a. Solve problems involving the conversion of units of measure, including time	SE: 227 #11, 279 #42-43, 465-468, 470-473, 476-479, 490-493, 494-497, 499, 500, 501 TWE: A 468, 473 B 494 DI 494 TNT 471	SE: 41, 139 (e.g. 4), 140 #34, 169 #40-41, 260 #14, #35
16b. Measure/determine perimeter, area and volume	SE: 17 #53, 39-41, 47 #24, 53 #21, 158-160, 171 #16, 243 #34-35, 351 (e.g. 3), 570-573 <i>Hands-On Lab</i> 464, 469 TWE: A 160 B 158 DI 140, 158 ICE 40	SE: 16 #41, 270-273, 483-485, 489-492, 493-495, 520-522, 524-527 <i>Hands-On Lab</i> 488 <i>Hands-On Mini Lab</i> 18, 489 TWE: A 273 PS 281

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
16c. Identify appropriate customary or metric units of measure (length, capacity, mass) for a given situation	SE: 465-468, 470-473, 476-479, 484-487, 499 <i>Web Quest</i> 461 <i>Hands-On Lab</i> 474-475 TWE: DI 471 ICE 477, 485 PC 462f	SE: 38-41, 48, 267-269, 280 TWE: DI 267
Spatial Relationships and Geometry		
17. Geometric Shapes and Properties		
17a. Identify and draw geometric shapes and figures	SE: 159 #1, 163 #1-2, 329 #17, 504, 522-525, 539 (e.g. 4) <i>Hands-On Lab</i> 384-385, 526-527 TWE: DI 321 NS 159	SE: 9 #9, 434-437 <i>Hands-On Lab</i> 432-433 <i>Hands-On Mini Lab</i> 428 <i>Study Skill</i> 474 <i>Web Quest</i> 409 TWE: A 415
17b. Describe and classify geometric shapes and figures	SE: 504, 522-525 <i>Hands-On Lab</i> 526-527 TWE: PC 544F PS 169	SE: 428-431, 434-437, 446-450 <i>Study Skill</i> 474 <i>Web Quest</i> 409 TWE: A 415 ICE 447
18. Spatial Relationships		
18a. Identify or draw geometric transformations	SE: <i>Hands-On Lab</i> 384-385, 532-533, 537	SE: 446-450, 451-454, 456-459, 467 #18, 473 #48-49 <i>Hands-On Lab</i> 460-461 <i>Spreadsheet Investigation</i> 455 <i>Web Quest</i> 409 TWE: DI 447, 451
18b. Identify, draw and describe lines of symmetry	SE: 528-531, 540 #24-27 TWE: A 531 DI 529 ICE 529 TNT 528	SE: 456-459, 465 #15 <i>Hands-On Lab</i> 461 <i>Web Quest</i> 409 TWE: B 456 ICE 457
18c. Relate 2-dimensional and 3-dimensional representations	SE: 544, 576 <i>Extending the Lesson</i> 578 <i>Hands-On Lab</i> 567, 574 <i>Hands-On Mini-Lab</i> 575	SE: 532 (e.g. 1), 538 <i>Hands-On Lab</i> 512-513, 530-531 <i>Hands-On Mini Lab</i> 520 <i>Problem-Solving Strategy</i> 518 <i>Web Quest</i> 409 TWE: PS 549
18d. Identify and describe congruent and similar figures	SE: 505 #5-6, 534-536, 540, 541 #14-15, 542 #8, 549 #30-32, 551 <i>Hands-On Lab</i> 384-385	SE: 429, 434-437, 440-443, 466 #7 <i>Problem-Solving Strategy</i> 444-445 <i>Web Quest</i> 409 TWE: DI 441 TNT 440

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
18e. Locate and draw points on grids	SE: 320-323, 326, 328 #10, 329 #20, 375 #16, 611 TWE: DI 321 ICE 321, 322 PS 327	SE: 112-115, 137 #46-48, 147 #20, 178 (e.g. 2), 190 #9, 191 #20, 473 #40-44 <i>Hands-On Lab</i> 176 <i>Spreadsheet Investigation</i> 455 <i>The Game Zone</i> 117 TWE: DI 113 ICE 113
Probability and Statistics		
19. Tables, Graphs and Charts		
19a. Identify correct information from graphs, tables and charts	SE: 13 #38-39, 33 #11, 50-53, 123 #31, 201 #29, 307 #32, 375 #13 <i>Problem-Solving Strategy</i> 54-55, 448-449 TWE: A 53 ICE 51, 55	SE: 13 #65, 49 #20, 51 #11, 54-57, 64-67, 70 (e.g. 3), 74 #11, 111 #29-30, 169 #40-42 <i>Hands-On Lab</i> 344 <i>Problem-Solving Strategy</i> 58-59 <i>Web Quest</i> 3, 103, 193
19b. Create bar graphs, line graphs, and stem and leaf plots from data in tables and charts	SE: 56-59, 72-75 <i>Spreadsheet Investigation</i> 60-61 TWE: A 59 B 56 DI 57 ICE 58, 73	SE: 54-55 (e.g. 1 & 2), 64 (e.g. 1), 76-79, 85-89, 101 #16 <i>Spreadsheet Investigation</i> 90-91 <i>Web Quest</i> 3, 103 TWE: A 79
20. Statistics and Data Analysis		
20a. Draw and justify reasonable conclusions from graphs, tables and charts	SE: 66-69, 86-89, 95 #14 <i>Problem-Solving Strategy</i> 54-55, 192-193, 448-449 TWE: DI 68, 87 ICE 88	SE: 55-57, 60-63, 65 (e.g. 2 & 3), 123 #43-45, 345-347 <i>Problem-Solving Strategy</i> 22-23, 58-59, 338-339 <i>Web Quest</i> 3, 103, 193
20b. Solve problems involving means and medians of sets of data	SE: 76-78, 80-83, 92, 95 #13, 105 #51, 131 #13 <i>Spreadsheet Investigation</i> 79 <i>Hands-On Lab</i> 156 TWE: DI 76 ICE 77, 81	SE: 69-72, 94 #9-11, 95 #19, 100 #6, 141 #36 <i>Hands-On Lab</i> 73 <i>The Game Zone</i> 75

