PRE-ALGEBRA ©2005
Correlated to
Kansas Mathematics Curriculum Standards
Grade Seven

CONTENT STANDARDS	PAGE REFERENCES
Standard 1: Number and Computation **The student uses numerical and computational concepts and procedures in a variety of situations.**	
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.**	
Seventh Grade Knowledge Base Indicators The student…	
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 $6x$.	SE: 153–157, 182–183, 190, 194, 195, 200–204, 205–209, 214, 224, 254–255, 264–268, 281–283, 293, 297, 302, 318, 321, 338, 359, 422, 475, 731, 732–733 TWE: 153–157, 182–183, 190, 194, 195, 200–204, 205–209, 214, 224, 254–255, 264–268, 281–283, 293, 297, 302, 318, 321, 338, 359, 422, 475, 731, 732–733
2. compares and orders rational numbers and the irrational number pi (2.4.K1a) **$**.	SE: 57–59, 188, 228, 283, 284, 442, 710 TWE: 57–59, 188, 228, 283, 284, 442, 710
3. explains the relative magnitude between rational numbers and between rational numbers and the irrational number pi (2.4.K1a).	The opportunity to address this objective is available. See the following: SE: 57–59, 188, 228, 283, 284, 442, 710 TWE: 57–59, 188, 228, 283, 284, 442, 710
4. knows and explains what happens to the product or quotient when (2.4.K1a):	
a. a whole number is multiplied or divided by a rational number greater than zero and less than one,	SE: 147, 185, 216, 218, 255, 567, 577, 715, 717 TWE: 147, 185, 216, 218, 255, 567, 577, 715, 717
b. a whole number is multiplied or divided by a rational number greater than one,	SE: 553, 577 TWE: 553, 577
c. a rational number (excluding zero) is multiplied or divided by zero.	SE: 24, 49, 61, 725 TWE: 24, 49, 61, 725

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5. explains and determines the absolute value of rational numbers (2.4.K1a).	SE: 58, 59, 61, 64, 65, 66, 90–91 TWE: 58, 59, 61, 64, 65, 66, 90–91
Seventh Grade Application Indicators The student…	
1. generates and/or solves real-world problems using (2.4.A1a) **$**:	
a. equivalent representations of rational numbers and simple algebraic expressions, e.g., you are in the mountains. Wilson Mountain has an altitude of 5.28×10^3 feet. Rush Mountain is 4,300 feet tall. How much higher is Wilson Mountain than Rush Mountain?	SE: 153–157, 182–183, 190, 194, 195, 200–204, 205–209, 214, 224, 254–255, 264–268, 281–283, 293, 297, 302, 318, 321, 338, 359, 422, 475, 731, 732–733 TWE: 153–157, 182–183, 190, 194, 195, 200–204, 205–209, 214, 224, 254–255, 264–268, 281–283, 293, 297, 302, 318, 321, 338, 359, 422, 475, 731, 732–733
b. fraction and decimal approximations of the irrational number pi, e.g., Mary measured the distance around her 48-inch diameter circular table to be 150 inches. Using this information, approximate pi as a fraction and as a decimal.	SE: 533, 534 TWE: 533, 534
2. determines whether or not solutions to real-world problems using rational numbers, the irrational number pi, and simple algebraic expressions are reasonable (2.4.A1a) **$**, e.g., a sweater that cost $15 is marked 1/3 off. The cashier charged $12. Is this reasonable?	SE: 7, 121, 295, 296, 298, 321, 567, 586, 709, 712, 716, 717 TWE: 7, 121, 295, 296, 298, 321, 567, 586, 709, 712, 716, 717
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.**	
Seventh Grade Knowledge Base Indicators The student…	
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.	SE: 56–59, 64, 68, 70, 75, 77, 202, 203, 205–206, 216, 441 TWE: 56–59, 64, 68, 70, 75, 77, 202, 203, 205–206, 216, 441
2. classifies a given rational number as a member of various subsets of the rational number system (2.4.K1a,k), e.g., $^-7$ is a rational number and an integer.	SE: 56–59, 202, 203, 205–209, 441, 443, 444, 451, 484, 487, 745 TWE: 56–59, 202, 203, 205–209, 441, 443, 444, 451, 484, 487, 745

