

MathScape

Seeing and Thinking Mathematically

Course 2

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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 rational numbers, the irrational number pi, and simple algebraic expressions in one variable 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; integer bases with whole number exponents; positive rational numbers written in scientific notation with positive integer exponents; time; and money (2.4.K1a-c) (\$), e.g., 253,000 is equivalent to 2.53×10^5 or $x + 5x$ is equivalent to $6x$.</p>	<p>Student Edition: 16-19, 26-31, 38, 39, 42, 43, 70-71, 106-113, 128-131, 184-185, 188-189, 212, 214</p> <p>Teacher Guide: 3A, 3B, 14-15, 16A, 24-25, 26A, 28A, 30A, 112A, 182-183, 188A</p> <p>Scientific Notation is addressed in <i>MathScape: Seeing and Thinking Mathematically, Course 3 2005</i></p>
<p>2. compares and orders rational numbers and the irrational number pi (2.4.K1a) (\$).</p>	<p>Student Edition: 6-7, 10-11, 16-17, 28-29, 38, 43, 186-187, 213, 294-295, 310</p> <p>Teacher Guide: 4-5, 6A, 10A, 17A, 24-25, 292-293</p>
<p>3. explains the relative magnitude between rational numbers and between rational numbers and the irrational number pi (2.4.K1a).</p>	<p>Student Edition: 26-27, 186-187, 213, 294-295, 311- 312</p> <p>Teacher Guide: 3G, 24-25, 186A, 295A</p>

STANDARDS	PAGE REFERENCES
<p>4. knows and explains what happens to the product or quotient when (2.4.K1a):</p> <ul style="list-style-type: none"> a. a whole number is multiplied or divided by a rational number greater than zero and less than one, b. a whole number is multiplied or divided by a rational number greater than one, c. a rational number (excluding zero) is multiplied or divided by zero. 	<p>Student Edition: 100-103, 108-109, 126, 127, 129, 162-163, 294-299, 310-312</p> <p>Teacher Guide: 93G, 100A, 102A, 103A</p>
<p>5. explains and determines the absolute value of rational numbers (2.4.K1a).</p>	<p>The following references can be used in classroom discussion to meet this objective.</p> <p>Student Edition: 186-187, 194-195, 213, 216, 314(Glossary)</p>
<p>Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of the rational number system and the irrational number pi; recognizes, uses, and describes their properties; and extends these properties to algebraic expressions in one variable.</p>	
<p>The student...</p>	
<p>1. knows and explains the relationships between natural (counting) numbers, whole numbers, integers, and rational numbers using mathematical models (2.4.K1a,k), e.g., number lines or Venn diagrams.</p>	<p>Student Edition: 26, 186-187, 213</p> <p>Teacher Guide: 24, 27A, 93E, 186A</p>
<p>2. classifies a given rational number as a member of various subsets of the rational number system (2.4.K1a,k), e.g., $\sqrt{7}$ is a rational number and an integer.</p>	<p>The following references can be used in classroom discussion to meet this objective.</p> <p>Student Edition: 116-117, 118-119</p>

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 properties of addition and multiplication (changing the order of the numbers does not change the solution); b. associative properties of addition and multiplication (changing the grouping of the numbers does not change the solution); c. distributive property [distributing multiplication or division over addition or subtraction, e.g., $2(4 - 1) = 2(4) - 2(1) = 8 - 2 = 6$]; d. substitution property (one name of a number can be substituted for another name of the same number), e.g., if $a = 2$, then $3a = 3 \times 2 = 6$. 	<p>Student Edition: 100-101, 184-185, 188-189, 204-205, 208-209, 212, 220, 221</p> <p>Teacher Guide: 182-183, 185A, 189A, 205A, 209A</p>
<p>4. 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. identity properties for addition and multiplication (additive identity – zero added to any number is equal to that number; multiplicative identity – one multiplied by any number is equal to that number); b. symmetric property of equality (if $7 + 2x = 9$ then $9 = 7 + 2x$); c. zero property of multiplication (any number multiplied by zero is zero); d. addition and multiplication properties of equality (adding/multiplying the same number to each side of an equation results in an equivalent equation); e. additive and multiplicative inverse properties. (Every number has a value known as its additive inverse and when the original number is added to that additive inverse, the answer is zero, e.g., $+5 + ^-5 = 0$. Every number except 0 has a value known as its multiplicative inverse and when the original number multiplied by its inverse, the answer will be 1, e.g., $8 \times 1/8 = 1$.) 	<p>Student Edition: 96-99, 100-101, 124-126, 188-189, 206-207, 208-209, 214, 221-223</p> <p>Teacher Guide: 189A, 202-203, 207A</p>

