



Math Connects

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STANDARDS	PAGE REFERENCES
<p>Standard 1: Number and Computation</p>	
<p>Standard 1: Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.</p>	
<p>Benchmark 1: Number Sense – The student demonstrates number sense for integers, fractions, decimals, and money in a variety of situations.</p>	
<p>1. ▲ N knows, explains, and uses equivalent representations for (\$):</p> <ul style="list-style-type: none"> a. whole numbers from 0 through 1,000,000 (2.4.K1a-b); b. fractions greater than or equal to zero (including mixed numbers) (2.4.K1c); c. decimals greater than or equal to zero through hundredths place and when used as monetary amounts (2.4.K1c). 	<p>Student Edition: 17-19, 20-23, 28-30, 32-35, 333-335, 350-353 <i>Explore</i> 26-27, 336-337, 346-347 <i>Problem Solving in Geography</i> 354-355</p> <p>Teacher Edition: AE 33; ATS 18; SQ 28, 346</p>

STANDARDS	PAGE REFERENCES
<p>2. compares and orders (2.4.K1a-c) ($\\$) :</p> <p>a. integers,</p> <p>b. fractions greater than or equal to zero (including mixed numbers),</p> <p>c. decimals greater than or equal to zero through hundredths place.</p>	<p>Student Edition: 36-39, 42-46, 350-353, 359 #39-#41, 391-393, 404-407, 533-535, 541 #46-#49 <i>Chapter Test</i> 55, 367, 415, 551 <i>Explore</i> 402-403 <i>Game Time</i> 47 <i>Problem Solving in Geography</i> 355 #4-#6 <i>Problem Solving in Science</i> 40-41 <i>Study Guide and Review</i> 53-54, 365, 411-414, 549</p> <p>Teacher Edition: A 39, 45, 353, 393, 535; AE 37, 351, 392, 534; SQ 36, 42, 350, 533</p>
<p>3. explains the numerical relationships (relative magnitude) between whole numbers, fractions greater than or equal to zero (including mixed numbers), and decimals greater than or equal to zero through hundredths place (2.4.K1a-c).</p>	<p>Student Edition: 36-39, 42-46, 350-353, 359 #39-#41, 391-393, 404-407 <i>Chapter Test</i> 55, 367, 415 <i>Explore</i> 402-403 <i>Game Time</i> 47 <i>Problem Solving in Geography</i> 355 #4-#6 <i>Problem Solving in Science</i> 40-41 <i>Study Guide and Review</i> 53-54, 365, 411-414</p> <p>Teacher Edition: A 39, 45, 353, 393; AE 37, 351, 392; SQ 36, 42, 350</p>
<p>4. knows equivalent percents and decimals for one whole, one-half, one-fourth, three-fourths, and one tenth through nine tenths (2.4.K1c), e.g., $1 = 100\% = 1.0$, $3/4 = 75\% = .75$, $3/10 = 30\% = .3$.</p>	<p>Student Edition: <i>Concepts and Skills Bank</i> R56 <i>Explore</i> 26-27 Also see <i>Math Connects: Concepts, Skills, and Problem Solving Course 1</i> © 2009.</p> <p>Student Edition: 365-369, 377-380</p>
<p>5. identifies integers and gives real-world problems where integers are used (2.4.K1a), e.g., making a T-table of the temperature each hour over a twelve hour period in which the temperature at the beginning is 10 degrees and then decreases 2 degrees per hour.</p>	<p>Student Edition: 533-535, 541 #46-#49 <i>Chapter Test</i> 551 <i>Study Guide and Review</i> 549</p> <p>Teacher Edition: A 535; AE 534; SQ 533</p>

STANDARDS	PAGE REFERENCES
<p>Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of the whole number system; recognizes, uses, and explains the concepts of properties as they relate to the whole number system; and extends these properties to integers, fractions (including mixed numbers), and decimals.</p>	
<p>1. classifies subsets of numbers as integers, whole number, fractions (including mixed numbers), or decimals (2.4.K1a-c, 2.4.K1k).</p>	<p>Student Edition: 36-39, 42-46, 350-353, 359 #39-#41, 391-393, 404-407, 533-535, 541 #46-#49 <i>Chapter Test</i> 55, 367, 415, 551 <i>Explore</i> 402-403 <i>Game Time</i> 47 <i>Problem Solving in Geography</i> 355 #4-#6 <i>Problem Solving in Science</i> 40-41 <i>Study Guide and Review</i> 53-54, 365, 411-414, 549</p> <p>Teacher Edition: A 39, 45, 353, 393, 535; AE 37, 351, 392, 534; SQ 36, 42, 350, 533</p>
<p>2. identifies prime and composite numbers from 0 through 50.</p>	<p>Student Edition: 378-381, 389 #40 <i>Explore</i> 376-377 <i>Mid-Chapter Check</i> 390</p> <p>Teacher Edition: A 381; AE 379; ATS 379; SQ 378</p>

