



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 whole numbers, fractions (including mixed numbers), decimals, and money including the use of concrete objects in a variety of situations.</p>	
<p>1. knows, explains, and uses equivalent representations for (\$):</p> <ul style="list-style-type: none"> a. whole numbers from 0 through 100,000 (2.4.K1a-b); b. fractions greater than or equal to zero (halves, fourths, thirds, eighths, tenths, twelfths, sixteenths, hundredths) 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-d) (\$), e.g., $7¢ = \\$.07 = 7/100$ of a dollar or a hundreds grid with 7 sections colored or $.1 = 1/10 =$ <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input checked="" type="checkbox"/> . 	<p>Student Edition: <i>Check What You Know</i> 18 #5-#11, 550, 561, 583 <i>Data File</i> 584 <i>Example</i> 18, 548, 549, 561, 582 <i>Explore</i> 546-547 <i>Extend</i> 68 <i>H.O.T. Problems</i> 563 #30, 585 #34 <i>Practice and Problem Solving</i> 19 #20-#33, 550-551, 561-562, 584 <i>Real-World Example</i> 560, 583 <i>Real-World Problem Solving</i> 19 <i>Study Guide and Review</i> 45 #9, #12, 569 #24-#29, 570 #39-#44, 607</p> <p>Teacher Edition: AE 18, 549, 561, 583; ATS 18, 549, 580, 583; IWO 17B, 548B; SGO 548B, 582B; T 548, 560, 582</p>

STANDARDS	PAGE REFERENCES
<p>2. compares and orders:</p> <p>a. whole numbers from 0 through 100,000 (2.4.K1a-b) (\$);</p> <p>b. fractions greater than or equal to zero (halves, fourths, thirds, eighths, tenths, twelfths, sixteenths, hundredths) including mixed numbers with a special emphasis on concrete objects (2.4.K1c);</p> <p>c. decimals greater than or equal to zero through hundredths place and when used as monetary amounts (2.4.K1c-d) (\$).</p>	<p>Student Edition:</p> <p>28</p> <p><i>Chapter Test</i> 49 #7-#11, 571 #9, #10</p> <p><i>Check What You Know</i> 29, 33, 555, 591</p> <p><i>Data File</i> 34</p> <p><i>Extra Practice</i> R3, R35, R37</p> <p><i>Game Time</i> 35</p> <p><i>Mid-Chapter Check</i> 31 #12, #13, #16, #17, 593 #17-#20</p> <p><i>Practice and Problem Solving</i> 30, 34, 556, 592</p> <p><i>Real-World Example</i> 28, 29, 32, 33, 554, 590</p> <p><i>Real-World Problem Solving</i> 30</p> <p><i>Study Guide and Review</i> 47, 569 #33-#38, 609 #23-#30</p> <p><i>Test Practice</i> 557 #32</p> <p>Teacher Edition:</p> <p>A 34, 557; AE 29, 33, 555, 591; ATS 29, 33, 555, 591; H 14H; I 28; IWO 32B, 554B, 590B; S 14H; SGO 28B, 32B, 554B; SS 14H; TOD 557; W 14G</p>
<p>Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of whole numbers with a special emphasis on place value; recognizes, uses, and explains the concepts of properties as they relate to whole numbers; and extends these properties to fractions (including mixed numbers), decimals, and money.</p>	
<p>1. ▲ identifies, models, reads, and writes numbers using numerals, words, and expanded notation from hundredths place through one-hundred thousands place (2.4.K1a-b) (\$), e.g., four hundred sixty-two thousand, two hundred eighty-four and fifty hundredths = 462,284.50 or $462,284.50 = (4 \times 100,000) + (6 \times 10,000) + (2 \times 1,000) + (2 \times 100) + (8 \times 10) + (4 \times 1) + (5 \times .1) + (0 \times .01) = 400,000 + 60,000 + 2,000 + 200 + 80 + 4 + .5 + .00$.</p>	<p>Student Edition:</p> <p>18</p> <p><i>Chapter Test</i> 49 #6, #14, #15</p> <p><i>Check What You Know</i> 18 #5-#10, 23 #5-#11</p> <p><i>Example</i> 18</p> <p><i>Mid-Chapter Check</i> 31 #1-#6, #9-#11</p> <p><i>Practice and Problem Solving</i> 19 #20-#33, 24 #21-#36</p> <p><i>Real-World Example</i> 22, 23</p> <p><i>Real-World Problem Solving</i> 19 #35, #36, 24 #37, #38</p> <p><i>Study Guide and Review</i> 45 #7-#9, #12-#15</p> <p>Teacher Edition:</p> <p>A 25; AE 18, 23; ATS 18, 23</p>