STANDARDS	PAGE REFERENCES
5. recognizes that the irrational number pi can be represented by approximate rational values, e.g., 22/7 or 3.14.	Student Edition: 294-295, 310 Teacher Guide: 292-293
Benchmark 3: Estimation – The student uses computational estimation with rational numbers and the irrational number pi in a variety of situations.	
The student...	
1. estimates quantities with combinations of rational numbers and/or the irrational number pi using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology (2.4.K1a) (\$).	Student Edition: 10-11, 12-13, 26-27, 36, 37, 42, 146-147, 154-155, 156-157, 160-161, 162-163, 171, 174-178 Teacher Guide: 10A, 12A, 26A, 27A, 137H, 146A, 154A, 162A
2. N uses various estimation strategies and explains how they were used to estimate rational number quantities and the irrational number pi (2.4.K1a) (\$).	Student Edition: 6-7, 10-11, 12-13, 26-27, 34, 36, 37, 42, 43, 162-163, 177, 164-165, 178, 294-295, 310, 312 Teacher Guide: 7A, 10A, 26A, 27A, 162A, 292-293
3. recognizes and explains the difference between an exact and approximate answer (2.4.K1a).	Student Edition: 10-11, 12-13, 26-27, 36, 37, 146-147, 154-155, 156-157, 160-161, 162-163, 171, 176, 177, 178, 298-299, 312 Teacher Guide: 4-5, 6A, 26A, 27A, 146A, 161A, 162A, 298A
4. determines the appropriateness of an estimation strategy used and whether the estimate is greater than (overestimate) or less than (underestimate) the exact answer and its potential impact on the result (24.K1a).	Student Edition: 6-7, 10-11, 26-27, 34, 36, 42, 146-147, 154-155, 156-157, 160-161, 162-163, 164-165, 171, 174-178 Teacher Guide: 4-5, 6A, 146A, 161A, 162A
5. knows and explains why the fraction (22/7) or decimal (3.14) representation of the irrational number pi is an approximate value (2.4.K1c).	Student Edition: 294-295, 310 Teacher Guide: 292-293

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<p>Benchmark 4: Computation – The student models, performs, and explains computation with rational numbers, the irrational number pi, and first-degree algebraic expressions in one variable in a variety of situations.</p>	
<p>The student...</p>	
<p>1. computes with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology (2.4.K1a-c) (\$).</p>	<p>Student Edition: 10-11, 12-13, 26-27, 30-31, 42, 96-97, 98-99, 124-125, 127, 131, 236-241, 261-263</p> <p>Teacher Guide: 26A, 27A, 28A, 94-95, 98A, 237A, 238A</p>
<p>2. performs and explains these computational procedures (2.4.K1a):</p> <p>a. ▲ N adds and subtracts decimals from ten millions place through hundred thousandths place;</p> <p>b. ▲ N multiplies and divides a four-digit number by a two-digit number using numbers from thousands place through thousandths place;</p> <p>c. ▲ N multiplies and divides using numbers from thousands place through thousandths place by 10; 100; 1,000; .1; .01; .001; or single-digit multiples of each, e.g., $54.2 \div .002$ or 54.3×300;</p> <p>d. ▲ N adds, subtracts, multiplies, and divides fractions and expresses answers in simplest form;</p> <p>e. N adds, subtracts, multiplies, and divides integers;</p> <p>f. N uses 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) using whole numbers;</p> <p>g. simplifies positive rational numbers raised to positive whole number powers;</p> <p>h. combines like terms of a first degree algebraic expression.</p>	<p>Student Edition: 6-7, 12-13, 26-27, 30-31, 32-33, 34, 42, 44-45, 58-59, 78-79, 96-97, 98-99, 100-101, 102-103, 106-107, 108-109, 116-117, 124-125, 128-131, 156-157, 175, 184-185, 188-189, 196-197, 212, 214, 215, 217, 238-239, 259 #9, 262, 263 #8-#10, 310 #16</p> <p>Teacher Guide: 12A, 30A, 32A, 93G, 93H, 94-95, 100A, 104-105, 183, 185A, 188A</p>
<p>3. recognizes, describes, and uses different ways to express computational procedures, e.g., $5 - 2 = 5 + (-2)$ or $49 \times 23 = (40 \times 23) + (9 \times 23)$ or $49 \times 23 = (49 \times 20) + (49 \times 3)$ or $49 \times 23 = (50 \times 23) - 23$.</p>	<p>Student Edition: 96-99, 100-101, 102-103, 124-126, 188-189</p> <p>Teacher Guide: 96A, 99A, 101A, 102A, 189A</p>