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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) **$**:	
a. commutative properties of addition and multiplication (changing the order of the numbers does not change the solution);	SE: 23, 26, 32, 49, 61, 63, 66, 75, 78, 107, 114, 725 TWE: 23, 26, 32, 49, 61, 63, 66, 75, 78, 107, 114, 725
b. associative properties of addition and multiplication (changing the grouping of the numbers does not change the solution);	SE: 24, 26, 49, 51, 63, 76, 78, 114, 725 TWE: 24, 26, 49, 51, 63, 76, 78, 114, 725
c. distributive property [distributing multiplication or division over addition or subtraction, e.g., 2(4 – 1) = 2(4) – 2(1) = 8 – 2 = 6];	SE: 98–102, 104, 107, 138, 147, 163, 164, 166, 185, 193, 209, 333, 334, 338, 349, 361, 667, 683, 686, 699, 728 TWE: 98–102, 104, 107, 138, 147, 163, 164, 166, 185, 193, 209, 333, 334, 338, 349, 361, 667, 683, 686, 699, 728
d. substitution property (one name of a number can be substituted for another name of the same number), e.g., if a = 2, then 3a = 3 x 2 = 6.	SE: 107, 379, 413, 416, 417, 418, 428, 440, 744 TWE: 107, 379, 413, 416, 417, 418, 428, 440, 744
4. uses and describes these properties with the rational number system and demonstrates their meaning including the use of concrete objects (2.4.K1a) **$**:	
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);	SE: 24, 38, 49, 66, 67, 70, 71, 72, 91, 112, 114, 215–216, 218, 677, 679, 699, 734 TWE: 24, 38, 49, 66, 67, 70, 71, 72, 91, 112, 114, 215–216, 218, 677, 679, 699, 734
b. symmetric property of equality (if 7 + 2x = 9 then 9 = 7 + 2x);	SE: 29, 30, 31 TWE: 29, 30, 31
c. zero property of multiplication (any number multiplied by zero is zero);	SE: 24, 49, 61, 725 TWE: 24, 49, 61, 725
d. addition and multiplication properties of equality (adding/multiplying the same number to each side of an equation results in an equivalent equation);	SE: 18, 23–25, 29, 30, 31, 49 TWE: 18, 23–25, 29, 30, 31, 49

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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 x 1/8 =1.)	SE: 66, 67, 70, 71, 72, 91, 112, 114, 215–216, 218, 504, 677, 679, 699, 734 TWE: 66, 67, 70, 71, 72, 91, 112, 114, 215–216, 218, 504, 677, 679, 699, 734
5. recognizes that the irrational number pi can be represented by approximate rational values, e.g., 22/7 or 3.14.	SE: 208, 533 TWE: 208, 533
Seventh Grade Application Indicators The student…	
1. generates and/or solves real-world problems with rational numbers and the irrational number pi using the concepts of these properties to explain reasoning (2.4.K1a) **$**:	
a. commutative and associative properties of addition and multiplication, e.g., at a delivery stop, Sylvia pulls out a flat of eggs. The flat has 5 columns and 6 rows of eggs. Express how to find the number of eggs in 2 ways.	SE: 23, 51 TWE: 23, 51
b. distributive property, e.g., trim is used around the outside edges of a bulletin board with dimensions 3 ft by 5 ft. Explain two different methods of solving this problem.	SE: 99, 100, 101, 334, 683 TWE: 99, 100, 101, 334, 683
c. substitution property, e.g., V = IR [Ohm's Law-voltage (V) = current (I) x resistance (R)] If the current is 5 amps (I = 5) and the resistance is 4 ohms (R = 4), what is the voltage? Substitute values for I and R. To find the voltage: V = IR V = 5 • 4 V = 20	This objective is taught in Glencoe *Algebra: Concepts and Applications* ©2004
d. additive and multiplicative identities	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
e. symmetric property of equality, e.g., Sam took a $15 check to the bank and received a $10 bill and a $5 bill. A $15 check is the same amount as a $10 bill and a $5 bill.	SE: 30, 31 TWE: 30, 31
f. additive and multiplicative identities	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004