STANDARDS	PAGE REFERENCES
<p>3. uses the concepts of these properties with whole numbers, integers, fractions greater than or equal to zero (including mixed numbers), and decimals greater than or equal to zero and demonstrates their meaning including the use of concrete objects (2.4.K1a) (\$):</p> <p>a. commutative properties of addition and multiplication, e.g., $43 + 34 = 34 + 43$ and $12 \times 15 = 15 \times 12$;</p> <p>b. associative properties of addition and multiplication, e.g., $4 + (3 + 5) = (4 + 3) + 5$;</p> <p>c. zero property of addition (additive identity) and property of one for multiplication (multiplicative identity), e.g., $342 + 0 = 342$ and $576 \times 1 = 576$;</p> <p>d. symmetric property of equality, e.g., $35 = 11 + 24$ is the same as $11 + 24 = 35$;</p> <p>e. zero property of multiplication, e.g., $438,223 \times 0 = 0$;</p> <p>f. distributive property, e.g., $7(3 + 5) = 7(3) + 7(5)$;</p> <p>g. substitution property, e.g., if $a = 3$ and $a = b$, then $b = 3$.</p>	<p>Student Edition: 84-87, 91 #33-#35, 126-129, 135 #32-#34, 222 #25 <i>Chapter Test</i> 143 <i>Study Guide and Review</i> 96, 142</p> <p>Teacher Edition: 88A, 132A A 87, 129; AE 85, 127; ATS 86, 127; SQ 84, 126</p>
<p>4. recognizes Roman Numerals that are used for dates, on clock faces, and in outlines.</p>	<p>This standard can be met during teacher/class discussion.</p>
<p>5. recognizes the need for integers, e.g., with temperature, below zero is negative and above zero is positive; in finances, money in your pocket is positive and money owed someone is negative.</p>	<p>Student Edition: 533-535, 537-541 <i>Chapter Test</i> 551 <i>Study Guide and Review</i> 549</p> <p>Teacher Edition: A 535; AE 534; CE 539; SQ 533</p>

STANDARDS	PAGE REFERENCES
Benchmark 3: Estimation – The student uses computational estimation with whole numbers, fractions, decimals, and money in a variety of situations.	
<p>1. estimates whole numbers quantities from 0 through 100,000; fractions greater than or equal to zero (including mixed numbers); decimals greater than or equal to zero through hundredths place; and monetary amounts to \$10,000 using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology (2.4.K1a-c) (\$).</p>	<p>Student Edition: 61-63, 64-67, 112-115, 118 #37-#40, 152-155, 161 #44-#47, 356-359, 444-446 <i>Chapter Test</i> 97, 143, 187, 367, 469 <i>Mid-Chapter Check</i> 73, 119, 165, 447 <i>Problem-Solving Investigation</i> 74-75 <i>Study Guide and Review</i> 95-96, 140, 183, 365, 467</p> <p>Teacher Edition: 116A, 158A, 360A A 67, 115, 155, 359, 446; AE 65, 113, 153, 357, 445; ATS 65, 114, 357, 445; SQ 64, 112, 152, 356, 444</p>
<p>2. ▲N uses various estimation strategies to estimate whole number quantities from 0 through 100,000; fractions greater than or equal to zero (including mixed numbers); decimals greater than or equal to zero through hundredths place; and monetary amounts to \$10,000 and explains how various strategies are used (2.4.K1a-c) (\$).</p>	<p>Student Edition: 61-63, 64-67, 112-115, 118 #37-#40, 152-155, 161 #44-#47, 356-359, 444-446 <i>Chapter Test</i> 97, 143, 187, 367, 469 <i>Mid-Chapter Check</i> 73, 119, 165, 447 <i>Problem-Solving Investigation</i> 74-75 <i>Study Guide and Review</i> 95-96, 140, 183, 365, 467</p> <p>Teacher Edition: 116A, 158A, 360A A 67, 115, 155, 359, 446; AE 65, 113, 153, 357, 445; ATS 65, 114, 357, 445; SQ 64, 112, 152, 356, 444</p>
<p>3. recognizes and explains the difference between an exact and an approximate answer (2.4.K1a-c).</p>	<p>Student Edition: 61-63, 64-67, 112-115, 118 #37-#40, 152-155, 161 #44-#47, 356-359, 444-446 <i>Chapter Test</i> 97, 143, 187, 367, 469 <i>Mid-Chapter Check</i> 73, 119, 165, 447 <i>Problem-Solving Investigation</i> 74-75 <i>Study Guide and Review</i> 95-96, 140, 183, 365, 467</p> <p>Teacher Edition: 116A, 158A, 360A A 67, 115, 155, 359, 446; AE 65, 113, 153, 357, 445; ATS 65, 114, 357, 445; SQ 64, 112, 152, 356, 444</p>

STANDARDS	PAGE REFERENCES
<p>4. explains the appropriateness of an estimation strategy used and whether the estimate is greater than (overestimate) or less than (underestimate) the exact answer (2.4.K1a).</p>	<p>Student Edition: 64-67, 70-71 Ex 1-4, 80 Ex 1-2, 116 Ex 1-2, 122 Ex 1-2, 132-135 <i>Chapter Test</i> 143 <i>Problem-Solving Investigation</i> 74-75, 442-443 <i>Study Guide and Review</i> 140-142</p> <p>Teacher Edition: 136A A 67, 135; AE 65, 133; SQ 64, 132</p>
<p>Benchmark 4: Computation – The student models, performs, and explains computation with whole numbers, fractions including mixed numbers, and decimals including the use of concrete objects in a variety of situations.</p>	
<p>1. computes with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology (2.4.K1a).</p>	<p>Student Edition: 80-82, 91 #36-#39, 158-161, 162-164, 170-173, 174-176, 423-425, 428-431, 434-436, 439-441, 448-451, 452-454, 458-461 <i>Explore</i> 78-79, 156-157, 168-169, 421-422, 426-427, 432-433, 437-438 <i>Chapter Test</i> 187, 469 <i>Game Time</i> 83, 177, 455 <i>Mid-Chapter Check</i> 165 <i>Problem Solving in Science</i> 462-463 <i>Problem Solving in Social Studies</i> 178-179 <i>Study Guide and Review</i> 183-186, 464-468</p> <p>Teacher Edition: A 161, 164, 425, 441, 451, 454; AE 440, 453; ATS 159, 163, 424; SQ 158, 162, 423, 439, 452</p>

