



MathScape

Seeing and Thinking Mathematically

Course 3

© 2005

STANDARDS	PAGE REFERENCES
<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 real numbers and simple algebraic expressions in a variety of situations.</p>	
<p>The student...</p>	
<p>1. knows, explains, and uses equivalent representations for rational numbers and simple algebraic expressions including integers, fractions, decimals, percents, and ratios; rational number bases with integer exponents; rational numbers written in scientific notation with integer exponents; time; and money (2.4.K1a) (\$).</p>	<p>Student Edition: 148-149, 150-151, 162-163, 176, 182-185, 210, 211, 246-247, 264, 296-297, 298-299, 300-301, 312, 313</p> <p>Teacher Guide: 150A, 190-191, 246A, 296A, 298A, 300A</p>
<p>2. compares and orders rational numbers, the irrational number pi, and algebraic expressions (2.4.K1a) (\$), e.g., which expression is greater $-3n$ or $3n$? It depends on the value of n. If n is positive, $3n$ is greater. If n is negative, $-3n$ is greater. If n is zero, they are equal.</p>	<p>Student Edition: 138-139, 160-161, 162-163, 166, 175, 176, 192-193, 214</p> <p>Teacher Guide: 135E, 137, 160A, 162A, 163A, 190</p>
<p>3. explains the relative magnitude between rational numbers, the irrational number pi, and algebraic expressions (2.4.K1a).</p>	<p>Student Edition: 162-163, 176, 296-297, 298-299, 300-301, 311-313</p> <p>Teacher Guide: 298A, 300A</p>

STANDARDS	PAGE REFERENCES
4. recognizes and describes irrational numbers (2.4.K1a), e.g., $\sqrt{2}$ is a non-repeating, non-terminating decimal; or π (pi) is a non-terminating decimal.	Student Edition: 238-239, 261 Teacher Guide: 239A
5. ▲ knows and explains what happens to the product or quotient when (2.4.K1a): <ol style="list-style-type: none"> a positive number is multiplied or divided by a rational number greater than zero and less than one, e.g., if 24 is divided by $\frac{1}{3}$, will the answer be larger than 24 or smaller than 24? Explain. a positive number is multiplied or divided by a rational number greater than one, C a nonzero real number is multiplied or divided by zero, (For purposes of assessment, an explanation of division by zero will not be expected.) 	Student Edition: 52-53, 79, 144, 186-187, 188-189, 196-197, 212, 213, 216 Teacher Guide: 53A, 181, 186A, 196A, 197A
6. explains and determines the absolute value of real numbers (2.4.K1a).	See <i>MathScape: Seeing and Thinking Mathematically, Course 2</i> © 2005. Student Edition: 186, 196, 213, 216, 314(Glossary)
Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of the real number system; recognizes, applies, and explains their properties; and extends these properties to algebraic expressions.	
The student...	
1. explains and illustrates the relationship between the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] using mathematical models (2.4.K1a), e.g., number lines or Venn diagrams.	Student Edition: 140-141, 167 Teacher Guide: 136-137
2. ▲ identifies all the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] to which a given number belongs (2.4.K1I). (For the purpose of assessment, irrational numbers will not be included.)	Student Edition: 140-141, 167 Teacher Guide: 136-137