STANDARDS	PAGE REFERENCES
<p>2. classifies various subsets of numbers as whole numbers, fractions (including mixed numbers), or decimals (2.4.K1b-c, 2.4.K1i).</p>	<p>Student Edition: 537, 560, 579 <i>Big Idea</i> 534, 574 <i>Explore</i> 577</p>
<p>3. identifies the place value of various digits from hundredths place through one hundred thousands place (2.4.K1b) (\$).</p>	<p>Student Edition: 17 <i>Check What You Know</i> 18 #1-#4 <i>Example</i> 17, 579, 580 <i>H.O.T. Problems</i> 19 #38 <i>Practice and Problem Solving</i> 19 #12-#19 <i>Real-World Problem Solving</i> 19 #34 Teacher Edition: T 17</p>
<p>4. identifies any whole number as even or odd (2.4.K1a).</p>	<p>Student Edition: <i>Concepts and Skills Bank</i> R58</p>
<p>5. uses the concepts of these properties with the whole number system and demonstrates their meaning including the use of concrete objects (2.4.K1a) (\$):</p> <p>a. ▲ commutative properties of addition and multiplication, e.g., $12 + 18 = 18 + 12$ and $8 \times 9 = 9 \times 8$;</p> <p>b. ▲ zero property of addition (additive identity) and property of one for multiplication (multiplicative identity), e.g., $24 + 0 = 24$ and $75 \times 1 = 75$;</p> <p>c. ▲ associative properties of addition and multiplication, e.g., $4 + (2 + 3) = (4 + 2) + 3$ and $2 \times (3 \times 4) = (2 \times 3) \times 4$;</p> <p>d. ▲ symmetric property of equality applied to addition and multiplication, e.g., $100 = 20 + 80$ is the same as $20 + 80 = 100$ and $21 = 7 \times 3$ is the same as $3 \times 7 = 21$;</p> <p>e. zero property of multiplication, e.g., $9 \times 0 = 0$ or $0 \times 112 = 0$;</p> <p>f. distributive property, e.g., $6(7 + 3) = (6 \cdot 7) + (6 \cdot 3)$.</p>	<p>Student Edition: 166 <i>Check What You Know</i> 56 #1-#6, 152 #1-#6 <i>Example</i> 56, 150, 151 <i>Explore</i> 282-283 <i>H.O.T. Problems</i> 57 #24, #25 <i>Key Concept</i> 55, 150 <i>Practice and Problem Solving</i> 57 #8-#19, 152 #9-#20 <i>Real-World Example</i> 55, 166, 172 <i>Study Guide and Review</i> 85 #6-#9, 182 #15-#18 Teacher Edition: A 57, 153; ATS 151; IWO 55B; T 150; TOD 153</p>

STANDARDS	PAGE REFERENCES
<p>Benchmark 3: Estimation – The student uses computational estimation with whole numbers, fractions (including mixed numbers) and money in a variety of situations.</p>	
<p>1. estimates whole number quantities from 0 through 10,000; fractions (halves, fourths, thirds); and monetary amounts through \$1,000 using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology (2.4.K1a-d) (\$).</p>	<p>Student Edition: 36, 58, 617 <i>Chapter Test</i> 49 #12, 649 #8, #11, #12 <i>Check What You Know</i> 38, 618 <i>Example</i> 58, 59, 618 <i>Game Time</i> 621 <i>Key Concept</i> 37 <i>Practice and Problem Solving</i> 38, 619 <i>Real-World Example</i> 36, 37, 58, 617, 619 <i>Real-World Problem Solving</i> 619 <i>Study Guide and Review</i> 48 #30-#34, 645 #7-#17</p> <p>Teacher Edition: A 61; AE 37, 618; ATS 38, 59, 618; IWO 617B; SGO 36B, 617B; T 58, 617</p>
<p>2. uses various estimation strategies and explains how they are used when estimating whole numbers quantities from 0 through 10,000; fractions [(halves, fourths, thirds) including mixed numbers]; and monetary amounts through \$1,000 (2.4.K1a-d) (\$).</p>	<p>Student Edition: <i>Real-World Example</i> 36, 37, 58, 617, 618</p> <p>Teacher Edition: A 39, 620; AE 37, 618; IWO 36B; NM 39</p>
<p>3. recognizes and explains the difference between an exact and an approximate answer (2.4.K1a), e.g., when asked how many desks are in the room, the student gives an estimate of about 30 and then counts the desks and indicates an exact answer is 28 desks.</p>	<p>Student Edition: <i>Analyze the Skill</i> 63 <i>Extra Practice</i> R5 <i>Mid-Chapter Check</i> 59 #10 <i>Practice the Skill</i> 63 <i>Study Guide and Review</i> 86 #17-#21</p> <p>Teacher Edition: A 63; ATS 63; T 62</p>
<p>4. selects from an appropriate range of estimation strategies and determines if the estimate is an overestimate or underestimate, (2.4.K1a).</p>	<p>The following page references can be used during teacher/class discussion to meet this standard.</p> <p>Student Edition: 36-38, 58-60, 242-244, 322-323, 617-619, LA2-LA5</p>

STANDARDS	PAGE REFERENCES
Benchmark 4: Computation – The student models, performs, and explains computation with whole numbers, fractions, and money including the use of concrete objects in a variety of situations.	
<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: <i>Check What You Know</i> 66, 73, 155, 161, 247, 285, 328, LA7 <i>Example</i> 64, 247 <i>Explore</i> 70-71, 282-283, 311-312 <i>Extend</i> 335 <i>Practice and Problem Solving</i> 66, 74, 156, 162, 248, 286, 328, LA8 <i>Real-World Example</i> 65, 72, 73, 154, 155, 160, 161, 284, 285, 326, 327, LA6, LA7</p> <p>Teacher Edition: A 67, 74, 157, 248, 329; ATS 65, 73, 161, 247, 327; NM 157</p>
<p>2. N states and uses with efficiency and accuracy multiplication facts from 1 x 1 through 12 x 12 and corresponding division facts (2.4.K1a) (\$).</p>	<p>Student Edition: <i>Chapter Test</i> 187 #19, #20 <i>Check What You Know</i> 155, 161, 167 <i>Mid-Chapter Check</i> 163 #3-#6, #12, #13 <i>Practice and Problem Solving</i> 156, 162, 168 <i>Real-World Example</i> 154, 155, 160, 161, 166, 167 <i>Study Guide and Review</i> 182 #20-#23, 184 #34-#37, #40-#43</p> <p>Teacher Edition: ATS 61, 67; IWO 154B, 160B</p>

