



**NEW HAMPSHIRE
Mathematics Content Strands
Grades 7-8**

Mathematics: Applications and Concepts Courses 2 and 3 © 2004

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
NUMBERS, NUMERATION, OPERATIONS, and NUMBER THEORY		
Today's mathematics program must be rich in experiences that go far beyond the traditional emphasis on number and operation.		
NUMBER SENSE AND NUMERATION		
Students should be given opportunities to read and write rational numbers.	SE: 210-213, 216-219, 220-223, 229 #1-#2, 230 #44-#49, 231 #53, #56 TWE: B 210, 220 ICE 211, 221	SE: 60, 62-66 TWE: ICE 63-64 <i>Practice: Skills 68</i> <i>Practice: Word Problems 69</i> <i>Study Guide and Intervention 67</i>
Students should use Venn diagrams or concept maps to illustrate the relationships between natural numbers, integers, and rational numbers.	SE: 229 (Key Concept) <i>Study Skill 474 #2</i> See <i>Mathematics: Applications and Concepts Course 3</i> page 62 and page 125 for further examples.	SE: 125 TWE: B 62
Have students explore ancient numeration systems for the purpose of making connections to our place value system.	SE: 13 #60 See <i>Mathematics: Applications and Concepts Course 1</i> pages 106-107.	See <i>Mathematics: Applications and Concepts Course 1</i> pages 106-107 and <i>Course 2</i> page 13 #60.
Continue to provide students opportunities to explore our place value system by examining bases other than ten.	SE: 13 #60 See <i>Mathematics: Applications and Concepts Course 3</i> pages 102-103.	SE: <i>Hands-On Lab 102-103</i>
Help students connect our place value system to the metric system.	This objective can be met during teacher/class discussion of the metric system using the following: SE: 39 (Concept Summary), 555 TWE: DI 39	The metric system is reviewed on pages 606-607. This could be used to make a connection to our place value system.

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	COURSE 2	COURSE 3
Given a set of rational numbers, students should be able to order them from least to greatest.	SE: 227-231 TWE: A 231 DI 228 ICE 228 <i>Practice: Skills 279 #19-#21</i>	SE: 67-70 TWE: B 67 DI 68 ICE 68 <i>Practice: Skills 73</i> <i>Practice: Word Problems 74</i> <i>Study Guide and Intervention 72</i>
Students should have opportunities to represent and identify rational numbers using models.	SE: 210, 213 #54-#57, 216 <i>Hands-On Mini Lab 207</i> <i>Practice Test 235 #1</i> <i>Standardized Test Practice 237 #19a</i> TWE: A 231	SE: 70 #38 <i>Hands-On Mini Lab 71</i> TWE: A 85, 91 DI 72, 77 PA 74
Given a number as a fraction, decimal, or percent, have students write equivalent expressions using one of the other forms.	SE: 210-213, 216-219, 220-223 TWE: A 219 B 216, 220 DI 211 ICE 211, 217, 221	SE: 62-66, 210-214 TWE: B 210 DI 211 ICE 63-64 <i>Practice: Skills 68, 251</i> <i>Practice: Word Problems 69, 252</i>
Have students write numbers using scientific notation.	SE: 43-45 TWE: ICE 44 <i>Practice: Skills 42</i> <i>Practice: Word Problems 43</i> <i>Study Guide and Intervention 41</i>	SE: 104-107 TWE: ICE 105 <i>Practice: Skills 108</i> <i>Practice: Word Problems 109</i> <i>Study Guide and Intervention 107</i>
Provide students with opportunities to explore irrational numbers and use the Pythagorean Theorem to locate numbers like the square root of 2 on the number line.	SE: 476-477 <i>Hands-On Mini Lab 475</i> TWE: A 476 DI 476 ICE 476	SE: 121-122 #5-#31, 125-129 <i>Hands-On Lab 141</i> TWE: A 129 DI 126 ICE 121, 126
Students should use rules for divisibility by 2, 3, 5, 9, and 10; explore the divisibility rules for 4, 6, and 8.	SE: 554 See <i>Mathematics: Applications and Concepts Course 1</i> pages 10-13.	SE: 608 See <i>Mathematics: Applications and Concepts Course 1</i> pages 10-13.

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	COURSE 2	COURSE 3
CONCEPTS OF NUMBER OPERATIONS		
Provide opportunities for students to use models to explore conceptually the addition, subtraction, multiplication, and division of fractions, decimals, and integers.	SE: 244 Examples 1 and 2, 246 #1, 254 Examples 1 and 2 <i>Hands-On Lab</i> 118-119, 126-127 <i>Hands-On Mini Lab</i> 134, 138, 264 TWE: A 266 B 244	SE: 24 Examples 3 and 4, 71, 84 #1 <i>Hands-On Mini Lab</i> 28 TWE: A 38, 85 B 82, 88 DI 72, 77
Have students explore the sum, difference, product and quotient of two rational numbers under various constraints, such as multiplying when both numbers are greater than zero and less than one, both numbers less than zero, or when one is less than zero and the other is greater; students should formulate conjectures about the answers and defend their conjectures.	SE: 242 #3, 254 (Earth Science), 257 #37 <i>Hands-On Mini Lab</i> 244	SE: 74 #1, 79 #2, 90 #3 TWE: A 75 B 71, 76
Have students relate multiplication by a fraction or decimal to finding a percent of a number.	SE: 334-337, 340-343 TWE: A 343 ICE 335-336	SE: 220-223 TWE: B 220 ICE 221 <i>Practice: Skills</i> 261 <i>Practice: Word Problems</i> 262 <i>Study Guide and Intervention</i> 260
Students should model the addition of fractions as a “joining” process as it was with whole numbers.	SE: 244 Example 1, 245 Example 3, 246 #1 <i>Hands-On Mini Lab</i> 244 TWE: B 244	SE: 84 #1 TWE: A 85, 91 B 82, 88
Provide students with opportunities to model the subtraction of fractions as a “take away” process and as a comparison (as with whole numbers).	SE: 244 Example 2, 249 Example 4 TWE: B 248 <i>Study Guide and Intervention</i> 308 Example 1	TWE: A 85, 91 B 85, 88 Students could be asked to model additional subtraction problems from pages 82-85.