STANDARDS	PAGE REFERENCES
<p>3. names, uses, and describes these properties with the rational number system and demonstrates their meaning including the use of concrete objects (2.4.K1a) (\$):</p> <ul style="list-style-type: none"> a. commutative, associative, distributive, and substitution properties [commutative: $a + b = b + a$ and $ab = ba$; associative: $a + (b + c) = (a + b) + c$ and $a(bc) = (ab)c$; distributive: $a(b + c) = ab + ac$; substitution: if $a = 2$, then $3a = 3 \times 2 = 6$]; b. identity properties for addition and multiplication and inverse properties of addition and multiplication (additive identity: $a + 0 = a$, multiplicative identity: $a \cdot 1 = a$, additive inverse: $+5 + -5 = 0$, multiplicative inverse: $8 \times 1/8 = 1$); c. symmetric property of equality, e.g., $7 + 2 = 9$ has the same meaning as $9 = 7 + 2$; d. addition and multiplication properties of equalities, e.g., if $a = b$, then $a + c = b + c$; e. addition property of inequalities, e.g., if $a > b$, then $a + c > b + c$; f. zero product property, e.g., if $ab = 0$, then $a = 0$ and/or $b = 0$. 	<p>Student Edition: 144-145, 169, 186-187, 196-197, 202-203, 204-205, 206-207, 208-209, 216, 218-219, 220-221</p> <p>Teacher Guide: 145A, 187A, 196A, 202A, 203A, 204A, 209A</p>
<p>Benchmark 3: Estimation – The student uses computational estimation with real numbers in a variety of situations.</p>	
<p>The student...</p>	
<p>1. estimates real number quantities using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology (2.4.K1a) (\$).</p>	<p>Student Edition: 22-23, 41, 50-51, 52-53, 78, 79, 138-139, 140-141, 148-149, 150-151, 166, 169 #10, 170 #16, 226-227, 256</p> <p>Teacher Guide: 22A, 138A, 148A, 150A</p>
<p>2. uses various estimation strategies and explains how they were used to estimate real number quantities and simple algebraic expressions (2.4.K1a) (\$).</p>	<p>Student Edition: 22-23, 41, 50-51, 52-53, 78, 79, 138-139, 140-141, 148-149, 150-151, 166, 169 #10, 170 #16, 226-227, 256</p> <p>Teacher Guide: 22A, 138A, 148A, 150A</p>
<p>3. knows and explains why a decimal representation of the irrational number pi is an approximate value (2.4.K1c).</p>	<p>Teacher Guide: 136-137, 239A</p>

STANDARDS	PAGE REFERENCES
4. knows and explains between which two consecutive integers an irrational number lies (2.4.K1a).	Teacher Guide: 137
Benchmark 4: Computation – The student models, performs, and explains computation with rational numbers, the irrational number pi, and algebraic expressions in a variety of situations.	
The student...	
1. computes with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology (2.4.K1a) (\$).	Student Edition: 79 #8, 104-105, 126, 138-139, 140-141, 144-145, 150-151, 160-161, 162-163, 167 #8, 169, 171, 173, 175, 176, 296-297, 298-299, 300-301, 311-313 Teacher Guide: 105A, 138A, 141A, 161A, 162A
2. performs and explains these computational procedures with rational numbers (2.4.K1a): a. ▲N addition, subtraction, multiplication, and division of integers b. ▲N order of operations (evaluates within grouping symbols, evaluates powers to the second or third power, multiplies or divides in order from left to right, then adds or subtracts in order from left to right); c. approximation of roots of numbers using calculators; d. multiplication or division to find: i. a percent of a number, e.g., what is 0.5% of 10? ii. percent of increase and decrease, e.g., if two coins are removed from ten coins, what is the percent of decrease? iii. percent one number is of another number, e.g., what percent of 80 is 120? iv. a number when a percent of the number is given, e.g., 15% of what number is 30? e. addition of polynomials, e.g., $(3x - 5) + (2x + 8)$. f. simplifies algebraic expressions in one variable by combining like terms or using the distributive property (2.4.K1a), e.g., $-3(x - 4)$ is the same as $-3x + 12$.	Student Edition: 6-7, 34, 138-139, 140-141, 144-145, 166, 169, 182-183, 186-187, 192-193, 194-195, 196-197, 206-207, 211, 212, 213, 220 Teacher Guide: 135G, 140A, 179G, 182A, 186A, 191, 192A, 196A, 206A