STANDARDS	PAGE REFERENCES
4. finds prime factors, greatest common factor, multiples, and the least common multiple (2.4.K1d).	Student Edition: 86, 116-117, 118-119, 120-121, 122-123, 132, 133, 136 Teacher Guide: 93B, 93E, 114-115, 116A, 118A, 119A
5. ▲ finds percentages of rational numbers (2.4.K1a,c) (\$), e.g., $12.5\% \times \$40.25 = n$ or 150% of 90 is what number? (For the purpose of assessment, percents will not be between 0 and 1.)	Student Edition: 162-163, 177 Teacher Guide: 162A, 163A
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 in a variety of situations	
The student...	
<p>The student...</p> <p>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:</p> <ul style="list-style-type: none"> a. ▲ counting numbers including perfect squares, cubes, and factors and multiples (number theory) (2.4.K1a); b. ▲ positive 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., 2, $\frac{1}{2}$, $\frac{1}{8}$, $\frac{1}{32}$, ...; c. geometric figures (2.4.K1f); d. measurements (2.4.K1a); e. things related to daily life (2.4.K1a) (\$), e.g., tide, moon cycle, or temperature. 	Student Edition: 39 #6, 66-67, 86, 106-107, 112-113, 116-117, 118-119, 120-121, 122-123, 128, 131-135, 160-161, 194-201, 217-219 Teacher Guide: 66A, 93H, 104-105, 107A, 112A, 114-115, 159, 197A, 199A, 201A
2. generates a pattern (2.4.K1a).	Student Edition: 66-67, 86, 106-107, 112-113, 128, 131 Teacher Guide: 112A

STANDARDS	PAGE REFERENCES
3. extends a pattern when given a rule of one or two simultaneous changes (addition, subtraction, multiplication, division) between consecutive terms (2.4.K1a), e.g., find the next three numbers in a pattern that starts with 3, where you double and add 1 to get the next number; the next three numbers are 7, 15, and 31.	Student Edition: 86, 106-107, 112-113, 116-117, 120-121, 128, 132, 194-195, 196-197, 198-199, 217-219 Teacher Guide: 104, 107A, 112A, 114-115, 193
4. ▲ ■ states the rule to find the n^{th} term of a pattern with one operational change (addition or subtraction) between consecutive terms (2.4.K1a), e.g., given 3, 5, 7, and 9; the n^{th} term is $2n + 1$. (This is the explicit rule for the pattern.)	Student Edition: 86, 106-107, 112-113, 116-117, 120-121, 128, 132, 194-195, 196-197, 198-199, 217-219 Teacher Guide: 104, 107A, 112A, 114-115, 193
Benchmark 2: : Variable, Equations, and Inequalities – The student uses variables, symbols, rational numbers, and simple algebraic expressions in one variable to solve linear equations and inequalities in a variety of situations.	
The student...	
1. knows and explains that a variable can represent a single quantity that changes (2.4.K1a), e.g., daily temperature.	Student Edition: 184-185, 186-187, 190-191, 206-207, 208-209, 212, 213, 215, 221, 222 Teacher Guide: 182, 185A, 186A, 202, 207A, 208A
2. knows, explains, and uses equivalent representations for the same simple algebraic expressions (2.4.K1a), e.g., $x + y + 5x$ is the same as $6x + y$.	Student Edition: 184-185, 188-189, 212, 214 Teacher Guide: 183, 184A, 188A
3. shows and explains how changes in one variable affects other variables (2.4.A1a), e.g., changes in diameter affects circumference.	Student Edition: 196-201, 217-219, 294-295, 310 Teacher Guide: 197A, 200A
4. explains the difference between an equation and an expression.	Student Edition: 184-185, 188-189, 190-191, 212, 214, 232-233, 260