STANDARDS	PAGE REFERENCES
<p>2. performs and explains these computational procedures:</p> <p>a. N divides whole numbers through a 2-digit divisor and a 4-digit dividend with the remainder as a whole number or a fraction using paper and pencil (2.4.K1a-b), e.g., $7452 \div 24 = 310 \text{ r } 12$ or $310 \frac{1}{2}$;</p> <p>b. divides whole numbers beyond a 2-digit divisor and a 4-digit dividend using appropriate technology (2.4.K1a-b), e.g., $73,368 \div 36 = 2,038$;</p> <p>c. N adds and subtracts decimals from thousands place through hundredths place (2.4.K1c);</p> <p>d. N multiplies decimals up to three digits by two digits from hundreds place through hundredths place (2.4.K1c);</p> <p>e. N adds and subtracts fractions (like and unlike denominators) greater than or equal to zero (including mixed numbers) without regrouping and without expressing answers in simplest form with special emphasis on manipulatives, drawings, and models; (2.4.K1c);</p> <p>f. N multiplies and divides by 10; 100; 1,000; or single-digit multiples of each (2.4.K1a-b), e.g., $20 \cdot 300$ or $4,400 \div 500$.</p>	<p>Student Edition: 80-82, 87 #29-#31, 91 #36-#39, 103-105, 112-115, 149-151, 152-155, 158-161, 162-164, 174-176, 423-425, 428-431, 434-436, 439-441, 448-451, 452-454, 458-461 <i>Explore</i> 78-79, 156-157, 421-422, 425-427, 432-433, 437-438 <i>Chapter Test</i> 97, 187, 469 <i>Game Time</i> 83, 177, 455 <i>Mid-Chapter Check</i> 165, 447 <i>Problem Solving in Science</i> 462-463 <i>Problem Solving in Social Studies</i> 178-179 <i>Study Guide and Review</i> 95, 182-186, 464-468</p> <p>Teacher Edition: 108A, 116A, 152A, 158A, 162A, 166A A 82, 105, 115, 151, 155, 164, 425, 431, 436, 441, 451, 454; AE 81, 104, 113, 153, 159, 163, 424, 429, 435, 440, 449, 453; ATS 81, 150, 153, 159, 163, 175, 429, 453; SQ 80, 103, 112, 149, 152, 158, 162, 423, 428, 434, 439, 448, 452</p>
<p>3. reads and writes horizontally, vertically, and with different operational symbols the same addition, subtraction, multiplication, or division expression, e.g., $6 \cdot 4$ is the same as 6×4 is the same as $6(4)$ and 6</p> $\begin{array}{r} \times 4 \\ \hline \end{array}$ <p>or 10 divided by 2 is the same as $10 \div 2$ or $\frac{10}{2}$.</p>	<p>Student Edition: 202-204 <i>Chapter Test</i> 229 <i>Game Time</i> 223 <i>Mid-Chapter Check</i> 205 <i>Study Guide and Review</i> 226</p> <p>Teacher Edition: 206A A 204; AE 203; ATS 203; SQ 202</p>
<p>4. ▲N identifies, explains, and finds the greatest common factor and least common multiple of two or more whole numbers through the basic multiplication facts from 1×1 through 12×12 (2.4.K1d).</p>	<p>Student Edition: 373-375, 378-381, 387 #41, 396-399, 407 #37-#40 <i>Chapter Test</i> 415 <i>Mid-Chapter Check</i> 390 <i>Study Guide and Review</i> 411-413</p> <p>Teacher Edition: A 375, 399; AE 374, 397; SQ 373, 396</p>

STANDARDS	PAGE REFERENCES
Standard 2: Algebra	
Standard 2: Algebra – The student uses algebraic concepts and procedures in a variety of situations.	
Benchmark 1: Patterns – The student recognizes, describes, extends, develops, and explains relationships in patterns in a variety of situations.	
<p>1. uses concrete objects, drawings, and other representations to work with these types of patterns(2.4.K1a):</p> <p>a. repeating patterns, e.g., 9, 10, 11, 9, 10, 11, ...;</p> <p>b. growing patterns, e.g., 20, 30, 28, 38, 36, ... where the rule is add 10, then subtract 2; or 2, 5, 8, ... as an example of an arithmetic sequence – each term after the first is found by adding the same number to the preceding term.</p>	<p>Student Edition: 6-7, 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Extend</i> 264-265 <i>Problem-Solving Strategy</i> 248-249, 394-395 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: A 213, 396; AE 211; ATS 211; I 210; SQ 210</p>
<p>2. uses these attributes to generate patterns:</p> <p>a. counting numbers related to number theory (2.4.K1a), e.g., multiples or perfect squares;</p> <p>b. whole numbers (2.4.K1a) (\$), e.g., 10; 100; 1,000; 10,000; 100,000; ... (powers of ten);</p> <p>c. geometric shapes through two attribute changes (2.4.K1g), e.g., (triangle, square, pentagon, hexagon) ... when the next shape has one more side; or when both the color and the shape change at the same time;</p> <p>d. measurements (2.4.K1a), e.g., 3 m, 6 m, 9 m, ...;</p> <p>e. things related to daily life (2.4.K1a), e.g., sports scores, longitude and latitude, elections, eras, or appropriate topics across the curriculum;</p> <p>f. things related to size, shape, color, texture, or movement (2.4.K1a), e.g., square dancing moves (kinesthetic patterns)</p>	<p>Student Edition: 6-7, 103-105, 149-151, 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Extend</i> 264-265 <i>Problem-Solving Strategy</i> 248-249, 394-395 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: 396A A 213, 396; AE 104, 150, 211; ATS 211; I 103, 149, 210; SQ 210</p>