STANDARDS	PAGE REFERENCES
3. finds factors and common factors of simple monomial expressions (2.4.K1d), e.g., given the monomials $10m^2n^3$ and $15a^2mn^2$ some common factors would be $5m$, $5mn^2$, and n^2 .	The following references can be expanded in classroom discussion to meet this objective. Student Edition: 182-183, 194-195, 210, 215
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 the general rule of a pattern from a variety of situations.	
The student...	
1. identifies, states, and continues a pattern presented in various formats including numeric (list or table), algebraic (symbolic notation), visual (picture, table, or graph), verbal (oral description), kinesthetic (action), and written using these attributes : <ol style="list-style-type: none"> counting numbers including perfect squares, cubes, and factors and multiples with positive rational numbers (number theory) (2.4.K1a). rational numbers including arithmetic and geometric sequences (arithmetic: sequence of numbers in which the difference of two consecutive numbers is the same, geometric: a sequence of numbers in which each succeeding term is obtained by multiplying the preceding term by the same number) (2.4.K1a), e.g., $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ geometric figures (2.4.K1h); measurements (2.4.K1a); things related to daily life (\$); variables and simple expressions, e.g., $1 - x$, $2 - x$, $3 - x$, $4 - x$, ...; or x, x^2, x^3, ... 	Student Edition: 138-139, 140-141, 142-143, 144-145, 148-149, 152-153, 166-171, 188-189, 198-199, 213, 217 Teacher Guide: 135E, 135G, 146, 147, 148A, 152A, 153A, 179E
2. generates and explains a pattern (2.4.K1a).	Student Edition: 138-139, 140-141, 142-143, 144-145, 148-149, 150-151, 166-171, 198-199, 217 Teacher Guide: 135E, 138A, 140A, 146, 149A, 150A, 198A

STANDARDS	PAGE REFERENCES										
3. generates a pattern limited to two operations (addition, subtraction, multiplication, division, exponents) when given the rule for the n th term (2.4.K1a), e.g., the n th term is n^2+1 , find the first 4 terms beginning with $n = 1$; the terms are 2, 5, 10, and 17.	Student Edition: 144-145, 148-149, 158-159, 169, 170, 174, 198-199, 217 Teacher Guide: 135G, 146-147, 149A, 156-157, R3 in “What Comes Next?”										
4. states the rule to find the n th term of a pattern using explicit symbolic notation (2.4.K1a), e.g., given 2, 5, 8, 11, ...; find the rule for the n th term, the rule is $3n - 1$.	Student Edition: 144-145, 148-149, 158-159, 169, 170, 174, 198-199, 217 Teacher Guide: 135G, 146-147, 149A, 156-157, R3 in “What Comes Next?”										
5. describes the pattern when given a table of linear values and plots the ordered pairs on a coordinate plane (2.4.K1f-g), e.g., in the table below, the pattern could be described as the x -coordinates are increasing by three, while the y -coordinates are increasing by 6, or the x is doubled and one is added to find the y . <table border="1" data-bbox="256 993 735 1087" style="margin: 10px auto;"> <tr> <td>X</td> <td>2</td> <td>5</td> <td>8</td> <td>11</td> </tr> <tr> <td>Y</td> <td>5</td> <td>11</td> <td>17</td> <td>23</td> </tr> </table>	X	2	5	8	11	Y	5	11	17	23	Student Edition: 152-153, 172 Teacher Guide: 135E, 152A
X	2	5	8	11							
Y	5	11	17	23							
Benchmark 2: : Variable, Equations, and Inequalities – The student uses variables, symbols, real numbers, and algebraic expressions to solve equations and inequalities in a variety of situations.											
The student...											
1. identifies independent and dependent variables within a given situation.	Teacher Guide: 14										
2. simplifies algebraic expressions in one variable by combining like terms or using the distributive property (2.4.K1a), e.g., $-3(x - 4)$ is the same as $-3x + 12$.	Student Edition: 182-183, 186-187, 194-195, 196-197, 198-199, 210, 212, 215-217 Teacher Guide: 181A, 191, 195A, 197A										