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	COURSE 2	COURSE 3
Have students connect the multiplication of fractions via the area model to multiplication of whole numbers.	SE: 254 Examples 1 and 2, 255 Example 4 TWE: B 254	SE: <i>Hands-On Mini Lab</i> 71 TWE: DI 72 PA 74 Students could be asked to model additional multiplication problems from pages 71-75.
Have students model division of fractions using “measurement” division, i.e., $\frac{3}{4}$ divided by $\frac{1}{3}$ counts how many thirds there are in $\frac{3}{4}$.	SE: <i>Hands-On Mini Lab</i> 264 TWE: A 266 B 264	TWE: DI 77 Students could be asked to model additional division problems from pages 76-79.
Students need opportunities to understand and use the standard algebraic order of operations.	SE: 14-17 <i>Study Guide and Review</i> 47 (Order of Operations) TWE: A 17 B 14 DI 15 ICE 15 <i>Practice: Skills</i> 12 <i>Practice: Word Problems</i> 13	SE: 11-15 <i>Practice Test</i> 57 #3-#5 <i>Study Guide and Review</i> 55 #13-#18 TWE: DI 12 ICE 12 <i>Practice: Skills</i> 7 <i>Practice: Word Problems</i> 8 <i>Study Guide and Intervention</i> 6
Provide opportunities for students to understand and use fundamental properties of exponents.	SE: 10-13 <i>Study Guide and Review</i> 47 (Powers and Exponents) TWE: A 13 DI 11 ICE 11 <i>Practice: Skills</i> 7 <i>Practice: Word Problems</i> 8 <i>Study Guide and Intervention</i> 6	SE: 98-101 <i>Practice Test</i> 111 #21-#22 <i>Standardized Test Practice</i> 112 #7-#8 TWE: A 101 <i>Practice: Skills</i> 103 <i>Practice: Word Problems</i> 104 <i>Study Guide and Intervention</i> 102
COMPUTATION		
Provide students opportunities to develop and use algorithms to do the four basic operations with fractions, decimals, and integers.	SE: 131 #49-#53, 254 (Earth Science) <i>Hands-On Lab</i> 119 #3, 127 #3 <i>Hands-On Mini Lab</i> 134, 244, 264 TWE: A 141 B 254 DI 265	SE: 26 #1, 76 (Animals) <i>Hands-On Mini Lab</i> 28, 71 TWE: A 31, 91 B 23, 34 DI 83 TT 35

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	COURSE 2	COURSE 3
Have students use the identity elements and the commutative, associative, and distributive properties to perform computations.	SE: 30-33, 124 #60-#61, 247 #42 TWE: ICE 31 <i>Practice: Skills 27</i> <i>Study Guide and Intervention 26</i>	SE: 13-15, 75 Extending the Lesson TWE: A 15 ICE 13 <i>Practice: Skills 7</i> <i>Practice: Word Problems 8</i> <i>Study Guide and Intervention 6</i>
Have students select appropriate computational techniques in the solution of problems and check the reasonableness of results using mental computation and estimation techniques.	SE: 6-9 <i>Problem-Solving Strategy 22-23, 338-339</i> TWE: A 339 ICE 22, 338 <i>Practice: Word Problems 3</i> <i>Study Guide and Intervention 1</i>	SE: 6-10, 73 (Study Tip), 83 Example 4, 89 (Study Tip) <i>Problem-Solving Strategy 226-227, 325 #11</i> TWE: B 226 DI 226 ICE 7-8 TT 93
Allow students to use calculators in appropriate problem solving situations.	SE: 11 (Study Tip), 44 Example 3, 210-211 Examples 1-4, 276 (Study Tip), 313 Example 4, 471 Examples 5 and 6, 476 Example 2, #8-#12, 493 Example 1 TWE: A 213	SE: 12 (Study Tip), 63 Examples 1 and 2, 67 Example 1, 99 Example 2, 105 (Study Tip), 126 Example 4, 320 Example 1, 385 (Test-Taking Tip) <i>Hands-On Lab 193 #7-#9</i> TWE: DI 221
Students should know when and how to apply “algebraic order of operations” and explore its use on various calculators.	SE: 14-15, 17 #50-#52 TWE: A 17 B 14 DI 15 ICE 15 #6 <i>Practice: Word Problems 13</i>	SE: 12 (Study Tip), 14 #40, 15 #41-#42 <i>Practice Test 57 #3-#5</i> <i>Study Guide and Review 55 #13-#18</i> TWE: DI 12 ICE 12 <i>Practice: Skills 7</i> <i>Practice: Word Problems 8</i> <i>Study Guide and Intervention 6</i>
Provide opportunities for students to explore the use of grouping symbols such as parentheses, braces, and brackets.	SE: 14-17, 124 #61 TWE: A 17 DI 15 ICE 15 <i>Practice: Skills 12</i>	SE: 11-15 TWE: DI 12 TT 11 <i>Practice: Skills 7</i> <i>Study Guide and Intervention 6</i>

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should have opportunities to decide when it is appropriate to use an estimate, mental calculation, paper and pencil calculation, or technology to do a calculation.	SE: 6-9, 242 #2 TWE: DI 7, 211, 241	This objective can be met during teacher/class discussions using the following: SE: 6-10, 601 #35 <i>Graphing Calculator Investigation</i> 404-405 <i>Hands-On Mini Lab</i> 347 <i>Problem-Solving Strategy</i> 43-44, 226-227, 488-489 TWE: ICE 7-8 <i>Practice: Word Problems</i> 3
Have students explore the ideas of exact numbers (the result of a counting process), approximate numbers (the result of a measurement), and measures of error for approximate numbers, such as relative error.	This objective can be met during teacher/class discussions of the following: SE: 38-41, 240-243, 267-269, 545 #22 <i>Hands-On Lab</i> 412 TWE: A 545 B 542 DI 241	This objective can be met during teacher/class discussions using the following: SE: 320 Example 1, 358-362 <i>Hands-On Mini Lab</i> 272, 319, 347 TWE: DI 185 TNT 360
ESTIMATION AND MENTAL CALCULATION		
Have students estimate the results of computations involving rational numbers, including percents.	SE: 240-243, 247 #45-#48, 251 #47-#50, 334-337 TWE: A 243 ICE 241-242, 335-336 <i>Practice: Skills</i> 304 <i>Study Guide and Intervention</i> 435	SE: 83 Example 4, 89 (Study Tip) and Example 3, 228-231 <i>Study Guide and Review</i> 248 #45-#50 TWE: ICE 229 TT 89
Given a problem, encourage students to make appropriate estimations relating to size, quantity, temperature, capacity, and passage of time in both metric and customary English units.	SE: 490 Example 3, 491 #1 <i>Problem-Solving Strategy</i> 139 #12 TWE: DI 39	SE: <i>Standardized Test Practice</i> 229 Example 7, 250 #6, 327 (Test-Taking Tip), 329 #22, 336 (Study Tip) <i>Hands-On Mini Lab</i> 347 TWE: B 342 DI 315 ICE 229 #7

