



CONNECTICUT
Second Generation CAPT Mathematics
Content Specifications
***Mathematics: Applications and Concepts Courses 2 and 3* © 2004**

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
<p>All CAPT mathematics items will be in a context and require students to solve a problem. In addition, all open-ended CAPT items will require students to show their work and explain their reasoning, thereby communicating their understanding of the relevant mathematics. All CAPT items will be devised to measure one or more of the following aspects of mathematical content:</p>		
The Number and Quantity Strand		
1. Number Sense		
<ul style="list-style-type: none"> Use integers, fractions, decimals, percents and scientific notation in real-world situations to count, measure, compare, order, scale, locate and label. 	SE: 10-13, 43-45, 216-219, 220-223, 312-315 TWE: DI 11, 313 I-CE 44 A 219 <i>Practice: Word Problems 43</i>	SE: 17-21, 23-27, 28-31, 62-66, 67-70, 104-107, 210-214 <i>The Game Zone 33, 225</i>
<ul style="list-style-type: none"> Use a variety of representations (including graphs, tables, words, number lines, pictures, etc.) to present, interpret and communicate various kinds of numerical information. 	SE: 87 Ex. 4, 150-152 <i>Hands-on Lab 37</i> <i>Problem-Solving Strategy 58-59</i> <i>Study Skill 153</i> TWE: A 36 B 150 <i>Study Guide and Intervention 185</i> <i>Practice: Skills 186</i> <i>Practice: Word Problems 187</i>	SE: 420-424, 426-429, 430-433, 446-449 <i>Hands-on Lab 22, 468, 569</i> <i>Problem-Solving Strategy 418-419</i> <i>Prerequisite Skills 602-603</i>

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	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Demonstrate an understanding of order, magnitude and equivalent forms of numbers. 	SE: 109-111, 210-213, 216-219, 220-223, 227-231, 312-315 <i>Study Guide and Review 234 #64-69</i> TWE: I-CE 110 A 111, 223, 315 DI 228	SE: 17-21, 67-70, 104-107, 210-214 <i>The Game Zone 225</i> TWE: A 21, 214 <i>Practice: Word Problems 13, 252</i> <i>Practice: Skills 73</i>
2. Operations		
<ul style="list-style-type: none"> Identify appropriate operations (including addition, subtraction, multiplication, division, exponentiation and square roots) and use these operations in a variety of contexts. 	SE: 43-45, 120-124, 128-131, 134-137, 138-141, 244-247, 248-251, 254-257, 264-266, 470-473 <i>The Game Zone 263</i>	SE: 23-27, 28-30, 24-28, 45-49, 50-53, 92-95, 98-101, 116-119 TWE: A 119
<ul style="list-style-type: none"> Select and use appropriate methods for computing (including mental mathematics, paper-and-pencil and calculator methods). 	SE: 14-17, 18-21 <i>Study Tip 11, 44, 198, 211, 221</i> <i>Problem-Solving Strategy 22-23</i>	SE: 6-10, 23-27, 220-228 <i>Study Tip 25, 73, 78, 407</i> <i>Graphing Calculator Investigation 404-405</i> TWE: B 23 <i>Practice: Skills 2</i>
3. Estimation and Approximation		
<ul style="list-style-type: none"> Select and use estimation strategies in problem situations. 	SE: 240-243, 334-337 <i>Prerequisite Skills 558</i> TWE: DI 335 I-CE 336 A 337 <i>Practice: Word Problems 305, 337, 477</i>	SE: 120-122, 228-231 <i>The Game Zone 131</i> <i>Prerequisite Skills 600-601</i> TWE: A 231 <i>Practice: Word Problems 3, 140, 267</i>
<ul style="list-style-type: none"> Assess the reasonableness of answers to problems. 	SE: 92-95, 240-243, 334-337 <i>Problem-Solving Strategy 338-339</i> TWE: DI 92, 241, 338 A 339 <i>Practice: Word Problems 243, 437</i>	SE: 6-10 <i>Study Tip 7</i> <i>Problem-Solving Strategy 226-227</i> TWE: I-CE 226 A 227