STANDARDS	PAGE REFERENCES
<p>3. solves (2.4.K1a,e) (\$):</p> <p>a. ▲ one- and two-step linear equations in one variable with rational number coefficients and constants intuitively and/or analytically;</p> <p>b. one-step linear inequalities in one variable with rational number coefficients and constants intuitively, analytically, and graphically;</p> <p>c. systems of given linear equations with whole number coefficients and constants graphically.</p>	<p>Student Edition: 202-203, 204-205, 206-207, 208-209, 218-221</p> <p>Teacher Guide: 200, 204A, 206A</p>
<p>4. knows and describes the mathematical relationship between ratios, proportions, and percents and how to solve for a missing monomial or binomial term in a proportion (2.4.K1c), e.g. $2/5 = 1/x + 2$</p>	<p>Student Edition: 242-243, 244-245, 246-247, 262-264</p> <p>Teacher Guide: 241, 245A</p>
<p>5. represents and solves algebraically (\$):</p> <p>a. the number when a percent and a number are given,</p> <p>b. what percent one number is of another number,</p> <p>c. percent of increase or decrease, e.g., the price of a loaf of bread is \$2.00. With a coupon, the cost is \$1.00. What is the percent of decrease?</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 3</i> © 2009.</p> <p>Student Edition: 263, 279, 285 <i>Check Your Understanding</i> 266, 282, 287 <i>Concept Summary</i> 264, 281 <i>Example</i> 263, 264, 279, 280 <i>Key Concept</i> 284 <i>Practice and Problem Solving</i> 266, 282, 288 #7-#12 <i>Real-World Example</i> 265, 281, 285</p> <p>Teacher Wraparound Edition: AE 264, 265, 280, 281, 285; CPC 284a; FMC 285; TNT 280</p>
<p>6. evaluates formulas using substitution (\$).</p>	<p>Student Edition: 184-185, 204-205, 206-207, 211, 219, 220</p> <p>Teacher Guide: 184A, 201A, 201B</p>
<p>Benchmark 3: Functions – The student recognizes, describes, and analyzes constant and linear relationships in a variety of situations.</p>	
<p>The student...</p>	
<p>1. recognizes and examines constant, linear, and nonlinear relationships using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or appropriate technology (2.4.K1a,e-g) (\$).</p>	<p>Student Edition: 272-273, 280-282, 302, 305</p> <p>Teacher Guide: 269A, 270, 278-279, 280A</p>

STANDARDS	PAGE REFERENCES
2. knows and describes the difference between constant, linear, and nonlinear relationships (2.4.K1g).	Student Edition: 272-273, 274-275, 276-277, 280-281, 282-283, 284-285, 302-307 Teacher Guide: 269E, 270, 271, 273A, 276A, 278-279, 280A
3. explains the concepts of slope and x- and y-intercepts of a line (2.4.K1g).	Student Edition: 2260227, 280-281, 282-283, 284-285, 305-307 Teacher Guide: 223A, 223B, 223H, 224-225, 226A, 240, 241, 269A, 281A
4. recognizes and identifies the graphs of constant and linear functions (2.4.K1g) (\$).	Student Edition: 284-285, 292-293 Teacher Guide: 284A
5. identifies ordered pairs from a graph, and/or plots ordered pairs using a variety of scales for the x- and y-axis (2.4.K1g).	Student Edition: 280-281, 282-283, 284-285, 290-291, 305-307, 309

STANDARDS	PAGE REFERENCES
<p>Benchmark 4: Models – The student generates and uses mathematical models to represent and justify mathematical relationships found in a variety of situations.</p>	
<p>The student...</p>	
<p>1. knows, explains, and uses mathematical models to represent and explain mathematical concepts, procedures, and relationships.</p> <p>Mathematical models include:</p> <ul style="list-style-type: none"> a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate grids) to model computational procedures, algebraic relationships, and mathematical relationships and to solve equations (1.1.K1-5, 1.2.K1-4, 1.3.K1-4, 1.4.K1-2, 1.4.K5, 2.1.K1a-b, 2.1.K1e, 2.1.K2-4, 2.2.K1-3, 2.2.K5-6, 2.3.K1, 3.1.K9, 3.2.K1-3, 3.2.K9, 3.3.K1-4, 3.4.K1, 4.2.K4-6) (\$); 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.K1, 1.4.K2) (\$); 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.K1, 1.3.K5, 1.4.K2, 2.2.K7-8, 4.1.K3) (\$); d. factor trees to find least common multiple and greatest common factor and to model prime factorization (1.4.K4); e. equations and inequalities to model numerical relationships (2.2.K5, 2.3.K1, 2.3.K4) (\$); f. function tables to model numerical and algebraic relationships (2.3.K1-2, 2.3.K4) (\$); 	<p>Student Edition: 8-9, 12-13, 16-17, 18-19, 20-21, 34-35, 37-41, 60-61, 62-63, 79, 83, 94-95, 98-99, 108-109, 114-115, 122-125, 142-143, 144-145, 148-149, 154-155, 158-159, 169, 173, 174, 196-197, 206-207, 216, 220, 226-227, 228-229, 236-237, 238-239, 252-253, 254-255</p> <p>Teacher Guide: 3H, 14, 18A, 19A, 58-59, 63A, 68-69, 91G, 92-93, 136, 155A, 158A, 196A, 200-201, 223H, 227A, 248-249, 251A, 254A</p>