STANDARDS	PAGE REFERENCES
<p>3. N performs and explains these computational procedures (\$):</p> <p>a. adds and subtracts whole numbers from 0 through 100,000 and when used as monetary amounts (2.4.K1a-b,d);</p> <p>b. multiplies through a three-digit whole number by a two-digit whole number (2.4.K1a-b);</p> <p>c. multiplies whole dollar monetary amounts (through three-digits) by a one- or two-digit whole number (2.4.K1d), e.g., \$45 x 16;</p> <p>d. multiplies monetary amounts less than \$100.00 by whole numbers less than ten (2.4.K1d), e.g., \$14.12 x 7;</p> <p>e. divides through a two-digit whole number by a one-digit whole number with a one-digit whole number quotient with or without a remainder (2.4.K1a-b), e.g., $47 \div 5 = 9 \text{ r } 2$;</p> <p>f. adds and subtracts fractions greater than or equal to zero with like denominators (2.4.K1c);</p> <p>g. figures correct change through \$20.00 (2.4.K1d).</p>	<p>Student Edition: <i>Check What You Know</i> 66, 73, 81, 247, 259, 285, 289, 314 <i>Example</i> 64, 247, 253 <i>Explore</i> 70-71, 282-283, 311-312 <i>Game Time</i> 75 <i>H.O.T. Problems</i> 82 #26 <i>Practice and Problem Solving</i> 66, 74, 82, 248, 260, 286, 290, 315 <i>Real-World Example</i> 65, 72, 73, 80, 81, 252, 258, 259, 284, 285, 288, 289, 313, 314</p> <p>Teacher Edition: A 67, 74, 83, 255, 261, 291; ATS 65, 73, 82, 247, 253, 259, 285, 289; T 64, 72, 80, 246, 252, 258, 313</p> <p>Also see <i>Math Connects Grade 5</i> © 2009</p> <p>Student Edition: 421-431 (computation with fractions)</p>
<p>4. identifies multiplication and division fact families (2.4.K1a).</p>	<p>Student Edition: 147 <i>Check What You Know</i> 148 <i>Example</i> 147 <i>Mid-Chapter Check</i> 163 #1-#7 <i>Practice and Problem Solving</i> 149 <i>Real-World Example</i> 148 <i>Study Guide and Review</i> 181 #5-#8</p> <p>Teacher Edition: A 149; AE 148; SGO 147B</p>
<p>5. 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 4 and $6(4)$ or 10 divided by 2 is the same as $10 \div 2$ or <u>10</u>.</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving Course 1</i> © 2009</p> <p>Student Edition: 42, 210</p>

STANDARDS	PAGE REFERENCES
<p>6. ▲N shows the relationship between these operations with the basic fact families (addition facts with sums from 0 through 20 and corresponding subtraction facts, multiplication facts from 1 x 1 through 12 x 12 and corresponding division facts) including the use of mathematical models (2.4.K1a) (\$):</p> <ul style="list-style-type: none"> a. addition and subtraction, b. addition and multiplication, c. multiplication and division, d. subtraction and division. 	<p>Student Edition: 71 <i>H.O.T. Problems</i> 149 #27 <i>Remember</i> 148</p> <p>Teacher Edition: A 149</p>
<p>7. finds factors and multiples of whole numbers from 1 through 100 (2.4.K1a).</p>	<p>Student Edition: 176, 177 <i>Chapter Test</i> 187 #14-#16 <i>Check What You Know</i> 177 <i>Example</i> 177 <i>Extra Practice</i> R12 <i>Practice and Problem Solving</i> 178 <i>Real-World Example</i> 176 <i>Real-World Problem Solving</i> 178 <i>Remember</i> 177 <i>Study Guide and Review</i> 186 #60-#69 <i>Test Practice</i> 188 #3</p> <p>Teacher Edition: AE 177; ATS 177; NM 179; T 176</p>
<p>Standard 2: Algebra</p>	
<p>Standard 2: Algebra – The student uses algebraic concepts and procedures in a variety of situations.</p>	
<p>Benchmark 1: Patterns – The student recognizes, describes, extends, develops, and explains relationships in patterns using concrete objects in a variety of situations.</p>	
<p>1. uses concrete objects, drawings, and other representations to work with types of patterns (2.4.K1a):</p> <ul style="list-style-type: none"> a. repeating patterns, e.g., an AB pattern is like 1-2, 1-2, ...; an ABC pattern is like dog-horse-pig, dog-horse-pig, ...; an AAB pattern is like $\uparrow\uparrow\rightarrow$, $\uparrow\uparrow\rightarrow$, ...; b. growing patterns e.g., 2, 5, 11, 20, ... 	<p>Student Edition: <i>Are You Ready</i> 192 #18 <i>P.S.I. Team</i> 40 <i>Real-World Example</i> 204, 205</p> <p>Teacher Edition: ATS 205, 221; I 204; SGO 204B</p> <p>Also see <i>Math Connects Grade 3</i> © 2009</p> <p>Student Edition: 478-480</p>