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g. zero property of multiplication, e.g., Jenny was thinking of two numbers. Jenny said that the product of the two numbers was 0. What could you deduct from this statement? Explain your reasoning?	SE: 26, 725 TWE: 26, 725
h. addition and multiplication properties of equality, e.g., the total price (P) of a car including tax (T), is $14,685.33. If the tax is 785.42, what is the sale price of the car (S)? P = S + T $14.685.3 = S + 785.42 $14,685.33 - $785.42 = S $13,899.91 = S	SE: 31 TWE: 31
i. additive and multiplicative inverse properties, e.g., if 5 candy bars cost $1.00, what does one candy bar cost? Explain your reasoning. 5x = $1.00, so 5x/5 = $1.00/5 x = $.20	SE: 71, 72, 679 TWE: 71, 72, 679
2. analyzes and evaluates the advantages and disadvantages of using integers, whole numbers, fractions (including mixed numbers), decimals, or the irrational number pi and its rational approximations in solving a given real-world problem (2.4.K1a, e.g., in the store everything is 25% off. When calculating the discount, which representation of 25% would you use and why?	The opportunity to address this objective is available throughout. See, for example: SE: 56–57, 112, 162, 185, 214, 234, 283–285, 302, 338, 396, 422, 475, 567, 616, 649, 712 TWE: 56–57, 112, 162, 185, 214, 234, 283–285, 302, 338, 396, 422, 475, 567, 616, 649, 712
Benchmark 3: Estimation **The student uses computational estimation with rational numbers and the irrational number pi in a variety of situations.**	
Seventh Grade Knowledge Base Indicators The student…	
1. estimates quantities with combinations of rational numbers and/or the irrational number pi using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology (2.4.K1a) **$**.	SE: 5, 121, 209, 230, 294, 295, 296, 297, 298, 302, 308, 319, 321, 437, 438, 439, 445, 456, 564, 567, 586, 712, 714, 716, 717, 738, 745 TWE: 5, 121, 209, 230, 294, 295, 296, 297, 298, 302, 308, 319, 321, 437, 438, 439, 445, 456, 564, 567, 586, 712, 714, 716, 717, 738, 745

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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) **$**.	SE: 5, 9, 121, 209, 220, 230, 233, 294, 295, 296, 297, 298, 302, 308, 319, 321, 397, 437, 438, 439, 445, 456, 564, 567, 586, 712, 714, 716, 717, 738, 745 TWE: 5, 9, 121, 209, 220, 230, 233, 294, 295, 296, 297, 298, 302, 308, 319, 321, 397, 437, 438, 439, 445, 456, 564, 567, 586, 712, 714, 716, 717, 738, 745
3. recognizes and explains the difference between an exact and approximate answer (2.4.K1a).	The opportunity to address this objective is available. See the following: SE: 294, 594, 672 TWE: 294, 594, 672
4. determines the appropriateness of an estimation strategy used and whether the estimate is greater than (overestimate) or less than (underestimate) the exact answer and its potential impact on the result (24.K1a).	SE: 9, 294–295, 297, 437 TWE: 9, 294–295, 297, 437
5. knows and explains why the fraction (22/7) or decimal (3.14) representation of the irrational number pi is an approximate value (2.4.K1c).	The opportunity to address this objective is available. See the following: SE: 208, 533, 534 TWE: 208, 533, 534
Seventh Grade Application Indicators The student…	
1. adjusts original rational number estimate of a real-world problem based on additional information (a frame of reference) (2.4.A1a) **$**, e.g., estimate the weight of a bookshelf of books. Then weigh one book and adjust your estimate.	The opportunity to address this objective is available in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
2. estimates to check whether or not the result of a real-world problem using rational numbers, the irrational number pi, and/or simple algebraic expressions is reasonable and makes predictions based on the information (2.4.A1a), e.g., a goat is staked out in a pasture with a rope that is 7 feet long. The goat needs 200 square feet of grass to graze. Does the goat have enough pasture? If not, how long should the rope be?	SE: 121, 298 TWE: 121, 298