STANDARDS	PAGE REFERENCES
<p>3. identifies, states, and continues a pattern presented in various formats including numeric (list or table), visual (picture, table, or graph), verbal (oral description), kinesthetic (action), and written (2.4.K1a) (\$).</p>	<p>Student Edition: 6-7, 103-105, 149-151, 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Extend</i> 264-265 <i>Problem-Solving Strategy</i> 248-249, 394-395 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: A 213, 396; AE 104, 150, 211; ATS 211; I 103, 149, 210; SQ 210</p>
<p>4. generates: a. a pattern (repeating, growing) (2.4.K1a). b. a pattern using a function table (input/output machines, T-tables) (2.4.K1g).</p>	<p>Student Edition: 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Extend</i> 264-265 <i>Problem-Solving Strategy</i> 248-249 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: A 213; AE 211; ATS 211; I 210; SQ 210</p>
<p>Benchmark 2: Variables, Equations, and Inequalities – The student uses variables, symbols, whole numbers, and algebraic expressions in one variable to solve linear equations in a variety of situations.</p>	
<p>1. ▲ explains and uses variables and symbols to represent unknown whole number quantities from 0 through 1,000 and variable relationships (2.4.K1a)</p>	<p>Student Edition: 193-195, 198-201, 202-204, 234 <i>Chapter Test</i> 229 <i>Mid-Chapter Check</i> 205 <i>Study Guide and Review</i> 225-226</p> <p>Teacher Edition: 196A, 202A, 206A A 195, 201; AE 194, 199, 203; ATS 194, 199, 203; I 198, 202, 204; SQ 193, 198, 202</p>
<p>2. ▲N solves one-step linear equations with one variable and a whole number solution using addition and subtraction with whole numbers from 0 through 100 and multiplication with the basic facts (2.4.K1a,e) (\$), e.g., $3y = 12$, $45 = 17 + q$, or $r - 42 = 36$.</p>	<p>Student Edition: 237-239, 244-247, 288 #30-#33 <i>Explore</i> 235-236, 242-243</p> <p>Teacher Edition: 244A, 248A A 239, 247; AE 238, 245; ATS 238, 245, SQ 237, 244</p>

STANDARDS	PAGE REFERENCES																
<p>3. explains and uses equality and inequality symbols ($=$, \neq, $<$, \leq, $>$, \geq) and corresponding meanings (is equal to, is not equal to, is less than, is less than or equal to, is greater than, is greater than or equal to) with whole numbers from 0 to 100,000 (2.4.K1a-b) (\$).</p>	<p>Student Edition: 20-23, 35 #41-#43, 39 #46-#49, 44 #7-#8 <i>Mid-Chapter Check</i> 31 #6-#10 <i>Study Guide and Review</i> 51</p> <p>Teacher Edition: A 23; AE 21, 42 #1; ATS 21</p>																
<p>4. recognizes ratio as a comparison of part-to-part and part-to-whole relationships (2.4.K1a), e.g., the relationship between the number of boys and the number of girls (part-to-part) or the relationship between the number of girls to the total number of students in the classroom (part-to-whole).</p>	<p>Student Edition: LA10-LA13</p> <p>Student Edition: Also see <i>Math Connects: Concepts, Skills, and Problem Solving Course 1</i> © 2009.</p> <p>Student Edition: 314-319</p>																
<p>Benchmark 3: Functions – The student recognizes, describes, and examines whole number relationships in a variety of situations.</p>																	
<p>1. states mathematical relationships between whole numbers from 0 through 10,000 using various methods including mental math, paper and pencil, concrete objects, and appropriate technology (2.4.K1a) (\$).</p>	<p>Student Edition: 210-213 <i>Chapter Test</i> 229 <i>Explore</i> 208-209 <i>Extend</i> 214-215 <i>Problem Solving in Science</i> 216-217 <i>Problem-Solving Investigation</i> 206-207 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: A 213; AE 211; SQ 210</p>																
<p>2. finds the values, determines the rule, and states the rule using symbolic notation with one operation of whole numbers from 0 through 10,000 using a vertical or horizontal function table (input/output machine, T-table) (2.4.K1f), e.g., using the function table, fill in the values and find the rule, the rule is $N \cdot 80$.</p> <table border="1" data-bbox="191 1507 784 1602"> <tbody> <tr> <td>N</td> <td>4</td> <td>9</td> <td>11</td> <td>?</td> <td>2</td> <td>7</td> <td>?</td> </tr> <tr> <td>?</td> <td>320</td> <td>720</td> <td>880</td> <td>640</td> <td>?</td> <td>?</td> <td>800</td> </tr> </tbody> </table>	N	4	9	11	?	2	7	?	?	320	720	880	640	?	?	800	<p>Student Edition: 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Explore</i> 208-209 <i>Extend</i> 214-215 <i>Study Guide and Review</i> 228</p> <p>Teacher Edition: A 213; AE 211, 261; ATS 211; I 210; SQ 210, 260</p>
N	4	9	11	?	2	7	?										
?	320	720	880	640	?	?	800										