STANDARDS	PAGE REFERENCES
<p>2. uses these attributes to generate patterns:</p> <p>a. counting numbers related to number theory (2.4.K1a), e.g., multiples and factors through 12 or multiplying by 10, 100, or 1,000;</p> <p>b. whole numbers that increase or decrease (2.4.K1a) (\$), e.g., 20, 15, 10, ...;</p> <p>c. geometric shapes including one or two attributes changes (2.4.K1f), e.g., Triangle, Square, Pentagon, Hexagon ... when the next shape has one more side; or when both color and shape change at the same time such as large red circle, large white triangle, small red triangle, small white square, large red square, small white circle ...;</p> <p>d. measurements (2.4.K1a), e.g., 3 ft., 6 ft., 9 ft., ...;</p> <p>e. money and time (2.4.K1a,d) (\$), e.g., \$.25, \$.50, \$.75, ... or 1:05 p.m., 1:10 p.m., 1:15 p.m., ...;</p> <p>f. things related to daily life (2.4.K1a), e.g., water cycle, food cycle, or life cycle;</p> <p>g. things related to size, shape, color, texture, or movement (2.4.K1a), e.g., rough, smooth, rough, smooth, rough, smooth, or clapping hands (kinesthetic patterns).</p>	<p>Student Edition: 204 <i>Analyze the Strategy</i> 367 <i>Are You Ready</i> 144 #9-#14, 192 #15-#18 <i>Check What You Know</i> 206, 238 #1-#3 <i>Example</i> 237 <i>Extra Practice</i> R13, R25 <i>Practice and Problem Solving</i> 206, 239 #9-#14 <i>Practice the Strategy</i> 367 <i>Real-World Example</i> 204, 205, 237 <i>Test Practice</i> 307 #2, 391 #4, 481 #2, 533 #4, #6</p> <p>Teacher Edition: AE 205; ATS 205; I 237; IWO 204B; SGO 204B; T 204, 237</p>
<p>3. identifies, states and continues a pattern presented in visual 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: <i>Check What You Know</i> 209, 221 <i>Example</i> 208 <i>Practice and Problem Solving</i> 206, 210, 222 <i>Real-World Example</i> 204, 205, 209, 220, 221</p> <p>Teacher Edition: AE 205, 209, 221; ATS 205, 221</p>
<p>4. generates:</p> <p>a. a pattern (repeating, growing) (2.4.K1a); a pattern using a function table (input/output machines, T-tables) (2.4.K1e).</p>	<p>Student Edition: <i>Check What You Know</i> 209, 221 <i>Example</i> 208 <i>H.O.T. Problems</i> 206 #15, 222 #14 <i>Practice and Problem Solving</i> 210, 222 <i>Real-World Example</i> 209, 220, 221</p> <p>Teacher Edition: I 204; IWO 204B; SGO 204B</p>

STANDARDS	PAGE REFERENCES
<p>Benchmark 2: Variables, Equations, and Inequalities – The student uses variables, symbols, and whole numbers to solve equations including the use of concrete objects in a variety of situations.</p>	
<p>The student...</p> <p>1. explains and uses variables and symbols to represent unknown whole number quantities from 0 through 1,000 (2.4.K1a).</p>	<p>Student Edition: <i>Big Idea</i> 190 <i>Chapter Test</i> 231 #4-#7 <i>Check What You Know</i> 194 #4-#6 <i>Extra Practice</i> R12 <i>Get Ready to Learn</i> 193 <i>Mid-Chapter Check</i> 207 #5-#8 <i>Practice and Problem Solving</i> 195 #25-#36 <i>Real-World Example</i> 193 <i>Study Guide and Review</i> 225 #12-#14</p> <p>Teacher Edition: A 195; AE 194; ATS 194; I 193; T 193</p>
<p>2. ▲ solves one-step equations using whole numbers with one variable and a whole number solution that:</p> <p>a. find the unknown in a multiplication or division equation based on the multiplication facts from 1 x 1 through 12 x 12 and corresponding division facts (2.4.K1a), e.g., $60 = 10 \times n$;</p> <p>b. find the unknown in a money equation using multiplication and division based upon the facts and addition and subtraction with values through \$10 (2.4.K1d) (\$), e.g., 8 quarters + 10 dimes = y dollars;</p> <p>c. find the unknown in a time equation involving whole minutes, hours, days, and weeks with values through 200 (2.4.K1a), e.g., 180 minutes = y hours.</p>	<p>Student Edition: <i>Check What You Know</i> 148 #5-#8 <i>Concepts and Skills</i> R63 <i>Mid-Chapter Check</i> 163 #15, #16 <i>Practice and Problem Solving</i> 149 #19-#24, 156 #27-#30 <i>Real-World Example</i> 148 <i>Spiral Review</i> 157 #45, #46, 169 #52-#55 <i>Study Guide and Review</i> 182 #24-#27</p>

STANDARDS	PAGE REFERENCES
<p>3. compares two whole numbers from 0 through 10,000 using the equality and inequality symbols ($=$, \neq, $<$, $>$) and their corresponding meanings (is equal to, is not equal to, is less than, is greater than) (2.4.K1b) (\$).</p>	<p>Student Edition: 28 <i>Chapter Test</i> 49 #10, #11 <i>Check What You Know</i> 29 #1-#4 <i>Extra Practice</i> R3 <i>Mid-Chapter Check</i> 31 #12, #13 <i>Practice and Problem Solving</i> 30 #9-#17 <i>Real-World Example</i> 28, 29 <i>Remember</i> 29 <i>Study Guide and Review</i> 47 #21, #22 Teacher Edition: AE 29; ATS 29; SGO 28B</p>
<p>4. reads and writes whole number equations and inequalities using mathematical vocabulary and notation, e.g., $15 = 3 \times 5$ is the same as fifteen equals three times five or $4,564 > 1,000$ is the same as four thousand, five hundred sixty-four is greater than one thousand.</p>	<p>The following references can be used during teacher/class discussion to meet this standard. Student Edition: 28 <i>Check What You Know</i> 194 #4-#6, 215 #4-#7 <i>Practice and Problem Solving</i> 30, 195 #25-#30, 216 #20-#23 Teacher Edition: AE 29; ATS 29; SGO 28B</p>
<p>Benchmark 3: Functions – The student recognizes and describes whole number relationships including the use of concrete objects in a variety of situations.</p>	
<p>1. states mathematical relationships between whole numbers from 0 through 1,000 using various methods including mental math, paper and pencil, concrete materials, and appropriate technology (2.4.K1a) (\$).</p>	<p>Student Edition: 208 <i>Check What You Know</i> 209, 221 <i>Example</i> 208 <i>Practice and Problem Solving</i> 210, 222 <i>Real-World Example</i> 209, 220, 221 Teacher Edition: AE 209; ATS 209, 221; SGO 220B</p>