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3. determines a reasonable range for the estimation of a quantity given a real-world problem and explains the reasonableness of the range (2.4.A1a), e.g., how long will it take your teacher to walk two miles? The range could be 25–35 minutes.	The opportunity to address this objective is available. See the following: SE: 9, 294–295, 297, 437 TWE: 9, 294–295, 297, 437
4. determines if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology (2.4.A1a) **$**, e.g., Kathy buys items at the grocery store priced at $32.56, $12.83, $6.99, and 5 for $12.49 each. She has $120 with her to pay for the groceries. To decide if she can pay for her items, does she need an exact or an approximate answer?	The opportunity to address this objective is available. See the following: SE: 594, 672 TWE: 594, 672
Benchmark 4: Computation **The student models, performs, and explains computation with rational numbers, the irrational number pi, and first-degree algebraic expressions in one variable in a variety of situations.**	
Seventh Grade Knowledge Base Indicators The student…	
1. computes with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology (2.4.K1a-c) **$**.	The opportunity to address this objective is available. See the following: SE: 5, 29, 74, 111, 139, 185, 232–234, 274, 314, 350–351, 435, 483, 511, 566, 567 TWE: 5, 29, 74, 111, 139, 185, 232–234, 274, 314, 350–351, 435, 483, 511, 566, 567
2. performs and explains these computational procedures (2.4.K1a):	
a. **N** adds and subtracts decimals from ten millions place through hundred thousandths place;	The opportunity to address this objective is available. See the following: SE: 5, 538, 712, 713 TWE: 5, 538, 712, 713
b. **N** multiplies and divides a four-digit number by a two-digit number using numbers from thousands place through thousandths place;	SE: 714, 715 TWE: 714, 715
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 ÷ .002 or 54.3 x 300;	SE: 263, 714, 715 TWE: 263, 714, 715

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d. **N** adds, subtracts, multiplies, and divides fractions and expresses answers in simplest form;	SE: 216, 220, 221, 233, 567, 649, 716, 717 TWE: 216, 220, 221, 233, 567, 649, 716, 717
e. **N** adds, subtracts, multiplies, and divides integers;	SE: 62–63, 64–66, 70–72, 74, 75–79, 80–84, 91–92, 97, 107, 114, 152, 199, 327, 385 TWE: 62–63, 64–66, 70–72, 74, 75–79, 80–84, 91–92, 97, 107, 114, 152, 199, 327, 385
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;	SE: 12–13, 14, 16, 24, 48, 51, 147, 154, 192, 401, 464, 525 TWE: 12–13, 14, 16, 24, 48, 51, 147, 154, 192, 401, 464, 525
g. simplifies positive rational numbers raised to positive whole number powers;	SE: 153–157, 192 TWE: 153–157, 192
h. combines like terms of a first degree algebraic expression.	SE: 103–104 TWE: 103–104
3. recognizes, describes, and uses different ways to express computational procedures, e.g., 5 – 2 = 5 + ($^{-}$2) or 49 x 23 = (40 x 23) + (9 x 23) or 49 x 23 = (49 x 20) + (49 x 3) or 49 x 23 = (50 x 23) – 23.	This objective is addressed throughout. See, for example: SE: 23, 75, 111, 132, 186, 221, 270, 310, 377, 436, 472, 522, 568, 613, 652 TWE: 23, 75, 111, 132, 186, 221, 270, 310, 377, 436, 472, 522, 568, 613, 652
4. finds prime factors, greatest common factor, multiples, and the least common multiple (2.4.K1d).	SE: 164–168, 179, 193, 199, 214, 226, 227, 228, 230, 236, 252, 257, 731, 735 TWE: 164–168, 179, 193, 199, 214, 226, 227, 228, 230, 236, 252, 257, 731, 735
5. finds percentages of rational numbers (2.4.K1a,c) **$**, e.g., 12.5% x $40.25 = n or 150% of 90 is what number? (For the purpose of assessment, percents will not be between 0 and 1.)	SE: 288, 289, 299 TWE: 288, 289, 299