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Encourage students to estimate measures of length, area, and volume before they perform or calculate the measurement in both metric and customary English units.	SE: 483 Example 1, 484 Example 2, 489 Example 1, 521 Example 2 Students could be asked to estimate before making the following measurements: SE: <i>Hands-On Mini Lab</i> 38, 304 TWE: B 43 DI 39, 271	SE: 321 (Study Tip), 336 (Study Tip) Students could be asked to estimate before finding measures on the following pages: SE: 314-318, 319-323, 326-329, 335-339, 342-345, 347-351, 352-355
Provide opportunities for students to recognize when to use estimation and mental computation to solve problems where exact answers are not required.	SE: 242 #2, 334, 494 #3 <i>Problem-Solving Strategy</i> 339 #5 TWE: A 339 DI 241, 335 ICE 338	SE: 67 (Recycling), 89 (Test-Taking Tip), 228-231 <i>Problem-Solving Strategy</i> 124 #7, 226-227, 325 #11, 379 #13, 419 #10, 489 #10 TWE: B 220
Have students do mental computations on a regular basis, such as 15% of \$42.00 is 10% of \$42.00 plus half of that again. Relate such computations to practical applications such as calculating an appropriate tip in a restaurant.	SE: 320 (Study Tip), 335 Examples 3-5, 337 #33-#35, 352 #2 <i>Problem-Solving Strategy</i> 338 TWE: ICE 335-336	SE: 220-223, 230 #36 <i>Problem-Solving Strategy</i> 124 #7, 226-227, 489 #10 TWE: A 223, 227 B 220, 226 ICE 226
<p>GEOMETRY, MEASUREMENT and TRIGONOMETRY Geometry helps students describe the world in which they live and serves as a natural link to the integration of mathematics across the curriculum. Students need to investigate, experiment, and explore geometric properties using both technology and hands-on materials. Geometry lends itself to having students work in groups; we encourage you to use group work extensively (Davidson, 1990).</p>		
<p>GEOMETRY AND SPATIAL SENSE</p>		
Have students identify the properties of plane and solid figures.	SE: 413-415, 428-431, 434-437, 446-450, 514-517 <i>The Game Zone</i> 529 TWE: A 431, 437 B 413 DI 434	SE: 262-265, 272-275, 331-334 <i>The Game Zone</i> 285 TWE: A 265, 275 B 272 DI 263 <i>Practice: Skills</i> 323, 393

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	COURSE 2	COURSE 3
Give students a set of plane figures and their attributes, and have them identify those figures that are congruent, similar, or neither.	SE: 440-443 <i>Standardized Test Practice</i> 466 #6 TWE: B 440 <i>Practice: Skills</i> 569 #7-#8 See <i>Mathematics: Applications and Concepts Course 3</i> pages 178-182 and 279-282.	SE: 178-182, 279-282 <i>Mid-Chapter Practice Test</i> 284 #8 TWE: A 282 ICE 179 <i>Practice: Skills</i> 206, 328
Provide students with problem-solving situations involving similar and congruent figures.	SE: 440-443 <i>Spreadsheet Investigation</i> 523 TWE: DI 441 ICE 441 <i>Practice: Word Problems</i> 570	SE: 180 Examples 2 and 3, 182 #14-#19, 184-187, 188-191, 281 #13, 282 #14-#24 TWE: B 184, 188 <i>Practice: Word Problems</i> 207, 329
Explore the Pythagorean relationship and have students apply the relationship to the solution of problems.	SE: 479-482 <i>Hands-On Lab</i> 478 TWE: A 482 ICE 480-481 <i>Practice: Skills</i> 620 <i>Practice: Word Problems</i> 621	SE: 132-136, 137-140, 142-145 TWE: A 136, 139 B 137, 142 DI 138 ICE 133-134 <i>Practice: Word Problems</i> 150
Have students classify figures into hierarchies; for example, quadrilaterals, parallelograms, rectangles, and squares, and explain the reasoning for the hierarchy.	SE: 434, 435 #1 <i>Study Skill</i> 474 TWE: A 431	SE: 273, 274 #3, 275 (Critical Thinking) TWE: A 265, 275 DI 273 GZ 285 (Tips)
Students should explore selected constructions using compass and straightedge, a MIRA, paper folding, or construction software.	SE: <i>Hands-On Lab</i> 416-417, 426-427, 432-433	SE: <i>Hands-On Lab</i> 261, 266, 271, 283
Have students explore the basic transformations: translations, rotations, and reflections. Use technology to explore these transformations.	SE: 451-454, 456-459 <i>Hands-On Lab</i> 460-461 <i>Spreadsheet Investigation</i> 455 TWE: DI 451 ICE 452, 457 <i>Practice: Skills</i> 574 <i>Practice: Word Problems</i> 585	SE: 290-294, 296-299, 300-303 TWE: A 294, 299, 303 B 290, 300 DI 296, 300

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should use models and manipulatives to develop the formulas for the linear (perimeter, circumference), area, volume, and surface area of two- and three-dimensional figures.	SE: 270 (Parks) <i>Hands-On Lab</i> 274, 488, 530-531 <i>Hands-On Mini Lab</i> 483, 489, 493, 520, 524 TWE: A 495	SE: <i>Hands-On Mini Lab</i> 314, 319, 335, 342, 347 TWE: B 326, 347, 352
Provide opportunities for students to explore the ratios of sides, areas, and volumes of similar figures.	SE: 304-308, 440-443 <i>Spreadsheet Investigation</i> 309, 523 TWE: A 443 DI 304, 441 ICE 441	SE: 178-182, 184-187, 188-191 TWE: A 182 ICE 179-180 <i>Practice: Skills</i> 206 <i>Practice: Word Problems</i> 207 <i>Study Guide and Intervention</i> 205
Have students explore tessellations and relate to art and architecture. (E.g., the works of Escher and tilings of floors and walls.)	SE: 446-450, 454 #13-#14, #17-#18, 459 #18, #23 <i>Hands-On Mini Lab</i> 451 TWE: DI 447 ICE 448	SE: <i>Hands-On Lab</i> 304-305
MEASUREMENT		
Structure activities that will allow students to extend their understanding of the process of measurement: identify the attribute to be measured; select an appropriate unit; select a tool; do the measurement.	The following can be structured to meet this objective: SE: 542-545 <i>Hands-On Lab</i> 274, 412 <i>Hands-On Mini Lab</i> 38, 304 TWE: A 545 B 43 DI 39, 271	The following can be structured to meet this objective: SE: 358-362 <i>Hands-On Mini Lab</i> 267, 272, 319, 347 TWE: DI 185, 326, 353 TNT 315
Have students estimate, make, and use measurements to describe and compare phenomena and to solve real problems.	SE: 40 #2, 41 #38-#42, 269 #31-#33, 304-308 <i>Hands-On Mini Lab</i> 38, 304 <i>Spreadsheet Investigation</i> 309 #5 TWE: B 532 DI 39, 304	SE: 316 Example 4, 318 #21-#25, 327 Example 3 <i>Hands-On Mini Lab</i> 267, 319 TWE: DI 315, 326, 353 ICE 316 #4 TNT 315