STANDARDS	PAGE REFERENCES														
<p>2. ▲ finds the values, determines the rule, and states the rule using symbolic notation with one operation of whole numbers from 0 through 200 using a horizontal or vertical function table (input/output machine, T-table) (2.4.K1e), e.g., using the function table, find the rule, the rule is $N \bullet 4$.</p> <table border="0" data-bbox="284 531 414 793"> <tr><td>N</td><td>?</td></tr> <tr><td>1</td><td>4</td></tr> <tr><td>5</td><td>20</td></tr> <tr><td>2</td><td>8</td></tr> <tr><td>3</td><td>?</td></tr> <tr><td>4</td><td>?</td></tr> <tr><td>?</td><td>24</td></tr> </table>	N	?	1	4	5	20	2	8	3	?	4	?	?	24	<p>The following references may use multiple operations to meet this standard.</p> <p>Student Edition: 208 <i>Chapter Test</i> 231 #15 <i>Check What You Know</i> 209, 221 <i>Example</i> 208 <i>Extra Practice</i> R14, R15 <i>Practice and Problem Solving</i> 210 #5-#8, 222 #5-#8 <i>Real-World Example</i> 209, 220, 221 <i>Study Guide and Review</i> 228, 230 #43, #49 <i>Test Practice</i> 211 #21, 223 #19, 233 #4, #8, #11, #13</p> <p>Teacher Edition: A 211; AE 209, 221; ATS 209, 221; IWO 208B; SGO 220B; T 220</p>
N	?														
1	4														
5	20														
2	8														
3	?														
4	?														
?	24														
<p>3. generalizes numerical patterns using whole numbers from 0 through 200 with one operation by stating the rule using words, e.g., if the pattern is 46, 68,90, 112, 134, ...; in words, the rule is add 22 to the number before.</p>	<p>Student Edition: 204 <i>Check What You Know</i> 206 #1-#4 <i>Mid-Chapter Check</i> 207 #16-#19 <i>Practice and Problem Solving</i> 206 #6-#11 <i>Real-World Example</i> 204, 205 <i>Study Guide and Review</i> 227 #28, #29</p> <p>Teacher Edition: AE 205; T 204</p>														
<p>4. uses a function table (input/output machine, T-table) to identify, plot, and label the ordered pairs in the first quadrant of a coordinate plane (2.4.K1a,e).</p>	<p>The concepts included in the following page references can be extended to meet this standard.</p> <p>Student Edition: 208-210, 406-408</p>														

STANDARDS

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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.

1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:
- 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, mathematical relationships, and equations (1.1.K1a, 1.1.K2a, 1.2.K1, 1.2.K4-5, 1.3.K1-4, 1.4.K1-2, 1.4.K3a-b, 1.4.K3e, 1.4.K4, 1.4.K6-7, 2.1.K1, 2.1.K.1a-b, 2.1.K2d-g, 2.1.K3, 2.1.K4a, 2.2.K1, 2.2.K2a, 2.2.K3-4, 2.3.K1, 2.3.K4, 3.2.K1-4, 3.3.K1-2, 3.4.K1-4, 4.2.K3) (**\$**);
 - 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.K2a, 1.2.K1-3, 1.3.K1-2, 1.4.K3a-b, 1.4.K3e, 2.2.K4) (**\$**);
 - c. fraction and mixed number models (fraction strips or pattern blocks) and decimal models (base ten blocks or coins) to compare, order, and represent numerical quantities (1.1.K1b-c, 1.1.K2b-c, 1.2.K2, 1.3.K1-2, 1.4.K1f) (**\$**);
 - d. money models (base ten blocks or coins) to compare, order, and represent numerical quantities (1.1.K1c, 1.2.K1c, 1.3.K1-2, 1.4.K3a, 1.4.K3a, 1.4.K3c-d, 1.4.K3g, 2.1.K2e, 2.2.K2b) (**\$**);
 - e. function tables (input/output machines, T-tables) to model numerical and algebraic relationships (2.1.K4b, 2.3.K2, 2.3.K4, 3.4.K4) (**\$**);

Student Edition:

Explore 70-71, 145-146, 196-197, 282-283, 311-312, 546-547

Extend 68

Get Ready to Learn 64, 246

Teacher Edition:

ATS 23, 29, 65, 82, 155, 161, 199, 221, 247, 253, 285, 327, 333, 337, 396, 537, 541, 549, 555, 580, 583, 589, 591; I 28, 55, 58, 64, 72, 80, 166, 193, 198, 316, 326, 332, 336, 537, 554, 579, 588, 590; IWO 395B, 588B; SGO 326B, 395B, 537B, 582B, 588B; T 154, 166, 193, 214, 336, 395, 537, 554, 579, 588, 590