STANDARDS	PAGE REFERENCES
<p>Continued from cell above.</p> <ul style="list-style-type: none"> g. coordinate planes to model relationships between ordered pairs and linear equations (2.3.K1, 2.3.K3-4, 3.4.K2-4) (\$); h. two- and three-dimensional geometric models (geoboards, dot paper, nets or solids) to model perimeter, area, volume, and surface area, and properties of two- and three-dimensional (2.1.K1c, 3.1.K1, 3.1.K3-8, 3.1.K10, 3.2.K1-2, 3.2.K4-8, 3.2.K10); i. scale drawings to model large and small real-world objects (3.3.K3-4); j. geometric models (spinners, targets, or number cubes), process models (coins, pictures, or diagrams), and tree diagrams to model probability (4.1.K1, 4.1.K4) (\$); k. frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, charts, tables, single stem-and-leaf plots, scatter plots, and box-and-whisker plots to organize and display data (4.2.K1) (\$); l. Venn diagrams to sort data and show relationships (1.2.K1-2).coordinate planes to model relationships between ordered pairs and linear equations (2.3.K1, 2.3.K3-4, 3.4.K2-4) (\$); 	<p>Continued from cell above.</p> <p>Student Edition: 8-9, 12-13, 16-17, 18-19, 20-21, 34-35, 37-41, 60-61, 62-63, 79, 83, 94-95, 98-99, 108-109, 114-115, 122-125, 142-143, 144-145, 148-149, 154-155, 158-159, 169, 173, 174, 196-197, 206-207, 216, 220, 226-227, 228-229, 236-237, 238-239, 252-253, 254-255</p> <p>Teacher Guide: 3H, 14, 18A, 19A, 58-59, 63A, 68-69, 91G, 92-93, 136, 155A, 158A, 196A, 200-201, 223H, 227A, 248-249, 251A, 254A</p>
<p>Standard 3: Geometry – The student uses geometric concepts and procedures in a variety of situations.</p>	
<p>Benchmark 1: Geometric Figures and Their Properties – The student recognizes geometric figures and compares their properties in a variety of situations.</p>	
<p>The student...</p>	
<p>1. recognizes and compares properties of two- and three-dimensional figures using concrete objects, constructions, drawings, appropriate terminology, and appropriate technology (2.4.K1h).</p>	<p>Student Edition: 94-95, 96-97, 108-109, 114-115, 116-117, 120-121, 122, 130, 133 #4, 228-229, 236-237, 238-239, 247-248, 250-251, 252-255, 257, 265-267</p> <p>Teacher Guide: 91G, 92, 94A, 114A, 116A, 117A, 120A, 229A, 238A, 252A</p>

STANDARDS	PAGE REFERENCES
<p>2. discusses properties of triangles and quadrilaterals related to (2.4.K1h):</p> <ul style="list-style-type: none"> a. sum of the interior angles of any triangle is 180°; b. sum of the interior angles of any quadrilateral is 360°; c. parallelograms have opposite sides that are parallel and congruent, opposite angles are congruent; d. rectangles have angles of 90°, sides may or may not be equal; e. rhombi have all sides equal in length, angles may or may not be equal; f. squares have angles of 90°, all sides congruent; g. trapezoids have one pair of opposite sides parallel and the other pair of opposite sides are not parallel; h. kites have two distinct pairs of adjacent congruent sides. 	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 3</i> © 2009.</p> <p>Student Edition: 316</p> <p><i>Concepts and Skills Bank</i> 738-740 <i>Key Concept</i> 316</p> <p>Also see <i>Math Connects: Concepts, Skills, and Problem Solving Course 2</i> © 2009.</p> <p>Student Edition: 33</p>
<p>3. recognizes and describes the rotational symmetries and line symmetries that exist in two-dimensional figures (2.4.K1h), e.g., draw a picture with a line of symmetry in it. Explain why it is a line of symmetry.</p>	<p>Student Edition: 290-291</p>