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should be encouraged to select appropriate units and tools to measure to the degree of accuracy required in a particular situation. (There are natural links to the science program here.)	SE: 542 (World Records), 543 #2, 544 #21 TWE: A 545 The following could also be used to discuss appropriate units and tools to measure to the degree of accuracy required: SE: 40 #2 <i>Hands-On Lab</i> 274 <i>Hands-On Mini Lab</i> 38, 304 TWE: B 43 DI 39, 271	SE: 358-362 The following could also be used to discuss appropriate units and tools to measure to the degree of accuracy required: SE: <i>Hands-On Mini Lab</i> 267, 272, 319, 347 TWE: DI 185, 326, 353 TNT 315
Have students explore the structure and use of systems of measurement, both English and metric.	SE: 38-41, 267-269 TWE: B 267 DI 39, 267 <i>Practice: Skills</i> 37, 334 <i>Practice: Word Problems</i> 38, 335	SE: 604-605, 606-607 See also <i>Mathematics: Applications and Concepts Course 2</i> pages 38-41 and 267-269.
Have students explore area as "covering" and volume as "filling."	SE: <i>Hands-On Lab</i> 530-531 <i>Hands-On Mini Lab</i> 483, 493, 520, 538 TWE: B 524	SE: 316 Example 4, 318 #26, 322 #22, 326 (Carpeting), 338 #25-#26 <i>Hands-On Mini Lab</i> 342 TWE: B 335, 342, 347 <i>Practice: Word Problems</i> 379 #6
Have students use grids and other techniques to approximate areas of irregular shapes.	SE: 492 #20-#21, 498-500, 503 #18 TWE: B 498 DI 499 ICE 499 <i>Practice: Skills</i> 640 <i>Practice: Word Problems</i> 641 <i>Study Guide and Intervention</i> 639	SE: 326-329 TWE: A 329 DI 326 ICE 327 TNT 328 <i>Practice: Skills</i> 388 <i>Practice: Word Problems</i> 389 <i>Study Guide and Intervention</i> 387
Provide activities that will permit students to extend their understanding of the concepts of perimeter, circumference, area, volume, surface area, angle measure, capacity, and weight and mass.	SE: 269 #33, 485 #22 <i>Hands-On Lab</i> 274, 488 <i>Spreadsheet Investigation</i> 523 TWE: A 522, 535 B 270, 493 DI 267	SE: <i>Hands-On Mini Lab</i> 319, 335 TWE: A 323, 329 B 335, 347 DI 257, 315, 336 TNT 320

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	COURSE 2	COURSE 3
Develop the concepts of rates and other derived measurements with students; explore indirect measurement.	SE: 161 Example 3, 292-295, 441 Example 2, 442 #10 <i>Hands-On Lab</i> 296 TWE: B 292 DI 441	SE: 156-159, 160-164, 188-191 TWE: B 188 DI 157, 189 ICE 189 <i>Practice: Word Problems</i> 187 <i>Study Guide and Intervention</i> 185
Encourage students to estimate the area and volume of figures by estimating the products of the linear measures.	SE: 483 Example 1, 484 Example 2, 489 Example 1, 521 Example 2, 522 #15	SE: 318 #21-#24, #30, 321 (Study Tip), 336 (Study Tip)
Have students develop their own formulas and procedures for finding measures to solve problems.	SE: 270 (Parks), 498 (Architecture) <i>Hands-On Lab</i> 274, 488 <i>Hands-On Mini Lab</i> 483, 489, 493, 520 TWE: B 267 DI 304	SE: 352 (History) <i>Hands-On Mini Lab</i> 335, 342 TWE: A 329 B 184, 347 DI 185, 315, 326 TNT 327
TRIGONOMETRY		
Have students find the height of objects using similar triangles, e.g., using shadows or reflections in a mirror.	SE: 442 #5, 443 #19, 454 #22 TWE: DI 441 <i>Practice: Word Problems</i> 570 #6	SE: 188-191, 197 #28 <i>Standardized Test Practice</i> 203 #15 <i>Study Guide and Review</i> 200 (Indirect Measurement) TWE: A 191 DI 189 ICE 189 <i>Practice: Word Problems</i> 217 <i>Study Guide and Intervention</i> 215
Have students explore the ratios of corresponding sides among similar right triangles; define the ratios of sine and tangent using the right triangle definitions.	SE: 442 #5 <i>Hands-On Mini Lab</i> 440 TWE: DI 441 ICE 441 #2 <i>Practice: Skills</i> 569 #1, #8 See also <i>Mathematics: Applications and Concepts Course 3</i> pages 192-193.	SE: 188-191 <i>Hands-On Lab</i> 192-193 TWE: B 188 <i>Study Guide and Intervention</i> 215

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	COURSE 2	COURSE 3
Apply similarity to the solution of practical problems such as finding the distance across a pond.	SE: 441 Example 2, 442 #10, 443 #13-#14 <i>Problem-Solving Strategy</i> 445 #6 TWE: DI 441 ICE 441#2 <i>Practice: Word Problems</i> 570	SE: 184 Example 1, 186 #15-#16, 187 #17-#22, 189 Example 2, 190 #8-#9, 191 #15, #20 TWE: ICE 185 <i>Practice: Skills</i> 216
<p>DATA ANALYSIS, STATISTICS, AND PROBABILITY Collecting, organizing, displaying, and interpreting data, as well as using that information to make predictions and decisions, are extremely important in today's society. However, before collecting data, students need to clearly define the problem and decide what information they will collect in order to solve the problem. Data collection and analysis lend themselves to small group work. Statistical instruction should be investigative and explorative in nature, so that students can answer questions about data. Probability should also be active and engaging, with students experimenting and modeling situations. Students need to investigate fairness, chances of winning, and uncertainty. Technology is an integral tool when students work with data and chance.</p>		
Have students systematically collect, organize, display, and describe data.	SE: 57 #15, #19, 79 #22-#23, 421 #15 <i>Hands-On Lab</i> 73 <i>WebQuest</i> 95 TWE: B 6, 54, 64 DI 55, 418	SE: 428 #3 <i>Graphing Calculator Investigation</i> 425 <i>Hands-On Lab</i> 22, 434 <i>WebQuest</i> 371 TWE: A 429 B 418 DI 418, 427
Students should construct, read, and interpret tables, charts, and graphs, especially those found in newspapers and magazines.	SE: 54-57, 76-79, 80-83, 85-89, 418-421 <i>Graphing Calculator Investigation</i> 84 <i>Problem-Solving Strategy</i> 58-59 TWE: B 92, 418 DI 55	SE: 420-424, 426-429, 430-433 <i>Graphing Calculator Investigation</i> 425 <i>Hands-On Lab</i> 434 <i>Problem-Solving Strategy</i> 418-419, 537-538 TWE: B 420 ICE 427-428
Have students identify the use of tables, charts, and graphs in other school subjects and bring those in for further analysis and discussion.	The following examples could be used to discuss the use of tables, charts, and graphs in other school subjects: SE: 66 #8-#11, 70 Example 2, 76 (History), 77 Example 3, 80 (Nutrition), 82 Example 3, 88 #14-#16, 94 #9-#11 <i>Problem-Solving Strategy</i> 59 #3-#4 TWE: DI 85	The following examples could be used to discuss the use of tables, charts, and graphs in other school subjects: SE: 421 Example 2, 423 #18-#21, 424 #23, 427 Examples 2 and 3, 429 #11, 447 Example 2 <i>Problem-Solving Strategy</i> 418, 419 #8 TWE: ICE 421 #2