STANDARDS	PAGE REFERENCES
5. solves (2.4.K1a,e) (\$): <ol style="list-style-type: none"> one-step linear equations in one variable with positive rational coefficients and solutions, e.g., $7x = 28$ or $x + \frac{3}{4} = 7$ or $\frac{x}{3} = 5$; two-step linear equations in one variable with counting number coefficients and constants and positive rational solutions; one-step linear inequalities with counting numbers and one variable, e.g., $3x > 12$. 	Student Edition: 196-197, 198-199, 200-201, 204-205, 206-207, 208-209, 218, 220-223 Teacher Guide: 196A, 200A, 202-203
6. explains and uses the 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) to represent mathematical relationships with rational numbers (2.4.K1a) (\$).	Student Edition: 184-185, 186-187, 190-191, 206-207, 208-209, 212, 213, 215, 221, 222 Teacher Guide: 182, 185A, 186A, 202-203, 207A, 208A
7. ▲ knows the mathematical relationship between ratios, proportions, and percents and how to solve for a missing term in a proportion with positive rational number solutions and monomials (2.4.K1a,c) (\$), e.g., $\frac{5}{x} = \frac{2}{6}$	Student Edition: 16-17, 18-19, 20-21, 22-23, 26-27, 30-31, 32-33, 38-42, 44-45 Teacher Guide: 14-15, 17A, 18A, 19A, 20A, 22A, 24-25, 32A
8. ▲ evaluates simple algebraic expressions using positive rational numbers (2.4.K1c) (\$), e.g., if $x = \frac{3}{2}$, $y = 2$, then $5xy + 2 = 5(\frac{3}{2})(2) + 2 = 17$.	Student Edition: 184-185, 188-189, 212, 214 Teacher Guide: 183, 184A, 188A
Benchmark 3: Functions – The student recognizes, describes, and analyzes constant and linear relationships in a variety of situations.	
The student...	
1. recognizes constant and linear relationships using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or appropriate technology (2.4.K1a,e-g) (\$).	Student Edition: 196-197, 204-205, 208-209, 217, 220 Teacher Guide: 192, 193, 197A, 204A
2. finds the values and determines the rule through two operations using a function table (input/output machine, T-table) (2.4.K1f).	Student Edition: 194-195, 198-199, 200-201, 216-219 Teacher Guide: 192-193, 195A, 198A, 200A
3. demonstrates mathematical relationships using ordered pairs in all four quadrants of a coordinate plane (2.4.K1g).	Student Edition: 194-195, 198-199, 200-201, 216, 218-219 Teacher Guide: 194A, 289A

STANDARDS	PAGE REFERENCES
<p>4. describes and/or gives examples of mathematical relationships that remain constant (2.4.K1e-g) (\$), e.g., you will get \$10.00 to do a job, no matter how long it takes for you to do it.</p>	<p>Student Edition: 190-191, 210-211, 215, 223</p>
<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. 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) (\$); g. coordinate planes to model relationships between ordered pairs and linear equations (2.3.K1, 2.3.K3-4, 3.4.K2-4) (\$); 	<p>Student Edition: 6-7, 8-9, 18-19, 22-23, 28-29, 32-33, 38 #9-#11, 43, 54-55, 59, 60-61, 70-71, 83, 85, 96-97, 98-99, 112-113, 118-119, 120-121, 126 #12, #13, 132, 133, 134, 135, 140-141, 144-145, 146-147, 150-151, 152-153, 164-165, 169 #17, 177 #13, 190-191, 194-195, 198-199, 210-211, 213, 215, 218-219, 230-231, 236-237, 244-245, 248-249, 266 #9, #10, 274-275, 285, 288-289, 294-295, 297-298, 302 #11-#14, 311</p> <p>Teacher Guide: 24, 47H, 48-49, 56-57, 64-66, 72-73, 94-95, 104-105, 137G, 138-139, 202-203, 234-235, 242-243, 282</p>