STANDARDS	PAGE REFERENCES
<p>3. generalizes numerical patterns using whole numbers from 0 through 5,000 up to two operations by stating the rule using words, e.g., If the sequence is 2400, 1200, 600, 300, 150, ...; in words, the rule could be split the number in half or divide the previous number by 2 or if the sequence is 4, 11, 25, 53, 109, ...; in words, the rule could be double the number and add 3 to get the next number or multiply the number by 2 and add 3.</p>	<p>Student Edition: 210-213, 222 #23, 260-262 <i>Chapter Test</i> 229 <i>Extend</i> 264-265 <i>Problem-Solving Investigation</i> 576-577 <i>Problem-Solving Strategy</i> 248-249 <i>Study Guide and Review</i> 228, 599 Teacher Edition: A 213; AE 211; ATS 211; I 210; SQ 210; T 576</p>
<p>4. ▲ ■ uses a function table (input/output machine, T-table) to identify, plot, and label whole number ordered pairs in the first quadrant of a coordinate plane (2.4.K1a,f).</p>	<p>Student Edition: 254-257 <i>Extend</i> 264-265 <i>Game Time</i> 263 <i>Problem Solving in Geography</i> 259 Teacher Edition: A 257; AE 255; SQ 254</p>
<p>5. plots and locates points for integers (positive and negative whole numbers) on a horizontal number line and vertical number line (2.4.K1a).</p>	<p>Student Edition: 250-252 <i>Game Time</i> 263 <i>Mid-Chapter Check</i> 253 <i>Problem Solving in Geography</i> 259 Teacher Edition: 254A A 252; AE 251; ATS 251; SQ 250</p>
<p>6. describes whole number relationships using letters and symbols.</p>	<p>Student Edition: 193-195, 198-201, 202-204, 234 <i>Chapter Test</i> 229 <i>Mid-Chapter Check</i> 205 <i>Study Guide and Review</i> 225-226 Teacher Edition: 196A, 202A, 206A A 195, 201; AE 194, 199, 203; ATS 194, 199, 203; I 198, 202, 204; SQ 193, 198, 202</p>

STANDARDS	PAGE REFERENCES
Benchmark 4: Models – The student develops and uses mathematical models including the use of concrete objects to represent and explain mathematical relationships in a variety of situations.	
<p>1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:</p> <p>a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate planes/grids) to model computational procedures and mathematical relationships and to solve equations (1.1.K1a, 1.1.K1c, 1.1.K2, 1.1.K3, 1.1.K5, 1.2.K1, 1.2.K3, 1.3.K1-4, 1.4.K1, 1.4.K2a-b, 1.4.K.2f, 2.1.K1, 2.1.K2a-b, 2.1.K2d-h, 2.1.K2, 2.2.K1-4, 2.3.K1, 2.3.K4-5, 3.1.K1-6, 3.2.K1-4, 3.3.K1-2, 3.4.K1-4, 4.2.K3) (\$);</p> <p>b. place value models (place value mats, hundred charts, base ten blocks, or unifix cubes) to compare, order, and represent numerical quantities and to model computational procedures (1.1.K1a, 1.1.K2, 1.1.K4, 1.2.K1, 1.3.K1-3, 1.4.K2a-b, 1.4.K2f, 2.2.K3) (\$);</p> <p>c. fraction and mixed number models (fraction strips or pattern blocks) and decimal and money models (base ten blocks or coins) to compare, order, and represent numerical quantities (1.1.K1b, 1.1.K2-4, 1.2.K1, 1.3.K1-3, 1.4.K2c-e, 4.1.K4) (\$);</p> <p>d. factor trees to find least common multiple and greatest common factor (1.2.K2, 1.4.K4);</p> <p>e. equations and inequalities to model numerical relationships (2.2.K2) (\$);</p> <p>f. function tables (input/output machines, T-tables) to model numerical and algebraic relationships (2.1.K1c, 2.1.K1j, 3.1.K1-8, 3.2.K7-8, 3.3.K1-3) (\$);</p>	<p>Student Edition: 17-19, 20-23, 28-30, 32-35, 80-82, 91 #36-#39, 158-161, 162-164, 170-173, 174-176, 193-195, 198-201, 202-204, 234, 333-335, 350-353, 373-375, 378-381, 387 #41, 396-399, 407 #37-#40, 423-425, 428-431, 434-436, 439-441, 448-451, 452-454, 458-461</p> <p><i>Explore</i> 26-27, 78-79, 156-157, 168-169, 336-337, 346-347, 421-422, 426-427, 432-433, 437-438</p> <p><i>Chapter Test</i> 187, 229, 415, 469</p> <p><i>Game Time</i> 83, 177, 455</p> <p><i>Mid-Chapter Check</i> 165, 205, 390</p> <p><i>Problem Solving in Geography</i> 354-355</p> <p><i>Problem Solving in Science</i> 462-463</p> <p><i>Problem Solving in Social Studies</i> 178-179</p> <p><i>Study Guide and Review</i> 183-186, 225-226, 411-413, 464-468</p> <p>Teacher Edition: 196A, 202A, 206A</p> <p>A 161, 164, 195, 201, 375, 399, 425, 441, 451, 454; AE 33, 194, 199, 203, 374, 397, 440, 453; ATS 18, 159, 163, 194, 199, 203, 424; I 198, 202, 204; SQ 28, 158, 162, 193, 198, 202, 346, 373, 396, 423, 439, 452</p>