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	COURSE 2	COURSE 3
Provide opportunities for students to use tables, box-and-whisker plots, stem-and-leaf graphs, bar graphs, and pie charts to display and/or analyze data. Discuss the advantages and disadvantages of each.	SE: 56 #1, 57 #19, 68 #24, 78 #1, #15-#18, 81 Example 2, 82 #1, 87 Example 4, 421 #16 <i>Problem-Solving Strategy</i> 58-59 TWE: A 421	SE: 430 (Concept Summary), 432 #1, 446-449 <i>Prerequisite Skills</i> 602 <i>Problem-Solving Strategy</i> 418-419 <i>Standardized Test Practice</i> 463 #17 TWE: A 419, 449 DI 430 PS 461
Have students calculate the measures of central tendency: mean, median, and mode. Discuss the advantages and disadvantages of each.	SE: 69-72 <i>The Game Zone</i> 75 <i>Hands-On Lab</i> 73 TWE: ICE 70 <i>Practice: Skills</i> 83 <i>Practice: Word Problems</i> 84 <i>Study Guide and Intervention</i> 82	SE: 435-438, 451 Examples 2 and 3, 453 #8-#12 <i>The Game Zone</i> 441 <i>Spreadsheet Investigation</i> 439 TWE: DI 436, 451 ICE 436, 451 #2-#3
Students should be guided to make valid inferences and build convincing arguments that are based on data analysis.	SE: 60-63, 68 #23, 77 Example 3, 89 #17, 420 #6-#8 <i>WebQuest</i> 3 TWE: A 95 B 92 DI 92 <i>Practice: Word Problems</i> 104	Students could be guided to make valid inferences and build convincing arguments using the following: SE: 424 #23, 449 #15-#18, 450-453 <i>Hands-On Lab</i> 434 #3 <i>Standardized Test Practice</i> 463 #18 TWE: A 453 DI 451 <i>Practice: Skills</i> 532 <i>Practice: Word Problems</i> 533 <i>Study Guide and Intervention</i> 531

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Have students evaluate arguments that are based on data analysis.	SE: 92-95 <i>Practice Test</i> 99 #13 TWE: A 95 B 92 DI 92 ICE 93 <i>Practice: Skills</i> 103 <i>Practice: Word Problems</i> 104 <i>Study Guide and Intervention</i> 102	SE: 433 #15, 450-453 <i>Standardized Test Practice</i> 463 #18 <i>Study Guide and Review</i> 460 #26-#30 TWE: A 453 <i>Practice: Skills</i> 532 <i>Practice: Word Problems</i> 533 <i>Study Guide and Intervention</i> 531
Students should develop an appreciation for statistical methods as powerful means for making decisions.	This idea can be emphasized throughout Chapter 2 pages 52-101, particularly with the following: SE: 60-63, 69-72, 92-95 <i>WebQuest</i> 3 TWE: A 95 DI 92	This idea can be emphasized throughout Chapter 9 pages 416-463, particularly with the following: SE: 433 #14-#15, 435-438, 450-453 TWE: A 453 DI 451 ICE 451 <i>Practice: Word Problems</i> 533
Students should explore probability as a measure of chance.	SE: 370-373 <i>The Game Zone</i> 385 <i>Hands-On Lab</i> 397 <i>Hands-On Mini Lab</i> 393 TWE: A 373 B 370	SE: 374-377 <i>The Game Zone</i> 395 <i>Hands-On Lab</i> 393 (Activity 2) TWE: A 377 B 374, 396 DI 375 ICE 375 <i>Practice: Skills</i> 446 <i>Practice: Word Problems</i> 447
Have students collect data sets of ordered pairs and make a scatter plot.	SE: 62 #7, #10 <i>Hands-On Mini Lab</i> 60 <i>Practice: Word Problems</i> 74 #3	SE: 541 #6, 542 #17, #21 <i>Graphing Calculator Investigation</i> 543 <i>Hands-On Mini Lab</i> 539 TWE: ICE 540 #3 <i>Practice: Word Problems</i> 646 #1

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Provide opportunities for students to explore simple linear regression using the median-median line.	Regression is a statistical technique for determining relationships between quantities. Regression procedures determine the line that best fits the observation. SE: 61 Example 2 fits the definition of regression. <i>Hands-On Lab</i> 296 could be used to begin the explanation of the objective.	Regression is a statistical technique for determining relationships between quantities. Regression procedures determine the line that best fits the observation. SE: 540 TWE: DI 540 A 542
Students should have opportunities to model situations by devising and carrying out experiments or simulations to determine probabilities.	SE: <i>Hands-On Lab</i> 397 <i>Hands-On Mini Lab</i> 374, 393 TWE: A 373 B 391 DI 371, 394 GZ 385 (Tips)	SE: <i>Graphing Calculator Investigation</i> 404-405 <i>Hands-On Mini Lab</i> 400 TWE: A 377, 403 B 374 DI 400
Have students model situations by constructing a sample space to determine probabilities. The use of tree diagrams is useful in developing sample spaces.	SE: 375 Example 3, 376 #3-#5, #15-#17, 377 #18-#19 TWE: A 401 <i>Practice: Skills</i> 491 #1-#2 <i>Practice: Word Problems</i> 492 #2-#3	SE: 380-383 <i>Standardized Test Practice</i> 415 #14 <i>Study Guide and Review</i> 410 #16-#19 TWE: ICE 381 #1 <i>Practice: Skills</i> 451
Students should appreciate the power of using a probability model by comparing the experimental results (from their simulation) with the mathematical expectations (determined with the use of a sample space).	SE: 394 Examples 2 and 3, 395 #1 <i>Hands-On Lab</i> 397 <i>Hands-On Mini Lab</i> 393 TWE: A 395 ICE 394 #2-#3 <i>Practice: Skills</i> 511 #1-#4	SE: 402 #3-#7 <i>Graphing Calculator Investigation</i> 404-405 <i>Hands-On Mini Lab</i> 400 TWE: A 403 DI 400 ICE 401 <i>Practice: Skills</i> 471 #1-#5 <i>Study Guide and Intervention</i> 470