STANDARDS	PAGE REFERENCES
<p>Continued from cell above.</p> <ul style="list-style-type: none"> 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. 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) (\$); j. 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) (\$); k. 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: 6-7, 8-9, 18-19, 22-23, 28-29, 32-33, 38 #9-#11, 43, 54-55, 59, 60-61, 70-71, 83, 85, 96-97, 98-99, 112-113, 118-119, 120-121, 126 #12, #13, 132, 133, 134, 135, 140-141, 144-145, 146-147, 150-151, 152-153, 164-165, 169 #17, 177 #13, 190-191, 194-195, 198-199, 210-211, 213, 215, 218-219, 230-231, 236-237, 244-245, 248-249, 266 #9, #10, 274-275, 285, 288-289, 294-295, 297-298, 302 #11-#14, 311</p> <p>Teacher Guide: 24, 47H, 48-49, 56-57, 64-66, 72-73, 94-95, 104-105, 137G, 138-139, 202-203, 234-235, 242-243, 282</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: 144-145, 150-151, 152-153, 164-165, 166-167, 172, 179, 278-279, 280-281, 284-285, 288-289, 294-295, 296-297, 300-301</p> <p>Teacher Guide: 144A, 150A, 279A, 281A, 282, 283, 284A, 288A, 291A</p>
<p>2. classifies regular and irregular polygons having through ten sides as convex or concave.</p>	<p>Student Edition: 284-285, 286-287, 290-291, 296-297, 300-301, 306, 307, 311</p> <p>Teacher Guide: 284A, 286A, 287A, 291A, 297, 300A</p>

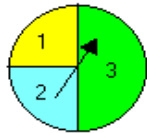
STANDARDS	PAGE REFERENCES
<p>3. ▲ identifies angle and side properties of triangles and quadrilaterals (2.4.K1h):</p> <ul style="list-style-type: none"> a. sum of the interior angles of any triangle is 180°; b. sum of the interior angles of any quadrilateral is 360°; c. parallelograms have opposite sides that are parallel and congruent; d. rectangles have angles of 90°, opposite sides are congruent; e. rhombi have all sides the same length, opposite angles are congruent; 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. 	<p>Student Edition: 274-275, 276-277, 278-279, 284-285, 286-287, 288-289, 296-297, 302, 304, 305, 306, 307 #11, #15, 308</p> <p>Teacher Guide: 271G, 271H, 272, 273, 275A, 276A, 278A, 282, 283, 286A</p>
<p>4. identifies and describes (2.4.K1h):</p> <ul style="list-style-type: none"> a. the altitude and base of a rectangular prism and triangular prism, b. the radius and diameter of a cylinder. 	<p>Student Edition: 1501-151, 172</p> <p>Teacher Guide: 150A</p>
<p>5. identifies corresponding parts of similar and congruent triangles and quadrilaterals (2.4.K1h).</p>	<p>Student Edition: 276-277, 280-281, 284-285, 288-289, 305, 306, 308</p> <p>Teacher Guide: 277A, 280A, 281A, 282, 283, 288A</p>
<p>6. uses symbols for right angle within a figure () , parallel (\parallel), perpendicular (\perp), and triangle (Δ) to describe geometric figures(2.4.K1h).</p>	<p>Student Edition: 275</p> <p>Teacher Guide: 276A</p>
<p>7. classifies triangles as (2.4.K1h): scalene, isosceles, or equilateral; right, acute, obtuse, or equiangular.</p>	<p>Student Edition: 276-277, 278-279, 302, 303, 304</p> <p>Teacher Guide: 276A, 278A</p>
<p>8. determines if a triangle can be constructed given sides of three different lengths(2.4.K1h).</p>	<p>Student Edition: 276-277, 303</p> <p>Teacher Guide: 277A</p>