STANDARDS	PAGE REFERENCES
<p>Continued from cell above:</p> <p>1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:</p> <p>g. two-dimensional geometric models (geoboards or dot paper) to model perimeter, area, and properties of geometric shapes and three-dimensional models (nets or solids) and real-world objects to compare size and to model volume and properties of geometric shapes (2.1.K2c, 2.1.K4b, 3.2.K5, 3.3.K3, 4.1.K2);</p> <p>h. tree diagrams to organize attributes through three different sets and determine the number of possible combinations (4.1.K2, 4.2.K1a-d, 4.2.K1f-l; 4.2.K2, 4.2);</p> <p>i. two- and three-dimensional geometric models (spinners or number cubes) and process models (concrete objects, pictures, diagrams, or coins) to model probability 4.1.K1-3, 4.2.K1e, 4.2.K2) (\$) ;</p> <p>j. graphs using concrete objects, pictographs, frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, line plots, charts, tables, and single stem-and-leaf plots to organize and display data (4.1.K2, 4.2.K1-2) (\$) ;</p> <p>k. Venn diagrams to sort data and show relationships.</p>	<p>Student Edition: 284-288, 289-292, 294-298, 299-303, 306-310, 608-611, 616-619, 627 #20-#22, #24, 631-635, 644-647, 668-672, 677-680 <i>Chapter Test</i> 327, 655, 687 <i>Explore</i> 666-667 <i>Extend</i> 673 <i>Game Time</i> 311, 622 <i>Mid-Chapter Check</i> 293, 623, 676 <i>Problem Solving in Art</i> 304-305 <i>Problem Solving in Science</i> 637 <i>Study Guide and Review</i> 322-326, 651, 653-654, 685-686</p> <p>Teacher Edition: 612A, 624A, 640A, 648A, 674A A 287, 292, 297, 303, 611, 619, 634, 671, 680; AE 285, 290, 295, 300, 609, 617, 632, 645, 669, 678; ATS 286, 291, 301, 610, 617, 632, 669; CE 633; SQ 284, 289, 294, 299, 608, 616, 644, 668</p>
<p>2. creates mathematical models to show the relationship between two or more things, e.g., using trapezoids to represent numerical quantities –</p> <p style="padding-left: 100px;">.5 or 1/2 1 or 1.0 1.5 or 1 1/2 2 or 2.0</p>	<p>Student Edition: 391-393 <i>Chapter Test</i> 415 <i>Study Guide and Review</i> 412</p> <p>Teacher Edition: 394A A 393; AE 392; ATS 392</p>

STANDARDS	PAGE REFERENCES
Standard 3: Geometry	
Standard 3: Geometry – The student uses geometric concepts and procedures in a variety of situations.	
Benchmark 1: Geometric Figures and Their Properties – The student recognizes geometric shapes and compares their properties in a variety of situations.	
<p>1. recognizes and investigates properties of plane figures and solids using concrete objects, drawings, and appropriate technology (2.4.K1g).</p>	<p>Student Edition: 556, 566-569, 570-574 <i>Chapter Test</i> 601 <i>Explore</i> 564-565 <i>Mid-Chapter Check</i> 575 <i>Study Guide and Review</i> 598 Teacher Edition: 570A, 576A A 569, 573; AE 567, 571; ATS 567, 571; I 566, 570; SQ 566, 570</p>
<p>2. recognizes and describes (2.4.K1g): a. regular polygons having up to and including ten sides; b. similar and congruent figures.</p>	<p>Student Edition: 566-569, 570-574, R58-R59, R62 <i>Chapter Test</i> 601 <i>Mid-Chapter Check</i> 575 <i>Study Guide and Review</i> 598 Teacher Edition: 570A, 576A A 569, 573; AE 567, 571; ATS 567, 571; I 566, 570; SQ 566, 570</p>
<p>3. ▲ recognizes and describes the solids (cubes, rectangular prisms, cylinders, cones, spheres, triangular prisms, rectangular pyramids, triangular pyramids) using the terms faces, edges, and vertices (corners) (2.4.K1g).</p>	<p>Student Edition: 624-627, 635 #29 <i>Chapter Test</i> 655 <i>Study Guide and Review</i> 652 Teacher Edition: 628A A 627; AE 625; ATS 625; I 624; SQ 624</p>

STANDARDS	PAGE REFERENCES
<p>4. determines if geometric shapes and real-world objects contain line(s) of symmetry and draws the line(s) of symmetry if the line(s) exist(s) (2.4.K1g).</p>	<p>Student Edition: 10-11</p> <p>Teacher Edition: APK 10; S 10</p> <p>Also see <i>Math Connects Grade 4</i> © 2009</p> <p>Student Edition: 422-425</p>
<p>5. recognizes, draws, and describes (2.4.K1g):</p> <p>a. points, lines, line segments, and rays;</p> <p>b. angles as right, obtuse, or acute.</p>	<p>Student Edition: 557-560</p> <p><i>Chapter Test</i> 601</p> <p><i>Explore</i> 564-565</p> <p><i>Game Time</i> 561</p> <p><i>Mid-Chapter Check</i> 575</p> <p><i>Study Guide and Review</i> 597</p> <p>Teacher Edition: 562A</p> <p>A 560; AE 558; I 557, 564; SQ 557</p>
<p>6. recognizes and describes the difference between intersecting, parallel, and perpendicular lines (2.4.K1g).</p>	<p>Student Edition: 557-560</p> <p><i>Chapter Test</i> 601</p> <p><i>Mid-Chapter Check</i> 575</p> <p><i>Study Guide and Review</i> 597</p> <p>Teacher Edition: A 560; AE 558</p>
<p>7. identifies circumference, radius, and diameter of a circle (2.4.K1g).</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving Course 1</i> © 2009.</p> <p>Student Edition: 527-533</p>