STANDARDS	PAGE REFERENCES
<p>4. recognizes and uses properties of corresponding parts of similar and congruent triangles and quadrilaterals to find side or angle measures using standard notation for similarity (\sim) and congruence (\cong) (2.4.K1h).</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 3</i> © 2009.</p> <p>Student Edition: 218, 320 <i>Check Your Understanding</i> 222, 322 <i>Example</i> 219, 220, 321 <i>Extra Practice</i> 679, 684 <i>Key Concept</i> 219, 221, 320 <i>Mid-Chapter Quiz</i> 326 #15-#20 <i>Practice and Problem Solving</i> 222, 322 <i>Practice Test</i> 247 #9, #10, 347 #6-#8 <i>Reading Math</i> 219 <i>Study Guide and Review</i> 245 #25-#28, 344 #24-#26 <i>Test Example</i> 221 <i>Test Practice</i> 223, 248 #2, 323, 348 #7 <i>Test-Taking Tip</i> 221 <i>Writing in Math</i> 223, 323</p> <p>Teacher Wraparound Edition: AE 219, 220, 221, 321; DI 320; FMC 219; TNT 219; VE 320a</p>
<p>5. knows and describes Triangle Inequality Theorem to determine if a triangle exists (2.4.K1h).</p>	<p>See <i>Geometry</i> © 2008.</p> <p>Student Edition: 296, <i>Check Your Understand</i> 299 <i>Example</i> 296 <i>Theorem 5.1</i> 296</p> <p>Teacher Wraparound Edition: DI 297</p>
<p>6. ▲ uses the Pythagorean theorem to (2.4.K1h):</p> <ol style="list-style-type: none"> determine if a triangle is a right triangle, find a missing side of a right triangle where the lengths of all three sides are whole numbers. 	<p>Student Edition: 236-237, 238-239, 246-247, 250-251, 260-261, 264, 265</p> <p>Teacher Guide: 223G, 232, 233, 237A, 239A</p>
<p>7. recognizes and compares the concepts of a point, line, and plane.</p>	<p>The following references can be used with teacher instruction to meet this objective.</p> <p>Student Edition: 96-97, 123, 256</p>
<p>8. describes the intersection of plane figures, e.g., two circles could intersect at no point, one point, two points, or all points.</p>	<p>Student Edition: 259 #14</p>

STANDARDS	PAGE REFERENCES
9. describes and explains angle relationships: <ol style="list-style-type: none"> when two lines intersect including vertical and supplementary angles; when formed by parallel lines cut by a transversal including corresponding, alternate interior, and alternate exterior angles. 	Student Edition: 226-227, 259 #14 Teacher Guide: 227A
10. recognizes and describes arcs and semicircles as parts of a circle and uses the standard notation for arc (\frown) and circle (\odot) (2.4.K1h).	See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 3</i> © 2009. Student Edition: <i>Extend</i> 358-359
Benchmark 2: Measurement and Estimation – The student estimates, measures, and uses measurement formulas in a variety of situations.	
The student...	
1. determines and uses rational number approximations (estimations) for length, width, weight, volume, temperature, time, perimeter, area, and surface area using standard and nonstandard units of measure (2.4.K1a) (\$).	Student Edition: 50-51, 52-53, 78, 79, 98-99, 118-119, 120-121, 124, 132, 133, 228-229, 238-239, 257, 261 Teacher Guide: 50A, 228A
2. selects and uses measurement tools, units of measure, and level of precision appropriate for a given situation to find accurate real number representations for length, weight, volume, temperature, time, perimeter, area, surface area, and angle measurements (2.4.K1a) (\$).	Student Edition: 50-51, 52-53, 78, 79, 98-99, 118-119, 124, 132, 226-227, 228-229, 230-231, 234-235, 238-239, 253, 256, 258, 261 Teacher Guide: 118A, 226A, 228A, 230A
3. converts within the customary system and within the metric system.	Student Edition: 50-51, 52-53, 78, 79, 118-119, 132, 226-227, 228-229, 256, 257 Teacher Guide: 118A, 223E
4. estimates the measure of a concrete object in one system given the measure of that object in another system and the approximate conversion factor (2.4.K1a), e.g., a mile is about 2.2 kilometers; how far is 2 miles?	Student Edition: 50-51, 52-53, 78, 79, 98-99, 118-119, 124, 132 Teacher Guide: 48, 98A, 118A