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	COURSE 2	COURSE 3
4. Ratios, Proportions and Percents		
<ul style="list-style-type: none"> Use ratios, proportions and percents to solve problems. 	SE: 316-318, 319-321, 323-325 TWE: B 316 A 318 DI 320 <i>Study Guide and Intervention</i> 410 <i>Practice: Skills</i> 411 <i>Practice: Word Problems</i> 412	SE: 156-159, 170-173, 178-182, 184-187, 188-191, 194-197, 206-209, 216-219 <i>The Game Zone</i> 175 TWE: A 173
<ul style="list-style-type: none"> Use dimensional analysis to determine equivalent rates (for example, converting inches-per-minute to feet-per-hour). 	SE: 177-181, 292-295 <i>Hands-on Lab</i> 176 TWE: B 177, 292 A 181 <i>Practice: Skills</i> 211 <i>Practice: Word Problems</i> 212	SE: 156-159, 160-164 <i>Spreadsheet Investigation</i> 165
<ul style="list-style-type: none"> Use direct and inverse variation to solve numerical, geometric and algebraic problems. 	SE: 24-27, 156-159, 160-163, 166-169, 177-181, 470-473 <i>Hands-on Lab</i> 154, 176 <i>Problem-Solving Strategy</i> 164-165	SE: 45-49, 50-53, 92-95 <i>Problem-Solving Strategy</i> 43-44 TWE: B 50 A 53 <i>Study Guide and Intervention</i> 36, 41 <i>Practice: Skills</i> 37 <i>Practice: Word Problems</i> 49
The Measurement and Geometry Strand		
5. Measurement		
<ul style="list-style-type: none"> Use the concepts of length, perimeter, area, volume, angle measure, capacity, weight and mass to solve problems, using both metric and customary units. 	SE: 38-41, 267-269, 270-273, 520-522, 524-527 TWE: DI 39 I-CE 268, 271 <i>Practice: Word Problems</i> 335, 340	SE: 256-260, 262-265, 314-318, 319-323, 326-329, 335-339, 342-345 <i>The Game Zone</i> 341 <i>Spreadsheet Investigation</i> 356-357 <i>Prerequisite Skills</i> 606-607

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	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Identify appropriate metric and customary measurement units and use appropriate measurement tools (including rulers and protractors). 	SE: 38-41, 267-269, 273 #26-29, 542-545 TWE: DI 271 A 273, 545 <i>Practice: Word Problems 335</i> <i>Study Guide and Intervention 694</i> <i>Practice: Skills 695</i>	SE: <i>Hands-on Lab 261, 266, 271, 283</i> <i>Hands-on Mni-Lab 300, 319</i> <i>Prerequisite Skills 604-605, 606-607</i>
<ul style="list-style-type: none"> Estimate, make and use measurements in realistic situations. 	SE: 490 Ex. 3, 498-500, 542-545 TWE: I-CE 490 #3 A 500 <i>Practice: Word Problems 636, 641, 696</i>	SE: 258 Example, 264 #16-24 TWE: I-CE 258 #4, 268 #2 <i>Practice: Word Problems 309, 314, 319, 324, 329</i>
<ul style="list-style-type: none"> Use formulas and scales to determine measures. 	SE: 304-308, 479-482 <i>Spreadsheet Investigation 309</i> <i>Study Guide and Intervention 390</i> <i>Practice: Skills 391, 620</i> <i>Practice: Word Problems 392, 621</i>	SE: 178-182, 184-187, 188-191, 314-318, 319-323, 326-329, 335-339, 342-345, 347-351, 352-355
6. Spatial Relationships and Geometry		
<ul style="list-style-type: none"> Interpret, describe and draw two- and three-dimensional objects. 	SE: 434-437, 446-450, 514-517 <i>Hands-on Lab 512-513</i> TWE: A 513, 517 TT 514 I-CE 515 DI 515 <i>Study Guide and Intervention 669</i> <i>Practice: Skills 670</i> <i>Practice: Word Problems 671</i>	SE: 262-265, 272-275, 331-334 <i>Hands-on Lab 330, 346</i> TWE: DI 263, 273, 331 A 265 B 272
<ul style="list-style-type: none"> Use the concepts of rotation, reflection and translation to transform geometric figures. 	SE: 446-450, 451-454, 456-459 <i>Spreadsheet Investigation 455</i> <i>Hands-on Lab 460-461</i> TWE: DI 451, 456 A 454, 461 <i>Practice: Word Problems 585</i>	SE: 290-294, 296-299, 300-303 TWE: B 290 I-CE 291, 297 A 299, 303 <i>Practice: Word Problems 339, 349</i>