STANDARDS	PAGE REFERENCES
Benchmark 2: Measurement and Estimation – The student estimates, measures, and uses measurement formulas in a variety of situations.	
<p>1. determines and uses whole number approximations (estimations) for length, width, weight, volume, temperature, time, perimeter, and area using standard and nonstandard units of measure (2.4.K1a) (\$).</p>	<p>Student Edition: 477-480, 484-487, 488-490, 492-495, 500-503, 517-521, 527-530, 608-611, 616-619, 627 #20-#22, #24, 631-635, 643 #21, 644-647 <i>Chapter Test</i> 509, 551, 655 <i>Explore</i> 475-476, 515-516 <i>Game Time</i> 481, 622 <i>Mid-Chapter Check</i> 491, 532, 623 <i>Problem Solving in Health</i> 498-499 <i>Problem Solving in Science</i> 637 <i>Problem Solving in Social Studies</i> 542-543 <i>Study Guide and Review</i> 505-507, 547-548, 651-654</p> <p>Teacher Edition: 482A, 488A, 496A, 517A, 522A, 612A, 624A, 648A A 480, 487, 490, 495, 503, 521, 530, 611, 619, 634; AE 478, 485, 489, 493, 501, 528, 609, 617, 632, 645; ATS 478, 485, 489, 493, 501, 508, 519, 610, 617; I 492, 500; SQ 477, 484, 488, 492, 500, 517, 527, 608, 616, 644</p>
<p>2. selects, explains the selection of, and uses measurement tools, units of measure, and degree of accuracy appropriate for a given situation to measure length, width, weight, volume, temperature, time, perimeter, and area using (2.4.K1a) (\$):</p> <p>a. customary units of measure to the nearest fourth and eighth inch,</p> <p>b. metric units of measure to the nearest centimeter,</p> <p>c. nonstandard units of measure to the nearest whole unit,</p> <p>d. time including elapsed time.</p>	<p>Student Edition: 477-480, 484-487, 488-490, 492-495, 500-503, 517-521, 527-530, 608-611, 616-619, 627 #20-#22, #24, 631-635, 643 #21, 644-647 <i>Chapter Test</i> 509, 551, 655 <i>Explore</i> 475-476, 515-516 <i>Game Time</i> 481, 622 <i>Mid-Chapter Check</i> 491, 532, 623 <i>Problem Solving in Health</i> 498-499 <i>Problem Solving in Science</i> 637 <i>Problem Solving in Social Studies</i> 542-543 <i>Study Guide and Review</i> 505-507, 547-548, 651-654</p> <p>Teacher Edition: 482A, 488A, 496A, 517A, 522A, 612A, 624A, 648A A 480, 487, 490, 495, 503, 521, 530, 611, 619, 634; AE 478, 485, 489, 493, 501, 528, 609, 617, 632, 645; ATS 478, 485, 489, 493, 501, 508, 519, 610, 617; I 492, 500; SQ 477, 484, 488, 492, 500, 517, 527, 608, 616, 644</p>

STANDARDS	PAGE REFERENCES
<p>3. states the number of feet and yards in a mile (2.4.K1a).</p>	<p>Student Edition: 477-480 <i>Check What You Know</i> 479 #2 <i>Key Concept</i> 477</p> <p>Teacher Edition: 482A ATS 478; SQ 477</p>
<p>4. converts (2.4.K1a):</p> <p>a. ▲ ■ within the customary system: inches and feet, feet and yards, inches and yards, cups and pints, pints and quarts, quarts and gallons, pounds and ounces;</p> <p>b. within the metric system: centimeters and meters, meters and kilometers, milliliters and liters, grams and kilograms.</p>	<p>Student Edition: 477-480, 484-487, 488-490, 495 #40-#44, 503 #34, 517 #40-#44, 524-526, 527-530 <i>Chapter Test</i> 509, 551 <i>Explore</i> 475-476, 515-516 <i>Game Time</i> 481 <i>Mid-Chapter Check</i> 491, 532 <i>Problem Solving in Social Studies</i> 542-543 <i>Study Guide and Review</i> 505-506, 547-548</p> <p>Teacher Edition: 482A, 522A, 527A A 480, 487, 490, 521, 526, 530; AE 478, 485, 489, 525, 528; ATS 478, 489, 508, 519, 525; I 524; SQ 477, 484, 488, 517, 524, 527</p>
<p>5. knows and uses perimeter and area formulas for squares and rectangles (2.4.K1g).</p>	<p>Student Edition: 608-611, 616-619, 627 #20-#22, #24, 644-647 <i>Chapter Test</i> 655 <i>Game Time</i> 622 <i>Mid-Chapter Check</i> 623 <i>Study Guide and Review</i> 651, 654</p> <p>Teacher Edition: 612A, 624A, 648A A 611, 619; AE 609, 617, 645; ATS 610, 617; SQ 608, 616, 644</p>

STANDARDS	PAGE REFERENCES
Benchmark 3: Transformational Geometry – The student recognizes and performs transformations on geometric shapes including the use of concrete objects in a variety of situations.	
1. recognizes and performs through two transformations (reflection, rotation, translation) on a two-dimensional figure (2.4.K1a).	Student Edition: 578-581, 582-585, 586-590, 591-593 <i>Chapter Test</i> 601 <i>Study Guide and Review</i> 599-600 Teacher Edition: 582A, 586A, 591A A 581, 585, 589; AE 579, 583, 587; ATS 579, 583, 587; I 578, 586; SQ 578, 582, 586
2. recognizes when an object is reduced or enlarged (2.4.K1a).	The following references involve the concept of similarity and can be used during teacher/class discussion to meet this standard. Student Edition: <i>Concepts and Skills Bank</i> R58-R59 Also see <i>Math Connects: Concepts, Skills, and Problem Solving Course 3</i> © 2009. Student Edition: 225-231
3. ▲ recognizes three-dimensional figures (rectangular prisms, cylinders, cones, spheres, triangular prisms, rectangular pyramids) from various perspectives (top, bottom, side, corners) (2.4.K1g).	Student Edition: 624-627, 635 #29 <i>Chapter Test</i> 655 <i>Study Guide and Review</i> 652 Teacher Edition: 628A A 627; AE 625; ATS 625; I 624; SQ 624
Benchmark 4: Geometry From An Algebraic Perspective – The student relates geometric concepts to a number line and the first quadrant of a coordinate plane in a variety of situations.	
1. locates and plots points on a number line (vertical/horizontal) using integers (positive and negative whole numbers) (2.4.K1a).	Student Edition: 533-535, 541 #46-#49 <i>Chapter Test</i> 551 <i>Study Guide and Review</i> 549 Teacher Edition: A 535; AE 534; SQ 533