STANDARDS	PAGE REFERENCES
5. uses given measurement formulas to find (2.4.K1h): <ol style="list-style-type: none"> area of parallelograms and trapezoids; surface area of rectangular prisms, triangular prisms, and cylinders; volume of rectangular prisms, triangular prisms, and cylinders. 	Student Edition: 98-99, 104-105, 106-107, 108-109, 110-111, 124, 126-129 Teacher Guide: 98A, 102-103, 105A, 107A, 108A, 111A
6. recognizes how ratios and proportions can be used to measure inaccessible objects (2.4.K1c), e.g., using shadows to measure the height of a flagpole.	Student Edition: 228-229, 230-231, 257, 258 Teacher Guide: 229A, 231A
7. calculates rates of change, e.g., speed or population growth.	Student Edition: 50-51, 60-61, 74-75, 82, 138-139, 150-151, 158-159, 160-167 Teacher Guide: 49, 59, 68-69, 138A, 160A, 163A
Benchmark 3: Transformational Geometry – The student recognizes and performs transformations on two- and three-dimensional geometric figures in a variety of situations.	
The student...	
1. identifies, describes, and performs single and multiple transformations [reflection, rotation, translation, reduction (contraction/shrinking), enlargement (magnification/growing)] on a two-dimensional figure (2.4.K1a).	The following reference can be used in classroom discussion to meet this objective. Student Edition: 259 #14
2. describes a reflection of a given two-dimensional figure that moves it from its initial placement (preimage) to its final placement (image) in the coordinate plane over the x- and y-axis (2.4.K1a,i).	See <i>Math Connects: Skills, and Problem Solving, Course 3</i> © 2009 for the follow references that can be used during teacher/class discussion to meet this objective. Student Edition: 332 <i>Check Your Understanding</i> 334 <i>Example</i> 332, 333, 334 <i>H.O.T. Problems</i> 336 #17, #18 <i>Practice and Problem Solving</i> 335 Teacher Wraparound Edition: AE 333, 334; TOD 336

STANDARDS	PAGE REFERENCES
3. draws (2.4.K1a): <ol style="list-style-type: none"> three-dimensional figures from a variety of perspectives (top, bottom, sides, corners); a scale drawing of a two-dimensional figure; a two-dimensional drawing of a three-dimensional figure. 	Student Edition: 120-121, 133, 228-229, 230-231, 246-247, 254-255 Teacher Guide: 229A, 254A
4. determines where and how an object or a shape can be tessellated using single or multiple transformations (2.4.K1a).	Student Edition: 259 #14
Benchmark 4: Geometry From An Algebraic Perspective – The student uses an algebraic perspective to examine the geometry of two-dimensional figures in a variety of situations.	
The student...	
1. uses the coordinate plane to (2.4.K1a): <ol style="list-style-type: none"> ▲ list several ordered pairs on the graph of a line and find the slope of the line; ▲ recognize that ordered pairs that lie on the graph of an equation are solutions to that equation; ▲ recognize that points that do not lie on the graph of an equation are not solutions to that equation; ▲ determine the length of a side of a figure drawn on a coordinate plane with vertices having the same x- or y-coordinates; solve simple systems of linear equations. 	Student Edition: 20-21, 40, 152-153, 172, 280-281, 282-283, 284-285, 303, 305-307 Teacher Guide: 21A, 152A, 240, 278-279
2. uses a given linear equation with integer coefficients and constants and an integer solution to find the ordered pairs, organizes the ordered pairs using a T-table, and plots the ordered pairs on a coordinate plane (2.4.K1e-g).	Student Edition: 280-281, 282-283, 284-285 Teacher Guide: 278-279, 283A, 284A
3. examines characteristics of two-dimensional figures on a coordinate plane using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology (2.4.A1g).	Student Edition: 292-293