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Have students make predictions that are based on experimental or theoretical probabilities.	SE: 394 Examples 4 and 5, 395 #11-#13, 396 #16-#17 TWE: DI 394 ICE 394 #5 <i>Practice: Skills 511 #7-#9</i> <i>Practice: Word Problems 512 #2-#3, #6</i> <i>Study Guide and Intervention 510 #2-#3</i>	SE: 401 Examples 5 and 6, 402 #4, #6, #9, #11, #14, 403 #17, #19, #21 <i>Practice: Skills 471</i> <i>Practice: Word Problems 472</i> <i>Study Guide and Intervention 470</i>
<p>FUNCTIONS, RELATIONS, and ALGEBRA One of the central themes of mathematics is the study of patterns, relations, and functions. This study requires students to recognize, describe, and generalize patterns and build mathematical models to predict the behavior of real-world phenomenon that exhibit the observed pattern. This study of patterns leads to an exploration of functions, a concept which is an important unifying idea in all aspects of mathematics. Functional relationships are of primary importance in many other disciplines such as the natural sciences, business [compound interest], the social sciences, and psychology [learning curves].</p>		
FUNCTIONS AND RELATIONS		
Have students describe, extend, analyze, and create a wide variety of patterns, using technology as and when appropriate.	SE: 9 #9, 13 #62, 34-36, 392 #10 <i>Hands-On Lab 196 #2</i> <i>Problem-Solving Strategy 23 #7, 132-133</i> TWE: A 36 B 34 DI 35	SE: 7 Example 1, 9 #3, #8-#9, 10 #18, 101 #44, 512-515 <i>Hands-On Mini Lab 6</i> <i>Problem-Solving Strategy 96-97</i> TWE: B 96 DI 99
Students should explore number patterns and note properties and relationships; have students describe these properties.	SE: 136 #45, 140 #35, 226 #21, 291 #38-#39 <i>Hands-On Lab 37, 196</i> <i>Prerequisite Skills 554</i> TWE: A 213, 445	SE: 7 Example 1, 512-515 <i>Hands-On Lab 183 #1, 516</i> <i>Hands-On Mini Lab 11</i> <i>Problem-Solving Strategy 96-97, 324</i> TWE: B 324, 512 ICE 96
Have students analyze and describe properties and relationships related to prime and composite numbers, rational numbers, multiples, factors, and exponents.	SE: 10 (Technology), 12 #40, 13 #62, 203 Example 1 <i>Hands-On Lab 196</i> <i>Prerequisite Skills 554</i> TWE: B 10 DI 11 TT 228	SE: 69 #1, #3, 70 #36, 74 #1, 76 (Animals), 98 (Family), 100 #1-#2 <i>Study Skill 16 #1-#2</i> TWE: A 66 B 62 DI 126

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Provide opportunities for students to describe functional relationships with tables and graphs.	SE: 177-181 <i>Hands-On Lab 176</i> <i>Study Guide and Review 188 #54-#62</i> TWE: ICE 178-179 <i>Practice: Skills 211</i> <i>Practice: Word Problems 212</i> <i>Study Guide and Intervention 210</i>	SE: 517-520, 522-525 <i>Hands-On Lab 22, 521</i> TWE: DI 523 ICE 518 #3, 523 <i>Practice: Skills 625, 630</i> <i>Practice: Word Problems 636</i>
Variables can be explored by having students generalize patterns. (Similarly in statistics.)	SE: 18-21, 226 #21 <i>The Game Zone 29</i> TWE: ICE 19 <i>Practice: Skills 17</i> <i>Practice: Word Problems 18</i> <i>Study Guide and Intervention 16</i>	SE: 39 (Party Planning), 42 #22-#24, #34 <i>Hands-On Lab 103 #4, 278 #2, #4</i> <i>Hands-On Mini Lab 11</i>
Have students explore rates of change: cost per unit, miles per hour, wage rates, and work-related problems.	SE: 45 #44, 292-295, 300 #48, #50 <i>Hands-On Lab 296</i> TWE: A 295 B 292 DI 293 <i>Practice: Word Problems 382</i>	SE: 156-159, 160-164 <i>Spreadsheet Investigation 165</i> TWE: A 164 B 160 ICE 161-162 <i>Practice: Skills 191</i> <i>Practice: Word Problems 187, 192</i>
Students should use graphs to interpret and compare rates of change.	SE: 179 Example 3, 295 #27-#28 <i>Hands-On Lab 176, 296</i>	SE: 161-162, 163 #11-#14, 164 #21 TWE: B 160 DI 161 ICE 161-162 #2-#4 <i>Practice: Skills 191 #5-#8</i> <i>Study Guide and Intervention 190</i>

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
ALGEBRA		
Students should have many experiences that require plotting points in the plane. Games and applications can both be used to help students master this skill.	SE: 112-115, 137 #47 <i>The Game Zone</i> 117 <i>Study Guide and Review</i> 143 #30-#37 TWE: DI 113 ICE 113 <i>Practice: Skills</i> 140 <i>Practice: Word Problems</i> 141 <i>Study Guide and Intervention</i> 139	SE: 142-145 <i>Practice Test</i> 149 #18-#19 <i>Prerequisite Skills</i> 614 <i>Standardized Test Practice</i> 151 #17 <i>Study Guide and Review</i> 148 #42-#47 TWE: DI 143 ICE 143 <i>Practice: Skills</i> 159 <i>Study Guide and Intervention</i> 158
Have students continue to explore the use of variables.	SE: 18-21, 226 #21 <i>The Game Zone</i> 29 TWE: ICE 19 <i>Practice: Skills</i> 17 <i>Practice: Word Problems</i> 18 <i>Study Guide and Intervention</i> 16	SE: 11-15, 39-42, 518 Examples 4 and 5 TWE: DI 40, 518 ICE 40 <i>Practice: Skills</i> 7, 32 <i>Practice: Word Problems</i> 33 <i>Study Guide and Intervention</i> 31
Have students represent situations and number patterns with concrete materials, tables, charts, graphs, verbal rules, and algebraic expressions.	SE: 35 #3, 36 #27, 226 #21 <i>Hands-On Lab</i> 37, 118-119 <i>Problem-Solving Strategy</i> 23 #7 TWE: B 34, 58 DI 35 ICE 58	SE: 39-41 <i>Hands-On Lab</i> 569 <i>Hands-On Mini Lab</i> 11, 512 <i>Problem-Solving Strategy</i> 96-97, 418-419, 537-538, 588-589 TWE: A 515 DI 99
Students should explore the field properties: the commutative, associative, distributive properties, and inverse and identity elements. Apply these properties to simplify and expand expressions.	SE: 30-33, 122 #10, 123 #46-#51 TWE: A 33 ICE 31 <i>Practice: Skills</i> 27 <i>Practice: Word Problems</i> 28	SE: 13-15, 76-80, 469-473 TWE: A 15 B 76 DI 470 ICE 13 <i>Practice: Skills</i> 7, 83 <i>Study Guide and Intervention</i> 82