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Seventh Grade Application Indicators The student…	
1. generates and/or solves one- and two-step real-world problems using these computational procedures and mathematical concepts (2.4.A1a) **$**:	
a. addition, subtraction, multiplication, and division of rational numbers with a special emphasis on fractions and expressing answers in simplest form, e.g., at the candy store, you buy 3/4 of a pound of peppermints and 1/2 of a pound of licorice. The cost per pound for each kind of candy is $3.00. What is the total cost of the candy purchased?	SE: 220, 567, 716, 717 TWE: 220, 567, 716, 717
b. addition, subtraction, multiplication, and division of rational numbers with a special emphasis on integers, e.g., the high temperatures for the week were: $^{-}4^{o}$, 10^{o}, $^{-}1^{o}$, 0^{o}, 7^{o}, 3^{o}, and $^{-}5^{o}$. What is the mean temperature for the week?	SE: 64–67, 71–73, 74, 75–79, 114, 152 TWE: 64–67, 71–73, 74, 75–79, 114, 152
c. first degree algebraic expressions in one variable, e.g., Jenny rents 3 videos plus $20 of other merchandise. Barb rents 5 videos plus $15 of other merchandise. Represent the total purchases of Jenny and Barb using V as the price of a video rental.	SE: 17, 18, 19, 20, 51, 105, 118, 190, 338 TWE: 17, 18, 19, 20, 51, 105, 118, 190, 338
d. percentages of rational numbers, e.g., if the sales tax is 5.5%, what is the sales tax on an item that costs $36?	SE: 288, 289, 299 TWE: 288, 289, 299
e. approximation of the irrational number pi, e.g., what is the approximate diameter of a 400-meter circular track?	SE: 533, 534 TWE: 533, 534
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.**	
Seventh Grade Knowledge Base Indicators 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:	
a. counting numbers including perfect squares, cubes, and factors and multiples (number theory) (2.4.K1a);	SE: 16, 47, 48, 55, 74, 84, 102 TWE: 16, 47, 48, 55, 74, 84, 102

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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, 1/2, 3, 1/3, 4, 1/4, …;	SE: 249–252, 258, 259, 268, 344, 736 TWE: 249–252, 258, 259, 268, 344, 736
c. geometric figures (2.4.K1f);	SE: 9 TWE: 9
d. measurements (2.4.K1a);	The opportunity to address this objective is available in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
e. things related to daily life (2.4.K1a) **$**, e.g., tide, moon cycle, or temperature.	The opportunity to address this objective is available in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
2. generates a pattern (2.4.K1a).	The opportunity to address this objective is available. See the following: SE: 9, 16, 47, 48, 55, 107, 167, 249–252, 258, 259, 268, 344, 736 TWE: 9, 16, 47, 48, 55, 107, 167, 249–252, 258, 259, 268, 344, 736
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.	SE: 9, 16, 47, 48, 55, 107, 167, 249–252, 258, 259, 268, 344, 736 TWE: 9, 16, 47, 48, 55, 107, 167, 249–252, 258, 259, 268, 344, 736
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.)	The opportunity to address this objective is available. See the following: SE: 9, 16, 47, 48, 55, 102, 167, 249, 252, 258, 259, 268, 344, 736 TWE: 9, 16, 47, 48, 55, 102, 167, 249, 252, 258, 259, 268, 344, 736

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Seventh Grade Application Indicators The student…	
1. generalizes a pattern by giving the n^{th} term using symbolic notation (2.4.A1a,f), e.g., given the following, the n^{th} term is 2n. X Y 1 person has 2 eyes 1 2 2 people have 4 eyes 2 4 3 people have 6 eyes 3 6 2 people have 8 eyes 4 8 . . . . 2 people have 2n eyes n 2n	The opportunity to address this objective is available. See the following: SE: 9, 16, 47, 48, 55, 102, 167, 249, 252, 258, 259, 268, 344, 736 TWE: 9, 16, 47, 48, 55, 102, 167, 249, 252, 258, 259, 268, 344, 736
2. recognizes the same general pattern presented in different representations [numeric (list or table), visual (picture, table, or graph), and written] (2.4.A1a,f,j-k) **$**.	SE: 249–252, 258, 259 TWE: 249–252, 258, 259
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.**	
Seventh Grade Knowledge Base Indicators The student…	
1. knows and explains that a variable can represent a single quantity that changes (2.4.K1a), e.g., daily temperature.	SE: 17–19 TWE: 17–19
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.	The opportunity to address this objective is available throughout. See, for example: SE: 23, 75, 111, 132, 186, 221, 270, 310, 377, 436, 472, 522, 568, 613, 652 TWE: 23, 75, 111, 132, 186, 221, 270, 310, 377, 436, 472, 522, 568, 613, 652
3. shows and explains how changes in one variable affects other variables (2.4.A1a), e.g., changes in diameter affects circumference.	The opportunity to address this objective is available. See the following: SE: 17–19, 21, 28, 30, 31, 48, 49, 328–329, 330–333, 360, 375–379, 397, 425, 725 TWE: 17–19, 21, 28, 30, 31, 48, 49, 328–329, 330–333, 360, 375–379, 397, 425, 725
4. explains the difference between an equation and an expression.	The opportunity to address this objective is available. See the following: SE: 12–14, 17, 28–30 TWE: 12–14, 17, 28–30