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>f. two-dimensional geometric models (geoboards, dot paper, pattern blocks, or tangrams) to model perimeter, area, and properties of geometric shapes and three-dimensional geometric models (solids) and real-world objects to compare size and to model properties of geometric shapes (2.1.K2c, 2.1.K1e, 3.1.K1-6, 3.2.K5, 3.3.K3);</p> <p>g. two-dimensional geometric models (spinners), three-dimensional models (number cubes), and process models (concrete objects) to model probability (4.1.K1-3) (\$);</p> <p>h. graphs using concrete objects, pictographs, frequency tables, horizontal and vertical bar graphs, line graphs, circle graphs, Venn diagrams, line plots, charts, and tables to organize and display data (4.1.K2, 4.2.K1-2) (\$);</p> <p>i. Venn diagrams to sort data and show relationships (1.2.K2).</p>	<p>Student Edition: <i>Explore</i> 122-123 <i>Extend</i> 116-117, 131, 464-465 <i>Game Time</i> 463 <i>Hands-On Mini Activity</i> 96, 360 <i>H.O.T. Problems</i> 107 #17, 126 #10, 130 #21 <i>Real-World Math</i> 383</p> <p>Teacher Edition: AR 356G; ATS 105, 113, 125, 129, 360, 363, 373, 376, 457, 461; CP 92; H 92J; I 95, 104, 108, 112, 128, 359, 362, 372, 376, 460; IWO 95B, 108B, 112B, 128B, 359B, 460B; M 92J; R 92J; S 92I; SGO 95B, 104B, 108B, 112B, 359B; T 108, 359, 362, 372, 456, 460</p>
<p>2. creates a mathematical model to show the relationship between two or more things, e.g., using pattern blocks, a whole (1) can be represented as</p> <p>a hexagon (1/1) or</p> <p>two quadrilaterals (2/2) or</p> <p>three quadrilaterals (3/3) or</p> <p>six triangles (6/6)</p>	<p>The following page references can be expanded during teacher/class discussion to meet this standard.</p> <p>Student Edition: 537</p> <p>Teacher Edition: ATS 538; I 537; SGO 537B; T 537</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 investigates their properties including the use of concrete objects in a variety of situations.	
<p>1. recognizes and investigates properties of plane figures (circles, squares, rectangles, triangles, ellipses, rhombi, octagons, hexagons, pentagons) using concrete objects, drawings, and appropriate technology (2.4.K1f).</p>	<p>Student Edition: <i>Are You Ready</i> 358 #9-#11 <i>Chapter Test</i> 389 #5, #6 <i>Check What You Know</i> 363 #1-#3, 377 #1-#3 <i>Example</i> 363, 376 <i>Extra Practice</i> R23, R24 <i>Game Time</i> 379 <i>Key Concept</i> 362, 376 <i>Practice and Problem Solving</i> 364 #9-#14, 378 #8-#13 <i>Real-World Example</i> 362 <i>Start Smart</i> 11 <i>Study Guide and Review</i> 385 #10-#13, 388 #28-#33 Teacher Edition: AE 363, 377; ATS 363; I 362; SGO 362B; T 362</p>
<p>2. recognizes, draws, and describes plane figures (circles, squares, rectangles, triangles, ellipses, rhombi, octagons, hexagons, pentagons) (2.4.K1f).</p>	<p>Student Edition: <i>Check What You Know</i> 363 #1-#3, 377 #1-#3 <i>Game Time</i> 379 <i>Key Concept</i> 362, 376 <i>Practice and Problem Solving</i> 364 #9-#14, 378 #8-#13 <i>Study Guide and Review</i> 385 #10-#13, 388 #28-#33 Teacher Edition: ATS 363, 377; NM 378; SGO 376B; T 362, 376</p>

STANDARDS	PAGE REFERENCES
<p>3. describes the solids (cubes, rectangular prisms, cylinders, cones, spheres, triangular prisms) using the terms faces, edges, and vertices (corners) (2.4.K1f).</p>	<p>Student Edition: 359 <i>Chapter Test</i> 389 #7 <i>Check What You Know</i> 360 #1-#3 <i>Extra Practice</i> R23 <i>H.O.T. Problems</i> 361 #23 <i>Mid-Chapter Check</i> 371 #1, #2 <i>Practice and Problem Solving</i> 361 #9-#14 <i>Real-World Example</i> 359 <i>Study Guide and Review</i> 385 #7, #8 <i>Test Practice</i> 390 #7, #15</p> <p>Teacher Edition: A 361; AE 360; I 359; T 359</p>
<p>4. recognizes and describes the square, triangle, rhombus, hexagon, parallelogram, and trapezoid from a pattern block set (2.4.K1f).</p>	<p>The following page references can be used during teacher/class discussion to meet this standard.</p> <p>Teacher Edition: I 376; SGO 366B; T 362, 376</p>
<p>5. recognizes (2.4.k1f):</p> <ul style="list-style-type: none"> a. squares, rectangles, rhombi, parallelograms, trapezoids as special quadrilaterals; b. similar and congruent figures; c. points, lines (intersecting, parallel, perpendicular), line segments, and rays. 	<p>Student Edition: <i>Check What You Know</i> 377 #1-#3, 402 #1-#4, 419 <i>Concepts and Skills</i> R65 <i>Example</i> 376, 400, 401, 418 <i>Explore</i> 348-349 <i>Extend</i> 421 <i>H.O.T. Problems</i> 378 #22-#24 <i>Key Concept</i> 376, 400, 401 <i>Practice and Problem Solving</i> 378 #9-#13, 402 #6-#11, 420 <i>Real-World Example</i> 419</p> <p>Teacher Edition: A 378, 403, 420; AE 377, 401, 419; ATS 377, 419; SGO 400B; T 376</p>