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	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Describe and use fundamental concepts and properties of, and relationships among, points, lines, planes, angles and shapes (including incidence, parallelism, perpendicularity and the Pythagorean Theorem). 	SE: 413-415, 422-425, 434-437, 478-482 <i>Hands-on Lab</i> 412, 416-417, 426-427, 478	SE: 132-136, 137-140, 256-260, 267-270 <i>Hands-on Lab</i> 261, 266, 271, 278 TWE: B 132 <i>Practice: Word Problems</i> 150
<ul style="list-style-type: none"> Use the concepts of congruence and similarity to solve realistic problems. 	SE: 422-425, 440-443 <i>Spreadsheet Investigation</i> 309 TWE: B 440 TNT 440 DI 441 A 443 <i>Practice: Word Problems</i> 555, 560, 570	SE: 178-182, 184-187, 188-191 TWE: I-CE 185, 189 DI 185, 189 <i>Practice: Word Problems</i> 207, 212, 217
<ul style="list-style-type: none"> Use coordinate representations of geometric figures. 	SE: 450 #42-45, 451-454, 456-459 <i>Hands-on Lab</i> 460-461 TWE: DI 451, 456 <i>Study Guide and Intervention</i> 573 <i>Practice: Skills</i> 574 <i>Practice: Word Problems</i> 575, 585	SE: 194-197, 290-294, 296-299, 300-303 TWE: I-CE 195, 297 DI 195 <i>Practice: Skills</i> 338, 348 <i>Study Guide and Intervention</i> 347
<ul style="list-style-type: none"> Solve problems using geometric models. 	SE: 479-482, 498-500, 501-503 <i>Hands-on Lab</i> 512-513, 530-531 <i>Problem-Solving Strategy</i> 518-519 <i>Spreadsheet Investigation</i> 523	SE: 137-140, 188-191 <i>Hands-on Lab</i> 192-193, 304-305 <i>Study Guide and Intervention</i> 153, 215 <i>Practice: Skills</i> 154, 216 <i>Practice: Word Problems</i> 155, 217
The Statistics, Probability and Discrete Mathematics Strand		
7. Probability and Statistics		
<ul style="list-style-type: none"> Demonstrate an understanding of sampling and its role in statistical assertions. 	SE: 345-347 <i>Hands-on Lab</i> 301, 344 TWE: B 345 A 347 <i>Practice: Word Problems</i> 447	SE: 374-377, 396-399, 400-403, 406-409 <i>The Game Zone</i> 395 TWE: B 374 I-CE 375 A 399, 403, 409