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
21. Probability		
21a. Solve problems involving elementary notions of probability and fairness, including justifying answers	SE: 428-431, 450-453, 458 #8, 459 #15 <i>Hands-On Lab</i> 426-427, 432, 437 TWE: B 428 ICE 429, 451	SE: 370-373, 374-377, 403, 407 #16-17 <i>Hands-On Lab</i> 201 <i>Problem-Solving Strategy</i> 391-392 <i>The Game Zone</i> 385 <i>Web Quest</i> 285 TWE: B 370 DI 375 ICE 375 PC 385 F PS 405
21b. Solve problems involving expected outcomes or predictions	SE: 428-431, 433-436, 438-441, 459 #17, 468 #42-43 <i>Hands-On Lab</i> 432 TWE: A 436, 441 B 438 ICE 429, 439	SE: 371 (e.g. 2), 375-376, 380 #9-16, 403, 406 #6, 407 #18 <i>Hands-On Lab</i> 501 <i>Web Quest</i> 285 TWE: A 376 PS 405
Patterns		
22. Patterns		
22. Extend or complete patterns involving numbers and attributes, and identify or state rules for given patterns	SE: 8 #3, 171 #9, 209 #43, 282-284, 453 #19 <i>Problem-Solving Strategy</i> 157 #6, 280-281 <i>Hands-On Lab</i> 360-361 <i>Web Quest</i> 291 TWE: A 294 B 66, 194 DI 11 TNT 434	SE: 8 (e.g. 2), 34-36, 100 #4, 147 #12, 291 #38-39, 459 #18 <i>Hands-On Lab</i> 37, 196 <i>Problem-Solving Strategy</i> 132-133 <i>Spreadsheet Investigation</i> 523
Algebra and Functions		
23. Algebraic Concepts		
23a. Solve simple 1-step equations	SE: 34-37, 339-342, 344-347, 350-353	SE: 18-21, 24-27, 101 #9, 156-159, 160-163, 187, 258-261, 279 #38-39, 281 #17-19 TWE: B 24, 160 DI 19, 275 ICE 178, 259 PS 49
23b. Use order of operations	SE: 24-27, 28-31, 44 #32-37, 46 #8-9, 252 #2 TWE: A 27 DI 25 ICE 25	SE: 14-17, 18-19, 47 #25-30, 140 #25-32 TWE: A 17 DI 151 ICE 15

Content Standards and Strands	PAGE REFERENCES	
	Course 1	Course 2
23c. Evaluate expressions and use formulas	SE: 28-31, 37 #45, 39-41, 44 #38-46, 45 #19-21, 122 (e.g. 5), 236 (e.g. 4), 263 #11, 307 #30, 318 #24-25	SE: 18-21, 28 #18, 45 #44, 107 (e.g. 3), 129 (e.g. 5), 139 (e.g. 4), 161 (e.g. 3), 261 #36
23d. Represent situations with algebraic expressions	SE: 31 #49-51, 170 #2 TWE: DI 29	SE: 20 #39, 21 #44-46, 25 (e.g. 3), 27 #42, 33 #49, 51 #14, 150-152, 159 #42, 186, 190 #8, 191 #19 <i>Study Skill</i> 153 TWE: DI 150 PC 148 F
Discrete Mathematics		
24. Classification and Logical Reasoning		
24. Solve problems involving the organization of data	SE: 53 #14-15, 56-59, 62-65, 72-75, 86-89, 433-436, 442 #7 <i>Problem-Solving Strategy</i> 54-55, 448-449 TWE: A 53 B 50, 72 DI 51, 57	SE: 374-377, 378-380, 381-383 <i>Problem-Solving Strategy</i> 58-59, 201-202 TWE: B 374 ICE 375
Integrated Understandings		
25. Mathematical Applications		
25. Solve extended numerical, spatial and statistical problems	SE: 74 #21-23, 86-89, 282-284, 433-434 <i>Extending the Lesson</i> 37, 53, 185, 369, 509, 544, 566 TWE: B 534 DI 87, 158, 433	SE: 13 #62, 63 #14, 79 #23, 89 #18-19, 180 #32-33, 185 #27-30, 450 #31, 541 #21 <i>Hands-On Lab</i> 37, 432-433, 512-513 <i>Problem-Solving Strategy</i> 22-23, 58-59, 164-165, 444-445

Codes Used for TWE Pages

Course 1

A	Assess
B	Bellringer
DI	Daily Intervention
ICE	In-Class Examples
NS	Number Sense
PC	Project Criss
PS	Portfolio Suggestion
TNT	Tips for New Teachers

Course 2

A	Assess
B	Bellringer
BBS	Bulletin Board Starters
DI	Daily Intervention
ICE	In-Class Examples
NS	Number Sense
PC	Project Criss
PS	Portfolio Suggestion
TNT	Tips for New Teachers