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5. solves (2.4.K1a,e) **$**:	
a. one-step linear equations in one variable with positive rational coefficients and solutions, e.g., 7x – 28 or x + 3/4 = or x/3 = 5;	SE: 350–354, 355–359, 361, 362, 373, 379, 385, 445, 481, 561, 567, 649, 740, 741 TWE: 350–354, 355–359, 361, 362, 373, 379, 385, 445, 481, 561, 567, 649, 740, 741
b. two-step linear equations in one variable with counting number coefficients and constants and positive rational solutions;	SE: 120–122, 126–130, 140, 327, 354, 451 TWE: 120–122, 126–130, 140, 327, 354, 451
c. one-step linear inequalities with counting numbers and one variable, e.g., 3x > 12.	SE: 345–349, 350–354, 361, 362, 373, 379, 385, 445, 481, 561, 567, 649, 740, 741 TWE: 345–349, 350–354, 361, 362, 373, 379, 385, 445, 481, 561, 567, 649, 740, 741
6. explains and uses the equality and inequality symbols (=, ≠, <, ≤, >, ≥) and corresponding meanings (is equal to, is not equal to, is less than, is less than or equal to, is greater than, is greater than or equal to) to represent mathematical relationships with rational numbers (2.4.K1a) **$**.	SE: 57, 126 TWE: 57, 126
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) **$,** e.g., 5/6 = 2/x.	SE: 262–268, 270–274, 276–280, 281–285, 288–292, 293–297, 298–302, 304–308, 316–320 TWE: 262–268, 270–274, 276–280, 281–285, 288–292, 293–297, 298–302, 304–308, 316–320
8. evaluates simple algebraic expressions using positive rational numbers (2.4.K1c) **$**, e.g., if x = 3/2, y = 2, then 5xy + 2 = 5(3/2)(2) + 2 = 17.	This objective is addressed throughout. See, for example: SE: 17, 48, 93, 118, 147, 182, 213, 235, 338, 373 TWE: 17, 48, 93, 118, 147, 182, 213, 235, 338, 373
Seventh Grade Application Indicators The student…	
1. represents real-world problems using variables and symbols to write linear expressions, one- or two-step equations (2.4.A1e) **$**, e.g., John has three times as much money as his sister. If M is the amount of money his sister has, what is the equality that represents the amount of money that John has? To represent the problem situation, J = 3M could be written.	This objective is addressed throughout. See, for example: SE: 20, 74, 133, 177, 213, 215, 301, 378, 401, 438, 487, 524, 575, 643 TWE: 20, 74, 133, 177, 213, 215, 301, 378, 401, 438, 487, 524, 575, 643

CONTENT STANDARDS	PAGE REFERENCES
2. solves real-world problems with one- or two-step linear equations in one variable with whole number coefficients and constants and positive rational solutions intuitively and analytically (2.4.A1e) **$**, e.g., Kim has read 5 more than twice the number of pages as Hank. Kim has read 15 pages. How many pages has Hank read? To solve analytically, write 2h + 5 = 15. Then find the answer.	SE: 121, 122, 126, 127, 128, 129, 130, 350, 354 TWE: 121, 122, 126, 127, 128, 129, 130, 350, 354
3. generates real-world problems that represent one- or two-step linear equations (2.4.A1e) **$**, e.g., given the equation x + 10 = 30, the problem could be: Two items cost $30.00. If one item costs $10.00, what is the cost of the other item?	SE: 375–379, 381–385, 404–408, 427 TWE: 375–379, 381–385, 404–408, 427
4. explains the mathematical reasoning that was used to solve a real-world problem using a one- or two-step linear equation (2.4.A1e) **$**, e.g., Kim has read 5 more than twice the number of pages as Hank. Kim has read 15 pages. How many pages has Hank read? To solve, write 2h + 5 = 15. Then to find the answer subtract 5 from both sides of the equation. 2h = 10, then divide both sides of the equation by 2, so h = 5.	SE: 7, 25, 71 TWE: 7, 25, 71
Benchmark 3: Functions **The student recognizes, describes, and analyzes constant and linear relationships in a variety of situations.**	
Seventh Grade Knowledge Base Indicators 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) **$**.	The opportunity to address this objective is available. See the following: SE: 41, 42, 43, 50, 51 TWE: 41, 42, 43, 50, 51
2. finds the values and determines the rule through two operations using a function table (input/output machine, T-table) (2.4.K1f).	SE: 369–373, 424, 687–691, 700, 741, 757 TWE: 369–373, 424, 687–691, 700, 741, 757
3. demonstrates mathematical relationships using ordered pairs in all four quadrants of a coordinate plane (2.4.K1g).	This objective is addressed throughout. See, for example: SE: 33–35, 61, 88, 124, 367, 391, 422, 686, 725, 742 TWE: 33–35, 61, 88, 124, 367, 391, 422, 686, 725, 742