STANDARDS	PAGE REFERENCES
9. generates a pattern for the sum of angles for 3-, 4-, 5-, ... n-sides polygons (2.4.K1a).	Student Edition: 276-277, 286-287, 303, 307 Teacher Guide: 271G, 271H, 272-273, 276A
10. describes the relationship between the diameter and the circumference of a circle (2.4.K1h).	Student Edition: 294-295, 310 Teacher Guide: 295A
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, and area using standard and nonstandard units of measure (2.4.K1a) (\$).	Student Edition: 8-9, 10-11, 12-13, 35-37, 140-141, 142-143, 146-147, 154-155, 156-157, 164-165, 168-171, 173-174, 179, 199, 218, 220, 296-297, 298-299, 311-313 Teacher Guide: 137G, 138-139, 141A, 148-149, 154A, 158-159, 296A, 299A
2. selects and uses measurement tools, units of measure, and level of precision appropriate for a given situation to find accurate rational number representations for length, weight, volume, temperature, time, perimeter, area, and angle measurements (2.4.K1a) (\$).	Student Edition: 140-141, 144-145, 164-165, 168, 169, 170, 173, 178, 198-199, 212 #20, 217 #16, 218, 274-275, 276-277, 280-281, 303, 305 Teacher Guide: 199A, 271G, 271H, 272, 273, 274A
3. converts within the customary system and within the metric system (2.4.K1a).	Student Edition: 140-141, 142-143, 144-145, 168-170 Teacher Guide: 137E, 141A
4. ▲ knows and uses perimeter and area formulas for circles, squares, rectangles, triangles, and parallelograms (2.4.K1h).	Student Edition: 146-147, 154-155, 160-161, 171, 176, 296-297, 311 Teacher Guide: 138-139, 146A, 148, 149, 155A, 296A
5. finds perimeter and area of two-dimensional composite figures of circles, squares, rectangles, and triangles (2.4.K1h).	Student Edition: 146-147, 154-155, 160-161, 171, 176, 296-297, 311 Teacher Guide: 138-139, 146A, 148, 149, 155A, 296A

STANDARDS	PAGE REFERENCES
6. ▲ uses given measurement formulas to find (2.4.K1h): a. surface area of cubes, b. volume of rectangular prisms.	See <i>MathScope: Seeing and Thinking Mathematically, Course 3</i> © 2005 Student Edition: 104-105, 126 Teacher Guide: 102
7. finds surface area of rectangular prisms using concrete objects (2.4.K1h).	See <i>MathScope: Seeing and Thinking Mathematically, Course 3</i> © 2005 Student Edition: 104-105, 126 Teacher Guide: 102
8. uses appropriate units to describe rate as a unit of measure (2.4.K1a), e.g., miles per hour.	Student Edition: 6-7, 8-9, 10-11, 12-13, 34-37 Teacher Guide: 4-5, 8A, 9A, 11A
9. finds missing angle measurements in triangles and quadrilaterals (2.4.K1h).	See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 2</i> © 2009. Student Edition: 524-529, 533-538, 545 #27, 564, 565, 694, 713 #8, 725 #12, 728 #12, 732 #5 <i>Mid-Chapter Quiz</i> 539 <i>Practice Test</i> 567 #7-#8, #10-#11 Teacher Wraparound Edition: AE 525, 534; FMC 525, 534
<p style="text-align: center;">Benchmark 3: Transformational Geometry – The student recognizes and performs transformations on two- and three-dimensional geometric figures in a variety of situations.</p> <p style="text-align: center;">The student...</p>	
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).	Student Edition: 288-289, 308 Teacher Guide: 271A, 283, 288A
2. identifies three-dimensional figures from various perspectives (top, bottom, sides, corners) (2.4.K1a).	Student Edition: 150-151, 152-153, 164-165, 166-167, 172, 173, 178, 179 Teacher Guide: 137G, 152A

STANDARDS	PAGE REFERENCES
3. draws three-dimensional figures from various perspectives (top, bottom, sides, corners) (2.4.K1a).	Student Edition: 150-151, 152-153, 164-165, 166-167, 172, 173, 178, 179 Teacher Guide: 137G, 152A
4. generates a tessellation (2.4.K1a).	See <i>MathScape: Seeing and Thinking Mathematically, Course 3</i> © 2005 Student Edition: 259
Benchmark 4: Geometry From An Algebraic Perspective – The student relates geometric concepts to a number line and a coordinate plane in a variety of situations.	
The student...	
1. finds the distance between the points on a number line by computing the absolute value of their difference (2.4.K1a).	See <i>MathScape: Seeing and Thinking Mathematically, Course 1</i> © 2005 Student Edition: 244-247
2. uses all four quadrants of a coordinate plane to (2.4.K1g): <ol style="list-style-type: none"> identify in which quadrant or on which axis a point lies when given the coordinates of a point, plot points, identify points, list through five ordered pairs of a given line. 	Student Edition: 194-195, 288-289 Teacher Guide: 194A, 195A, 216, 288A
3. uses a given linear equation with whole number coefficients and constants and a whole number solution to find the ordered pairs, organize the ordered pairs using a T-table, and plot the ordered pairs on the coordinate plane (2.4.K1e-g).	Student Edition: 196-197, 198-199, 200-201, 217-219 Teacher Guide: 197A, 200A
4. 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: 288-289, 308 Teacher Guide: 289A