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should have a variety of real-world experiences that enable them to write literal expressions, equations, and inequalities. Have the students translate between English sentences and expressions or equations and vice versa.	SE: 11 #2, 150-152, 174 #32-#35 <i>Study Skill</i> 153 TWE: B 150, 172 DI 173 ICE 151 <i>Practice: Skills</i> 186	SE: 39-42, 471 Example 2, 478-481, 492-495 TWE: A 42, 473 B 39, 469, 478 DI 479
Have students develop, analyze, and explain methods for solving proportions.	SE: 297-300 <i>The Game Zone</i> 311 TWE: A 300 B 297 DI 298 ICE 298	SE: 170-173 TWE: A 173 DI 171 ICE 171 <i>Practice: Skills</i> 201 <i>Study Guide and Intervention</i> 200
Students should solve simple linear equations using informal, graphical, and concrete methods.	SE: 156-159, 160-163 <i>The Game Zone</i> 171 <i>Hands-On Lab</i> 154-155 TWE: A 181 B 156 DI 157	SE: 45-49, 50-53, 92-95 TWE: A 49 B 45 DI 51
Students should solve linear equations and inequalities in one unknown using traditional algebraic methods.	SE: 156-159, 160-163, 166-169, 172-175 TWE: ICE 157-158, 167 <i>Practice: Skills</i> 191, 196, 206	SE: 45-49, 50-53, 92-95, 496-499, 500-504 TWE: ICE 93, 497 <i>Practice: Skills</i> 37, 42, 98
Have students graph linear equations and inequalities in two unknowns.	SE: 177-181 <i>Practice Test</i> 189 #13-#15 TWE: ICE 178-179 <i>Practice: Skills</i> 211 <i>Practice: Word Problems</i> 212 <i>Study Guide and Intervention</i> 210	SE: 522-525, 548-551 <i>The Game Zone</i> 531 <i>Graphing Calculator Investigation</i> 532 TWE: A 551 DI 523 ICE 549 <i>Practice: Skills</i> 630, 655

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
<p>MATHEMATICS OF CHANGE All natural phenomena are characterized by change, and mathematics is one of the primary tools used for representing and describing change. Understanding rates of change is a preliminary precursor to the more formal ideas of calculus. Through investigations and explorations of patterns, tables, graphs, and functions which focus on the nature of change, the representation, understanding, and recognition of types of change can be promoted. Real-world examples of change such as unit pricing, rates of speed, and averages should be explored. Fractions, decimals, percents, proportional reasoning, and slopes of lines are integral to this process.</p>		
Provide opportunities for students to use proportional reasoning to solve problems about rates of change.	SE: 141 #37, 168 #39, 289 Example 5, 300 #45-#46 <i>Mid-Chapter Practice Test</i> 310 #11, #19 <i>Practice Test</i> 329 #12 <i>Standardized Test Practice</i> 330 #6, 331 #11 <i>Study Guide and Review</i> 327 #24 <i>Practice: Word Problems</i> 387 #2-#4, #6	SE: 160-164, 173 #48 <i>Practice Test</i> 201 #5-#6 <i>Spreadsheet Investigation</i> 165 <i>Study Guide and Review</i> 198 #12 TWE: ICE 161-162 <i>Practice: Skills</i> 191 <i>Practice: Word Problems</i> 192
Have students explore number patterns and predict the tenth, hundredth, and nth terms in the pattern using words.	SE: 36 #27, 226 #21, 392 #10 <i>Hands-On Mini Lab</i> 18 <i>Standardized Test Practice</i> 51 #17c, 237 #10 TWE: A 376, 445	SE: 39 (Party Planning), 42 #22-#24 <i>Hands-On Lab</i> 278 #2, #4, 516 #3 <i>Hands-On Mini Lab</i> 11 <i>Problem-Solving Strategy</i> 96-97 TWE: A 97 DI 99
Have students explore geometric patterns and predict the tenth, hundredth, and nth terms in the pattern using words.	The following examples contain geometric patterns: SE: 9 #9 <i>Hands-On Mini Lab</i> 18 <i>Standardized Test Practice</i> 147 #12	SE: 10 #18, 42 #34 <i>Hands-On Mini Lab</i> 6, 512 TWE: ICE 324

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should describe and compare rates of change from analysis of a graph, table, or chart.	SE: 293 Example 4, 295 #27-#28 <i>Hands-On Lab</i> 296 <i>Mid-Chapter Practice Test</i> 310 #11 <i>Study Guide and Review</i> 327 #24	SE: 160-164 <i>Practice Test</i> 201 #5-#6 <i>Spreadsheet Investigation</i> 165 <i>Study Guide and Review</i> 198 #12 TWE: B 160 DI 161 ICE 161-162 <i>Practice: Skills</i> 191 <i>Practice: Word Problems</i> 192 <i>Study Guide and Intervention</i> 190
Provide opportunities for students to explore tables of numbers and common sequences, such as arithmetic, geometric, and Fibonacci, to determine if patterns exist.	SE: 34-36, 196 #2, 291 #38 <i>Hands-On Lab</i> 37 <i>Problem-Solving Strategy</i> 132-133 TWE: A 36, 213	SE: 7 Example 1, 512-515 <i>Hands-On Lab</i> 516 <i>Hands-On Mini Lab</i> 11 <i>Problem-Solving Strategy</i> 96-97, 324 TWE: B 96 ICE 96
Students should look for ratios in given sets of real-life data and use them to solve problems.	SE: 288 (Gears), 289 Example 5, 291 #33-#37, 294 #20, 295 #27-#28 <i>Hands-On Lab</i> 301 TWE: B 288, 292 DI 289	SE: 156 (Trail Mix), 157 Example 4, 159 #34, 184-187 <i>Hands-On Lab</i> 193 #10 <i>Spreadsheet Investigation</i> 165 TWE: A 159, 173
Provide students the opportunity to find the probability of simple events and to represent it as a ratio, decimal, or percent.	SE: 370-373, 375 Example 3, 376 #16-#17, 377 #25-#27, 380 #23-#25 TWE: ICE 371 <i>Practice: Skills</i> 486 <i>Practice: Word Problems</i> 487 <i>Study Guide and Intervention</i> 485	SE: 374-377 <i>Problem-Solving Strategy</i> 379 #11 TWE: ICE 375 <i>Practice: Skills</i> 446 <i>Practice: Word Problems</i> 447 <i>Study Guide and Intervention</i> 445