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Describe, calculate and apply the concepts of mean, median, mode and range. 	SE: 69-72 <i>Hands-on Lab 73</i> <i>The Game Zone 75</i> TWE: DI 69 I-CE 70 A 72 <i>Study Guide and Intervention 82</i> <i>Practice: Skills 83</i> <i>Practice: Word Problems 84</i>	SE: 435-438, 442-445 <i>Spreadsheet Investigation 439</i> <i>The Game Zone 441</i> TWE: B 435 DI 436, 443 A 437 I-CE 443 <i>Reading to Learn Mathematics 519</i>
<ul style="list-style-type: none"> Construct, read and interpret tables, charts and graphs of real-world data. 	SE: 64-68, 76-79, 80-83, 85-89, 92-95 <i>Hands-on Lab 73</i> <i>Graphing Calculator Investigation 84</i> <i>Spreadsheet Investigation 90-91</i> TWE: A 79, 82	SE: 420-424, 426-429, 430-433, 446-449, 450-453 <i>Graphing Calculator Investigation 425</i> TWE: B 426 I-CE 447-448 <i>Practice: Word Problems 503, 508</i>
<ul style="list-style-type: none"> Make and evaluate inferences from tables, charts, graphs and other representations of data. 	SE: 60-63, 92-95, 345-347 TWE: B 60, 92, 345 A 63, 95 <i>Study Guide and Intervention 445</i> <i>Practice: Skills 446</i> <i>Practice: Word Problems 447</i>	SE: 420-424, 426-429, 430-433, 446-449, 450-453, 454-457 <i>Graphing Calculator Investigation 425</i> <i>Hands-on Lab 434</i> <i>Practice: Skills 532</i> <i>Practice: Word Problems 533</i>
<ul style="list-style-type: none"> Use probability to make predictions and evaluate the likelihood of simple and compound events. 	SE: 370-373, 393-396, 398-401 <i>Hands-on Lab 397</i> TWE: DI 399 A 401 <i>Study Guide and Intervention 515</i> <i>Practice: Skills 516</i> <i>Practice: Word Problems 517</i>	SE: 374-377, 396-399, 400-403 TWE: I-CE 375, 397 B 396 <i>Practice: Word Problems 447, 467</i> <i>Study Guide and Intervention 465</i> <i>Practice: Skills 466</i>

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	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Use simulations to determine experimental probabilities. 	SE: 370-373, 393-396, 398-401 <i>Hands-on Lab</i> 397 TWE: DI 399 A 401 <i>Study Guide and Intervention</i> 515 <i>Practice: Skills</i> 516 <i>Practice: Word Problems</i> 517	SE: 374-377, 380-383, 396-399, 400-403 <i>The Game Zone</i> 395 <i>Graphing Calculator Investigation</i> 404-405 TWE: B 374 TNT 375 A 377 <i>Practice: Skills</i> 446
<ul style="list-style-type: none"> Compare experimental and theoretical probabilities and make predictions based on these probabilities. 	SE: 393-396, 398-401 <i>Hands-on Lab</i> 397 TWE: B 393 DI 394 A 395, 397 <i>Study Guide and Intervention</i> 510 <i>Practice: Skills</i> 511 <i>Practice: Word Problems</i> 512	SE: 400-403 <i>Graphing Calculator Investigation</i> 404-405 TWE: DI 400 I-CE 401 A 403 <i>Study Guide and Review</i> 412 #42-45 <i>Study Guide and Intervention</i> 470 <i>Practice: Skills</i> 471 <i>Practice: Word Problems</i> 472
10. Discrete Mathematics*		
<ul style="list-style-type: none"> Use systematic listing and counting strategies, including simple combinations and permutations, to solve problems. 	SE: 374-377, 378-380, 381-383, 387-390 TWE: B 374, 381 I-CE 375, 379 A 390	SE: 380-383, 384-387, 388-391 <i>Hands-on Lab</i> 392-393 TWE: I-CE 381, 389 DI 385 A 387, 391 <i>Practice: Word Problems</i> 457
<ul style="list-style-type: none"> Use recursive processes, including iteration, to solve problems. 	SE: 374-377, 378-380, 381-383 <i>The Game Zone</i> 385 <i>Problem-Solving Strategy</i> 391-392 TWE: B 374, 391 DI 375	SE: 374-377, 400-403 TWE: B 374 A 377, 403 I-CE 401 <i>Study Guide and Intervention</i> 470 <i>Practice: Skills</i> 471