STANDARDS	PAGE REFERENCES
2. explains mathematical relationships between whole numbers, fractions, and decimals and where they appear on a number line (2.4.K1a).	Student Edition: 17-19, 20-23, 28-30, 32-35, 333-335, 350-353 <i>Explore</i> 26-27, 336-337, 346-347 <i>Problem Solving in Geography</i> 354-355 Teacher Edition: AE 33; ATS 18; SQ 28, 346
3. identifies and plots points as ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a).	Student Edition: 250-252 <i>Game Time</i> 263 <i>Mid-Chapter Check</i> 253 <i>Problem Solving in Geography</i> 259 Teacher Edition: 254A A 252; AE 251; ATS 251; SQ 250
4. organizes whole number data using a T-table and plots the ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a,f).	Student Edition: 254-257 <i>Extend</i> 264-265 <i>Game Time</i> 263 <i>Problem Solving in Geography</i> 259 Teacher Edition: A 257; AE 255; SQ 254
Standard 4: Data	
	Standard 4: Data – The student uses concepts and procedures of data analysis in a variety of situations.
	Benchmark 1: Probability – The student applies the concepts of probability to draw conclusions and to make predictions and decisions including the use of concrete objects in a variety of situations.
1. recognizes that all probabilities range from zero (impossible) through one (certain) (2.4.K1i) (\$).	Student Edition: 668-672, 677-680 <i>Chapter Test</i> 687 <i>Mid-Chapter Check</i> 676 <i>Study Guide and Review</i> 685-686 Teacher Edition: 674A A 671, 680; AE 669, 678; ATS 669; SQ 668

STANDARDS	PAGE REFERENCES
<p>2. lists all possible outcomes of a simple event in an experiment or simulation in an organized manner including the use of concrete objects (2.4.K1g-j).</p>	<p>Student Edition: 661-663, 668-672, 677-680 <i>Chapter Test</i> 687 <i>Explore</i> 666-667 <i>Extend</i> 673 <i>Mid-Chapter Check</i> 676 <i>Study Guide and Review</i> 685-686</p> <p>Teacher Edition: 674A A 663, 671, 680; AE 662, 669, 678; ATS 669; SQ 661, 668</p>
<p>3. recognizes a simple event in an experiment or simulation where the probabilities of all outcomes are equal (2.4.K1i).</p>	<p>Student Edition: 661-663 <i>Chapter Test</i> 687 <i>Mid-Chapter Check</i> 676 <i>Problem Solving in Science</i> 664-665 <i>Study Guide and Review</i> 685</p> <p>Teacher Edition: A 663; AE 662; I 661; SQ 661</p>
<p>4. represents the probability of a simple event in an experiment or simulation using fractions (2.4.K1c).</p>	<p>Student Edition: 668-672, 677-680 <i>Chapter Test</i> 687 <i>Explore</i> 666-667 <i>Extend</i> 673 <i>Mid-Chapter Check</i> 676 <i>Study Guide and Review</i> 685-686</p> <p>Teacher Edition: 674A A 671, 680; AE 669, 678; ATS 669; SQ 668</p>

STANDARDS	PAGE REFERENCES
Benchmark 2: Statistics – The student collects, organizes, displays, explains, and interprets numerical (rational numbers) and non-numerical data sets in a variety of situations with a special emphasis on measures of central tendency.	
<p>1. organizes, displays, and reads numerical (quantitative) and nonnumerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number and decimal intervals using these data displays (2.4.K1j) (\$):</p> <ul style="list-style-type: none"> a. graphs using concrete objects, b. pictographs, c. frequency tables, d. bar and line graphs, e. Venn diagrams and other pictorial displays, e.g., glyphs, f. line plots, g. charts and tables, h. circle graphs, i. single stem-and-leaf plots. 	<p>Student Edition: 284-288, 289-292, 294-298, 299-303, 306-310, R64 <i>Chapter Test</i> 327 <i>Game Time</i> 311 <i>Mid-Chapter Check</i> 293 <i>Problem Solving in Art</i> 304-305 <i>Problem-Solving Strategy</i> 320-321 <i>Study Guide and Review</i> 322-326</p> <p>Teacher Edition: A 287, 292, 297, 303; AE 285, 290, 295, 300; ATS 286, 291, 301; SQ 284, 289, 294, 299</p>
<p>2. collects data using different techniques (observations, polls, tallying, interviews, surveys, or random sampling) and explains the results (2.4.K1j) (\$).</p>	<p>Student Edition: 284-288, 289-292, 294-298, 299-303, 306-310 <i>Chapter Test</i> 327 <i>Game Time</i> 311 <i>Mid-Chapter Check</i> 293 <i>Problem Solving in Art</i> 304-305 <i>Study Guide and Review</i> 322-326</p> <p>Teacher Edition: A 287, 292, 297, 303; AE 285, 290, 295, 300; ATS 286, 291, 301; SQ 284, 289, 294, 299</p>

STANDARDS	PAGE REFERENCES
<p>3. ▲ identifies, explains, and calculates or finds these statistical measures of a whole number data set of up to twenty whole number data points from 0 through 1,000 (2.4.K1a) (\$):</p> <ul style="list-style-type: none"> a. minimum and maximum values, b. range, c. mode (no-, uni-, bi-), d. median (including answers expressed as a decimal or a fraction without reducing to simplest form), e. mean (including answers expressed as a decimal or a fraction without reducing to simplest form). 	<p>Student Edition: 279-281, 284-288, 289-292, 294-298, 299-303, 306-310, R63 <i>Chapter Test</i> 327 <i>Game Time</i> 311 <i>Mid-Chapter Check</i> 293 <i>Problem Solving in Art</i> 304-305 <i>Study Guide and Review</i> 322-326</p> <p>Teacher Edition: 282A, 294A A 281, 287, 292, 297, 303; AE 280, 285, 290, 295, 300; ATS 286, 291, 301; SQ 279, 284, 289, 294, 299</p>