CONTENT STANDARDS	PAGE REFERENCES
4. describes and/or gives examples of mathematical relationships that remain constant (2.4.K1e-g) **$**, e.g., you will get $10.00 to do a job, no matter how long it takes for you to do it.	The opportunity to address this objective is available. See the following: SE: 41, 42, 43, 50, 51 TWE: 41, 42, 43, 50, 51
Seventh Grade Application Indicators The student…	
1. represents a variety of constant and linear relationships using written or oral descriptions of the rule, tables, graphs, and when possible, symbolic notation (2.4.A13-g,k) **$,** e.g., the relationship between cars and their wheels (written) becomes a table: Cars | Wheels 1 | 4 → (1,4) 2 | 8 → (2,8) 10 | 40 → (10,40) . | . . | . . | . n | 4n and then the ordered pairs of (1,4), (2,8), (10,40), and (n,4n) can be graphed.	The opportunity to address this objective is available. See the following: SE: 41, 42, 43, 50, 51 TWE: 41, 42, 43, 50, 51
2. interprets, describes, and analyzes the mathematical relationships of numerical, tabular, and graphical representations (2.4.A1k) **$**.	SE: 35, 36, 37, 50 TWE: 35, 36, 37, 50
Benchmark 4: Models **The student generates and uses mathematical models to represent and justify mathematical relationships found in a variety of situations.**	
Seventh Grade Knowledge Base Indicators The student…	
1. knows, explains, and uses mathematical models to represent and explain mathematical concepts, procedures, and relationships. Mathematical models include:	
a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate grids) to model computational procedures, algebraic relationships, and mathematical relationships and to solve equations (1.1.K1–5, 1.2.K1–4, 1.3.K1–4, 1.4.K1–2, 1.4.K5, 2.1.K1a-b, 2.1.K1e. 2.1.K2–4, 2.2.K1–3, 2.2.K5–6, 2.3.K1, 3.1.K9, 3.2.K1–3, 3.2.K9, 3.3.K1–4, 3.4.K1, 4.2.K4–6) **$**;	This objective is addressed throughout. See, for example: SE: 62–63, 99, 106, 132, 162, 210, 286–287, 328–329, 388, 453, 498–499, 522, 563, 656 TWE: 62–63, 99, 106, 132, 162, 210, 286–287, 328–329, 388, 453, 498–499, 522, 563, 656

CONTENT STANDARDS	PAGE REFERENCES
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) **$**;	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 1 ©2004
c. fraction and mixed number models (fraction strips or pattern blocks and decimal and money models (base ten blocks or coins to compare, order, and represent numerical quantities (1.1.K1, 1.3.K5, 1,4,K2, 2.2.K7–8, 4.1.K3) **$**:	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
d. factor trees to find least common multiple and greatest common factor and to model prime factorization (1.4.K4);	SE: 160 TWE: 160
e. equations and inequalities to model numerical relationships (2.2.K5, 2.3.K1, 23.K4) **$**;	This objective is addressed throughout. See, for example: SE: 28, 49, 96, 120–122, 157, 244–248, 326, 354, 404–408, 443, 491, 511, 588, 687–688, 725 TWE: 28, 49, 96, 120–122, 157, 244–248, 326, 354, 404–408, 443, 491, 511, 588, 687–688, 725
f. function tables to model numerical and algebraic relationships (2.3.K1–2, 2.3.K4) **$**;	SE: 369–370, 688 TWE: 369–370, 688
g. coordinate planes to model relationships between ordered pairs and linear equations (2.3.K1, 2.3.K3–4, 3.4.K2–4) **$**;	SE: 375–379, 381–385, 404–408, 425 TWE: 375–379, 381–385, 404–408, 425
h. two- and three-dimensional geometric models (geoboards, dot paper, nets or solids) to model perimeter, area, volume, and surface area, and properties of two- and three-dimensional (2.1.K1c, 3.1.K1, 3.1.K3–8, 3.1.K10, 3.2.K1–2, 3.2.K4–8, 3.2.K10);	SE: 518–519, 554–555, 562 TWE: 518–519, 554–555, 562
i. geometric models (spinners, targets, or number cubes), process models (coins, pictures, or diagrams), and tree diagrams to model probability (4.1.K1, 4.1.K4) **$**;	SE: 315, 636–637, 650–655, 662, 739, 754, 755 TWE: 315, 636–637, 650–655, 662, 739, 754, 755