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
The Algebra and Functions Strand		
8. Patterns		
<ul style="list-style-type: none"> Construct, describe, extend and analyze a variety of numerical, geometric and statistical patterns. 	SE: 34-36, 136 #45, 140 #35, 226 #21 <i>Hands-on Lab 37</i> <i>Standardized Test Practice 51 #17</i> <i>Problem-Solving Strategy 132-133, 164-165 #6</i>	SE: 98-101, 512-515 <i>Problem-Solving Strategy 96-97</i> <i>Hands-on Lab 304-305, 516-517</i> TWE: I-CE 96 A 97 DI 99, 513
<ul style="list-style-type: none"> Describe, analyze and generalize patterns using tables, rules, algebraic expressions and equations and graphs. 	SE: 18-21, 34-36, 150-152, 226 #21 <i>Problem-Solving Strategy 22-23 #7</i> <i>Hands-on Lab 37, 176</i> TWE: A 36	SE: 512-515, 517-520, 539-542 <i>Hands-on Lab 304-305, 516, 521</i> TWE: A 516, 521 I-CE 518
<ul style="list-style-type: none"> Make and justify predictions based on patterns. 	SE: 60-63 <i>Hands-on Lab 176</i> TWE: B 60 DI 60 I-CE 61 A 63 <i>Study Guide and Intervention 72</i> <i>Practice: Skills 73</i> <i>Practice: Word Problems 74</i>	SE: 539-542 <i>Hands-on Lab 521</i> TWE: A 521 I-CE 540
9. Algebra and Functions		
<ul style="list-style-type: none"> Represent and analyze situations involving variable quantities with tables, graphs, verbal rules and equations, and translate among representations. 	SE: 150-152, 177-181 <i>Hands-on Lab 154-155, 176</i> TWE: DI 157 A 176 <i>Practice: Word Problems 187, 192, 202</i>	SE: 160-164, 166-169, 517-520, 522-525, 526-529, 533-536 <i>Spreadsheet Investigation 165</i> <i>The Game Zone 531</i>
<ul style="list-style-type: none"> Use variables, expressions, equations and inequalities, including formulas, to model situations and solve problems. 	SE: 150-152, 156-159, 160-163, 166-169, 172-175, 270-273, 275-277 <i>Hands-on Lab 154-155</i>	SE: 39-42, 45-49, 50-53, 137-140 TWE: A 473 <i>Practice: Word Problems 33, 38, 43, 565, 570</i>

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
<ul style="list-style-type: none"> Construct and use linear functions to model and solve real-world situations. 	SE: 177-181, 182-185 <i>Study Guide and Review</i> 188 #60-62 TWE: I-CE 178-179 <i>Practice: Word Problems</i> 212	SE: 166-169, 522-525, 526-529 <i>Practice: Word Problems</i> 197, 631, 636, 641
<ul style="list-style-type: none"> Use the coordinate plane to represent functions. 	SE: 177-181, 182-185 TWE: A 181 DI 183 <i>Study Guide and Intervention</i> 210, 215 <i>Practice: Skills</i> 211, 216 <i>Practice: Word Problems</i> 212, 217	SE: 522-525 <i>The Game Zone</i> 531 <i>Graphing Calculator Investigation</i> 532 TWE: DI 523 I-CE 523 <i>Study Guide and Intervention</i> 629 <i>Practice: Skills</i> 630 <i>Practice: Word Problems</i> 631

Codes Used for TWE Pages

Course 2

A	Assessment
B	Bellringer
DI	Daily Intervention
I-CE	In-Class Examples
TNT	Tips for New Teachers
TT	Teaching Tip

Course 3

A	Assessment
B	Bellringer
DI	Daily Intervention
I-CE	In-Class Examples
TNT	Tips for New Teachers