STANDARDS	PAGE REFERENCES
<p>6. 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.K1f).</p>	<p>Student Edition: 422 <i>Chapter Test</i> 433 #11-#13 <i>Check What You Know</i> 423 #1, #2 <i>Example</i> 422 <i>Practice and Problem Solving</i> 424 #7-#10, #15, #16 <i>Study Guide and Review</i> 432 #32-#35 <i>Test Practice</i> 435 #12, #13</p> <p>Teacher Edition: AE 423; ATS 423; SGO 422B; T 422</p>
<p>Benchmark 2: Measurement and Estimation – The student estimates and measures using standard and nonstandard units of measure including the use of concrete objects in a variety of situations.</p>	
<p>1. 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: <i>Chapter Test</i> 479 #3, #4, 531 #3-#6 <i>Check What You Know</i> 442 #1-#4, 451 #3, #4, 457 #1-#3, 461 #1-#3, 470 #1, #2, 487 #1-#3, 499 #1-#5, 514 #3, #4 <i>Example</i> 457, 513 <i>Explore</i> 439-440, 448-449, 485, 496-497 <i>Game Time</i> 511 <i>Hands-On Mini Activity</i> 512 <i>Mid-Chapter Check</i> 453 #1-#3, #7, #10, 501 #1-#4, #15 <i>Practice and Problem Solving</i> 443 #6-#9, #12, #13, 452 #10, #11, 458 #7-#15, 462 #6-#11, 470 #7-#12, 488 #5-#13, 500 #7-#12, 514 #10-#12 <i>Real-World Example</i> 441, 442, 451, 486, 487, 498, 499 <i>Study Guide and Review</i> 473 #6, 475 #20, #21, 478 #34, 525 #8-#10, 526 #22-#24, 529 #43, #44</p> <p>Teacher Edition: A 443, 452, 489; AE 442, 451, 487, 499, 513; ATS 451, 487, 499, 513; IWO 498B, 512B; S 482J; SGO 441B; T 441, 450</p>

STANDARDS	PAGE REFERENCES
<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 (2.4.K1a) (\$):</p> <p>a. length, width, and height to the nearest fourth of an inch or to the nearest centimeter;</p> <p>b. volume to the nearest cup, pint, quart, or gallon; to the nearest liter; or to the nearest whole unit of a nonstandard unit;</p> <p>c. weight to the nearest ounce or pound or to the nearest whole unit of a nonstandard unit of measure;</p> <p>d. temperature to the nearest degree;</p> <p>e. time including elapsed time.</p>	<p>Student Edition: <i>Check What You Know</i> 442 #1, #2, 451 #1, #2, 470 #1, #2, 493 #5, 521 <i>Explore</i> 439-440, 448-449, 496-497 <i>Get Ready to Learn</i> 492, 520 <i>Practice and Problem Solving</i> 443 #6-#9, 452 #7-#9, 470 #7-#12, 522</p> <p>Teacher Edition: A 443; ATS 442, 469, 487, 499, 521; I 441, 450, 498; IWO 441B, 450B, 468B, 498B; SGO 441B, 450B, 498B; T 441, 450, 468, 486, 492, 498, 520</p>
<p>3. states:</p> <p>a. the number of weeks in a year;</p> <p>b. the number of ounces in a pound;</p> <p>c. the number of milliliters in a liter, grams in a kilogram, and meters in a kilometer;</p> <p>d. the number of items in a dozen.</p>	<p>Student Edition: <i>Concepts and Skills</i> R63 <i>Key Concept</i> 504</p> <p>Teacher Edition: ATS 451; CE 493; FMB 508A</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;</p> <p>b. within the metric system: centimeters and meters.</p>	<p>Student Edition: 444, 490 <i>Check What You Know</i> 445 #1-#6, 491 #1-#4 <i>Example</i> 44, 490 <i>Extra Practice</i> R28, R31 <i>Key Concept</i> 490 <i>Practice and Problem Solving</i> 445 #9-#20, 491 #6-#16 <i>Real-World Example</i> 444, 490 <i>Study Guide and Review</i> 473 #8-#12, 525 #11-#14</p> <p>Teacher Edition: ATS 445, 491; FMB 444A; IWO 444B, 490B Also see <i>Math Connects Grade 5</i> © 2009</p> <p>Student Edition: 517-521 (metric conversions)</p>

STANDARDS	PAGE REFERENCES
<p>5. finds(2.4.K1f):</p> <p>a. the perimeter of two-dimensional figures given the measures of all the sides.</p> <p>b. the area of squares and rectangles using concrete objects.</p>	<p>Student Edition:</p> <p><i>Check What You Know</i> 457</p> <p><i>Example</i> 457</p> <p><i>Extend</i> 464-465</p> <p><i>Game Time</i> 463</p> <p><i>Practice and Problem Solving</i> 458</p> <p><i>Real-World Example</i> 456</p> <p>Teacher Edition:</p> <p>AE 457; ATS 457, 461; I 460; IWO 456B; M 436J; W 436I</p>
<p>Benchmark 3: Transformational Geometry – The student recognizes and performs one transformation on simple shapes or concrete objects in a variety of situations.</p>	
<p>1. describes a transformation using cardinal points or positional directions (2.4.K1a), e.g., go north three blocks and then west four blocks or move the triangle three units to the right and two units up.</p>	<p>Student Edition:</p> <p><i>Check What You Know</i> 407 #9-#12</p> <p><i>Practice and Problem Solving</i> 408 #22, #23</p> <p><i>Study Guide and Review</i> 430 #21</p>
<p>2. ▲ ■ recognizes, performs, and describes one transformation (reflection/flip, rotation/turn, translation/slide) on a two-dimensional figure or concrete object (2.4.K1a).</p>	<p>Student Edition:</p> <p>412</p> <p><i>Chapter Test</i> 433 #1, #2</p> <p><i>Check What You Know</i> 414</p> <p><i>Example</i> 412, 413</p> <p><i>Explore</i> 410-411</p> <p><i>Extra Practice</i> R26</p> <p><i>H.O.T. Problems</i> 415 #13-#16</p> <p><i>Key Concept</i> 413</p> <p><i>Practice and Problem Solving</i> 414</p> <p><i>Real-World Example</i> 413</p> <p><i>Study Guide and Review</i> 431 #22-#25</p> <p><i>Test Practice</i> 435 #14, #15</p> <p>Teacher Edition:</p> <p>AE 413; ATS 413; I 412; IWO 412B; SGO 412B; T 412</p>
<p>3. recognizes three-dimensional figures (rectangular prisms, cylinders) and concrete objects from various perspectives (top, bottom, sides, corners) (2.4.K1f).</p>	<p>The concepts and diagrams in the following page references can be extended to meet this standard.</p> <p>Student Edition:</p> <p>359-361, 512-515</p> <p>Also see <i>Math Connects Grade 5</i> © 2009</p> <p>Student Edition:</p> <p>614-617</p>