STANDARDS	PAGE REFERENCES
<p>Standard 4: Data – The student uses concepts and procedures of data analysis in a variety of situations.</p>	
<p>Benchmark 1: Probability – The student applies the concepts of probability to draw conclusions, generate convincing arguments, and make predictions and decisions including the use of concrete objects in a variety of situations.</p>	
<p>The student...</p>	
<p>1. knows and explains the difference between independent and dependent events in an experiment, simulation, or situation (2.4.K1j) (\$).</p>	<p>Student Edition: 18-19, 20-21, 22-23, 39-41 Teacher Guide: 14-15, 18A, 21A</p>
<p>2. identifies situations with independent or dependent events in an experiment, simulation, or situation (2.4.K1j), e.g., there are three marbles in a bag. If you draw one marble and give it to your brother, and another marble and give it to your sister, are these independent events or dependent events?</p>	<p>Student Edition: 18-19, 20-21, 22-23, 39-41 Teacher Guide: 14-15, 18A, 21A</p>
<p>3. ▲ finds the probability of a compound event composed of two independent events in an experiment, simulation, or situation (2.4.K1j), e.g., what is the probability of getting two heads, if you toss a dime and a quarter?</p>	<p>Student Edition: 26-27, 28-29, 30-31, 32-33, 42-45 Teacher Guide: 26A, 28A, 30A</p>
<p>4. finds the probability of simple and/or compound events using geometric models (spinners or dartboards) (2.4.K1j).</p>	<p>Student Edition: 26-27, 42</p>
<p>5. finds the odds of a desired outcome in an experiment or simulation and expresses the answer as a ratio ($\frac{2}{3}$ or 2:3 or 2 to 3) (2.4.K1j).</p>	<p>Student Edition: 26-27, 42</p>
<p>6. describes the difference between probability and odds.</p>	<p>Student Edition: 26-27, 42</p>

STANDARDS	PAGE REFERENCES
<p>Benchmark 2: Statistics – The student collects, organizes, displays, and explains numerical (rational numbers) and non-numerical data sets in a variety of situations with a special emphasis on measures of central tendency.</p>	
<p>The student...</p>	
<p>1. organizes, displays and reads quantitative (numerical) and qualitative (non-numerical) data in a clear, organized, and accurate manner including a title, labels, categories, and rational number intervals using these data displays (2.4.K1k) (\$):</p> <ol style="list-style-type: none"> frequency tables; bar, line, and circle graphs; Venn diagrams or other pictorial displays; charts and tables; stem-and-leaf plots (single and double); scatter plots; box-and-whiskers plots; histograms. 	<p>Student Edition: 12-13, 16-17, 18-19, 20-21, 22-23, 34, 37-41, 52-53, 138-139, 154-155, 166, 172, 174, 305</p> <p>Teacher Guide: 14-15, 17A, 18A</p>
<p>2. recognizes valid and invalid data collection and sampling techniques.</p>	<p>Student Edition: 6-7, 34, 138-139, 154-155, 158-159, 160-161, 162-163, 164-165, 166, 174-176</p> <p>Teacher Guide: 6A, 138A, 158A, 159A, 161A, 162A</p>
<p>3. ▲ determines and explains the measures of central tendency (mode, median, mean) for a rational number data set (2.4.K1a).</p>	<p>Student Edition: 6-7, 8-9, 10-11, 16-17, 34, 35, 36, 38</p> <p>Teacher Guide: 3G, 8A, 11A</p>
<p>4. determines and explains the range, quartiles, and interquartile range for a rational number data set (2.4.K1a).</p>	<p>Student Edition: 8-9, 12-13, 16-17, 35, 37, 38</p> <p>Teacher Guide: 5, 8A, 9A</p>
<p>5. explains the effects of outliers on the median, mean, and range of a rational number data set (2.4.K1a).</p>	<p>Student Edition: 12-13, 37</p> <p>Teacher Guide: 5, 12A</p>

STANDARDS	PAGE REFERENCES
<p>6. makes a scatter plot and draws a line that approximately represents the data, determines whether a correlation exists, and if that correlation is positive, negative, or that no correlation exists (2.4.K1k).</p>	<p>Student Edition: 18-19, 20-21, 22-23, 39-41</p> <p>Teacher Guide: 3H, 14-15, 18A, 20A, 21A</p>