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Students should find rates of change expressed as ratios with unlike units such as cost per unit, miles per hour, or height per age, interpret what these ratios mean, and use them to solve problems.	SE: 292 Example 1, 293, 294 #20-#21, 295 #22 <i>Hands-On Lab</i> 296 <i>Hands-On Mini Lab</i> 292 TWE: A 295 DI 293	SE: 160-164 <i>Spreadsheet Investigation</i> 165 TWE: B 160 DI 161 ICE 161-162 <i>Practice: Skills</i> 191 <i>Practice: Word Problems</i> 192 <i>Study Guide and Intervention</i> 190
<p>DISCRETE MATHEMATICS</p> <p>Discrete mathematics is defined as the study of topics which involve items that can be counted rather than continuous quantities which can only be measured. Discrete mathematics is actually an umbrella term which can include such topics as counting techniques, sets, relations, functions, logic, reasoning, and algorithms. Information and communication continue to impact the modern world and require the understanding of topics in discrete mathematics. Decision-making, involving sets and systems having a countable number of elements, needs to be integrated throughout the curriculum. Students should have experience with finite graphs, matrices, sequences, recursion, and the development and testing of algorithms.</p>		
Have students solve simple counting problems using different strategies, such as tree diagrams or the multiplication rule, and have students discuss the efficiency of the various strategies.	SE: 374-377, 378-380, 381-383, 387-390 TWE: A 376, 380 B 374 <i>Practice: Skills</i> 491 <i>Practice: Word Problems</i> 497	SE: 380-383 <i>Problem-Solving Strategy</i> 378-379 TWE: A 379, 383 B 380 DI 378 ICE 381 <i>Practice: Skills</i> 451 <i>Practice: Word Problems</i> 452 <i>Study Guide and Intervention</i> 450
Have students explore and explain strategies in more complex game situations, such as the game of NIM.	Games are discussed in the following examples: SE: 373 #30, 374 Example 1, 376 #1, 377 #21-#22, 380 #16 <i>The Game Zone</i> 385 <i>Hands-On Mini Lab</i> 374 <i>WebQuest</i> 285	The following games use several strategies to meet the objective. SE: <i>The Game Zone</i> 33, 441

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Explore ways to represent data in an organized fashion so the number of items in a set can be determined: e.g., stem-and-leaf plots.	SE: 54-57, 64-68, 76-79 <i>Hands-On Lab 73 #2</i> TWE: B 54, 64, 76 DI 55	SE: <i>Problem-Solving Strategy</i> 123-124, 378-379, 418-419, 430 TWE: B 123, 418 DI 378 ICE 123
Encourage students to create simple algorithms as a way to solve problems; have them defend the algorithm.	SE: <i>Hands-On Lab</i> 119 #3, 127 #3, 155 #5, 176 <i>Hands-On Mini Lab</i> 134, 244 TWE: A 141 DI 265	SE: 26 #1 <i>Hands-On Lab</i> 482-483 <i>Hands-On Mini Lab</i> 71 TWE: A 31 B 23, 50, 142 DI 51
Have students compare and discuss different algorithms for solving problems.	When discussing problem-solving on the following pages, different algorithms can be compared and discussed: SE: <i>Problem-Solving Strategy</i> 22-23, 132-133, 164-165, 302-303, 338-339, 391-392, 444-445, 496-497, 518-519	SE: 26 #1, 92 (Biology) <i>Hands-On Mini Lab</i> 28 TWE: B 23, 484 DI 51, 83
Encourage students to use simple logic and inductive reasoning to make predictions related to real-life situations; apply this strategy to science activities.	SE: <i>Problem-Solving Strategy</i> 444-445 TWE: B 345, 444 ICE 444	SE: <i>Problem-Solving Strategy</i> 276-277 TWE: A 277 DI 276 ICE 276
Explore elementary logic notions, such as "and", "or", and "not" statements, and relate these to Venn diagrams.	TWE: A 431 The following example could be used with a Venn diagram. TWE: DI 241	SE: <i>Problem-Solving Strategy</i> 123-124 TWE: A 124 DI 123, 133

OBJECTIVES	PAGE REFERENCES	
	COURSE 2	COURSE 3
Have students explore “if-then” statements.	SE: 32 #29, 57 #18, 200 #46, 243 #39, 360 #20, 377 #19	SE: 21 #61, 27 #45, 122 #36, 289 #21 <i>Problem-Solving Strategy 276</i>
Have students investigate the benefits of various alternatives in simple networks, such as efficient ways to deliver mail or plow streets in a small village (with a small number of streets).	The following can be used to discuss simple networks: SE: 112 (Maps), 115 #41, 453 #12 <i>Problem-Solving Strategy 202 #12</i> <i>Practice: Word Problems 141</i>	The following can be used to discuss simple networks: SE: 125, 142 (Archaeology), 143 Example 2, 145 #22, 273 TWE: ICE 143
Students should use logic and simple deductive reasoning to order a series of statements.	Deductive reasoning is covered on the following pages: SE: <i>Problem-Solving Strategy 444-445</i> TWE: DI 445	Deductive reasoning is covered on the following pages: SE: <i>Problem-Solving Strategy 276-277</i>
Provide opportunities for students to write simple computer programs using languages like LOGO or some form of BASIC.	The following examples could be used to meet this objective. TWE: WQ 3, 103, 285	The following examples could be used to meet this objective. TWE: WQ 3, 153, 465

Codes Used for TWE Codes

Course 2

A Assess
B Bellringer
DI Daily Intervention
GZ The Game Zone
ICE In-Class Examples
TT Teaching Tip
WQ WebQuest

Course 3

A Assess
B Bellringer
DI Daily Intervention
GZ The Game Zone
ICE In-Class Examples
PA Practice/Apply
PS Portfolio Suggestion
TNT Tips for New Teachers
TT Teaching Tip
WQ WebQuest