STANDARDS	PAGE REFERENCES
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. uses a number line (horizontal/vertical) to model whole number multiplication facts from 1 x 1 through 12 x 12 and corresponding division facts (2.4.K1a).	Student Edition: <i>Real-World Example</i> 154 Teacher Edition: ATS 155; T 154 Also see <i>Math Connects Grade 3</i> © 2009 Student Edition: 163, 178, 191, 193
2. uses points in the first quadrant of a coordinate plane (coordinate grid) to identify locations (2.4.K1a).	Student Edition: 406 <i>Check What You Know</i> 407 #1-#4 <i>Extra Practice</i> R26 <i>Mid-Chapter Check</i> 409 #9-#12 <i>Practice and Problem Solving</i> 408 #14-#17 <i>Real-World Example</i> 407 <i>Study Guide and Review</i> 430 #18-#20 <i>Test Practice</i> 435 #10 Teacher Edition: AE 407; ATS 407; IWO 406B
3. ▲ ■ identifies and plots points as whole number ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a).	Student Edition: 406 <i>Check What You Know</i> 407 #5-#8 <i>Practice and Problem Solving</i> 408 #18-#21
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,e).	See <i>Math Connects Grade 5</i> © 2009 Student Edition: 254-257, 264-265

STANDARDS	PAGE REFERENCES
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 the probability of an impossible event is zero and that the probability of a certain event is one (2.4.K1g) (\$).	Student Edition: 128 Also see <i>Math Connects Grade 5</i> © 2009 Student Edition: 668
2. lists all possible outcomes of a simple event in an experiment or simulation including the use of concrete objects (2.4.K1g-h).	Student Edition: <i>Explore</i> 122-123 Teacher Edition: A 127; ATS 125; I 124; IWO 124B; SGO 124B
3. recognizes and states the probability of a simple event in an experiment or simulation (2.4.K1g), e.g., when a coin is flipped, the probability of landing heads up is $\frac{1}{2}$ and the probability of landing tails up is $\frac{1}{2}$. This can be read as one out of two or one half.	Student Edition: <i>Concepts and Skills</i> R76 <i>Extend</i> 131 Also see <i>Math Connects Grade 5</i> © 2009 Student Edition: 668-671

STANDARDS	PAGE REFERENCES
Benchmark 2: Statistics – The student collects, organizes, displays, explains, and interprets numerical (whole numbers) and non-numerical data sets including the use of concrete objects in a variety of situations.	
<p>1. ▲ ■ organizes, displays, and reads numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number intervals using these data displays (2.4.K1h) (\$):</p> <ul style="list-style-type: none"> a. graphs using concrete objects, (for testing, does not have to use concrete objects in items); b. pictographs with a symbol or picture representing one, two, five, ten, twenty-five, or one-hundred including partial symbols when the symbol represents an even amount; c. frequency tables (tally marks); d. horizontal and vertical bar graphs; e. Venn diagrams or other pictorial displays, e.g., glyphs; f. line plots; g. charts and tables; h. line graphs; i. circle graphs. 	<p>The following references can be used during teacher/class discussion to meet this standard.</p> <p>Student Edition: <i>Big Idea</i> 92 <i>Check What You Know</i> 96 #1, #2, 105 #1, #2 <i>Concepts and Skills</i> R70-R73 <i>Get Ready to Learn</i> 22, 80, 104, 108, 112 <i>Practice and Problem Solving</i> 97 #5-#8, 106 #7-#10 <i>Real-World Example</i> 95, 104, 105 <i>Remember</i> 105 <i>Start Smart</i> 12-13</p> <p>Teacher Edition: ATS 105; H 92J; I 108; M 92J; R 92J; S 92I; SGO 95B, 104B, 108B; SS 92I; T 108</p>
<p>2. collects data using different techniques (observations, polls, surveys, interviews, or random sampling) and explains the results (2.4.K1h) (\$).</p>	<p>Student Edition: 95 <i>Hands-On Mini Activity</i> 96 <i>H.O.T. Problems</i> 107 #17</p> <p>Teacher Edition: H 92J; I 95; IWO 95B; M 92J; S 92I; SGO 95B</p>
<p>3. identifies, explains, and calculates or finds these statistical measures of a data set with less than ten whole number data points using whole numbers from 0 through 1,000 (2.4.K1a) (\$):</p> <ul style="list-style-type: none"> a. minimum and maximum values, b. range, c. mode, d. median when data set has an odd number of data points, e. mean when data set has a whole number mean. 	<p>Student Edition: <i>Check What You Know</i> 99 #1-#3 <i>Concepts and Skills</i> R74-R75 <i>Extra Practice</i> R7 <i>Mid-Chapter Check</i> 111 #4, #5 <i>Practice and Problem Solving</i> 100 #6-#11 <i>Real-World Example</i> 98 <i>Remember</i> 99 <i>Study Guide and Review</i> 133 #9-#11 <i>Test Practice</i> 140 #2, #5</p> <p>Teacher Edition: A 101; AE 99; ATS 99; SGO 98B</p>