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. finds the probability of a compound event composed of two independent events in an experiment or simulation (2.4.K1i) (\$).</p>	<p>Student Edition: 52-53, 66-67, 68-69, 87 Teacher Guide: 52A, 64-65</p>
<p>2. explains and gives examples of simple or compound events in an experiment or simulation having probability of zero or one.</p>	<p>Student Edition: 52-53, 54-55, 70-71, 74-75, 76-77, 78-79, 82, 86, 88, 90 Teacher Guide: 48-49, 52A, 53A, 56-57, 72-73, 74A, 77A, 78A</p>
<p>3. uses a fraction, decimal, and percent to represent the probability of (2.4.K1c):</p> <ol style="list-style-type: none"> a simple event in an experiment or simulation; a compound event composed of two independent events in an experiment or simulation. 	<p>Student Edition: 54-55, 58-59, 60-61, 62-63, 68-69, 70-71, 74-75, 78-79, 82, 83, 84, 85, 87, 91 Teacher Guide: 49, 54A, 58A, 75A, 77A</p>
<p>4. finds the probability of a simple event in an experiment or simulation using geometric models (2.4.K1i), e.g., using spinners or dartboards, what is the probability of landing on 2? The answer is $\frac{1}{4}$, .25, or 25%.</p>	<p>Student Edition: 50-51, 52-53, 58-59, 60-61, 62-63, 80, 81, 83-85 Teacher Guide: 47E, 47H, 48-49, 56-57, 58A</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>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.K1j) (\$):</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); scatter plots; box-and-whiskers plots. 	<p>Student Edition: 28-29, 32-33, 43, 49, 50-51, 81, 200-201, 210-211, 223, 246-247, 248-249, 265-266, 285</p> <p>Teacher Guide: 3H, 4-5, 24-25, 29A, 33A, 200A, 242-243, 246A, 248A, 282</p>
<p>2. selects and justifies the choice of data collection techniques (observations, surveys, or interviews) and sampling techniques (random sampling, samples of convenience, or purposeful sampling) in a given situation.</p>	<p>Student Edition: 28-29, 43</p> <p>Teacher Guide: 24-25</p>
<p>3. conducts experiments with sampling and describes the results.</p>	<p>The following reference can be used in classroom discussion to meet this objective.</p> <p>Student Edition: 43 #11</p> <p>Also see <i>MathScape; Seeing and Thinking Mathematically, Course 3</i> © 2005.</p> <p>Student Edition: 138-163</p>
<p>4. determines the measures of central tendency (mode, median, mean) for a rational number data set (2.4.K1a) (\$).</p>	<p>Student Edition: 74-75, 76-77, 89, 90, 132 #16, 163</p> <p>Teacher Guide: 76A</p>

STANDARDS	PAGE REFERENCES
<p>2. identifies and determines the range and the quartiles of a rational number data set (2.4.K1a) (\$).</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 2</i> © 2009.</p> <p>Student Edition: 402-408, 410-414, LA21-LA25, 711 #2, 725 #19, 729 #19 <i>Mid-Chapter Quiz</i> 423 <i>Practice Test</i> 455</p> <p>Teacher Wraparound Edition: AA LA24; AE LA22; FMC 404; TNT 411, 421</p>
<p>3. identifies potential outliers within a set of data by inspection rather than formal calculation (2.4.K1a) (\$), e.g., consider the data set of 1, 100, 101, 120, 140, and 170; the outlier is 1.</p>	<p>See <i>Math Connects: Concepts, Skills, and Problem Solving, Course 2</i> © 2009.</p> <p>Student Edition: 396-401, 451, 687, 711 #3 <i>Practice Test</i> 455 #1</p> <p>Teacher Wraparound Edition: AA 399, 400, 401; AE 398; FMC 397; T LA21; TNT 411</p>