CONTENT STANDARDS	PAGE REFERENCES
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) **$**;	SE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 239, 408, 410, 411, 412, 422, 427, 429, 606–611, 623–628, 629, 633, 658, 659, 722–723, 726, 752, 753 TWE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 239, 408, 410, 411, 412, 422, 427, 429, 606–611, 623–628, 629, 633, 658, 659, 722–723, 726, 752, 753
k. Venn diagrams to sort data and show relationships (1.2.K1–2).	SE: 164, 441 TWE: 164, 441
Seventh Grade Application Indicators The student…	
1. recognizes that various mathematical models can be used to represent the same problem situation. Mathematical models include:	
a. process models (concrete objects, pictures, diagrams, flowcharts, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate grids) to model computational procedures, algebraic relationships, mathematical relationships, and problem situations and to solve equations (1.1.A1, 1.2.A1–2, 1.3.A1–4, 1.4.A1, 2.1.A1–2, 3.1.A1, 3. 2.A1a, 3.2.A1d, 3.2.A1f, 3.2.A2, 3.3.A1. 4.2.A4) **$**;	The opportunity to address this objective is available throughout. See, for example: SE: 61, 103, 123, 162, 222, 286–287, 317, 394, 458–459, 476, 498–499, 535, 560, 656–657 TWE: 61, 103, 123, 162, 222, 286–287, 317, 394, 458–459, 476, 498–499, 535, 560, 656–657
b. place value models (place value mats, hundred charts, base ten blocks, or unifix cubes) to model problem situations (1.1.A1a, 1.1.A2a, 1.2.A12, 1.3A1.2, 1.4.A3a-e, 2.2.A3) **$**;	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 1 ©2004
c. fraction and mixed number models (fraction strips or pattern blocks) and decimal and money models (base ten blocks or coins) to compare, order, and represent numerical quantities (1.1.A1b, 1.1.A2b, 1.2.A1–2, 1.3.A1–2) **$**;	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
d. factor trees to find least common multiple and greatest common factor and to model prime factorization (1.4.K5)	The opportunity to address this objective is available. See the following: SE: 160 TWE: 160

CONTENT STANDARDS	PAGE REFERENCES
e. equations and inequalities to model numerical relationships (2.2.A1–4, 2.3.A1, 3.2.A1e). **$**	This objective is addressed throughout. See, for example: SE: 28, 49, 96, 120–122, 157, 244–248, 326, 354, 404–408, 443, 491, 511, 588, 687–688, 725 TWE: 28, 49, 96, 120–122, 157, 244–248, 326, 354, 404–408, 443, 491, 511, 588, 687–688, 725
f. function tables to model numerical and algebraic relationships (2.1.A1–2, 2.3.A1) **$**;	The opportunity to address this objective is available throughout. See, for example: SE: 369–370, 688 TWE: 369–370, 688
g. coordinate planes to model relationships between ordered pairs and linear equations (2.3.A1, 3.4.A1) **$**;	SE: 375–379, 381–385, 404–408, 425 TWE: 375–379, 381–385, 404–408, 425
h. two- and three-dimensional geometric models (geoboards, dot paper, nets or solids) to model perimeter, area, volume, and surface area, and properties of two- and three-dimensional models (3.1.A2–3, 3.2.A1b-c, 3.2.A1e, 3.3.A2, 3.4.A1);	The opportunity to address this objective is available. See the following: SE: 518–519, 554–555, 562 TWE: 518–519, 554–555, 562
i. scale drawings to model large and small real-world objects (3.3.A3);	SE: 276–280, 317 TWE: 276–280, 317
j. geometric models (spinners, targets, or number cubes), process models (coins, pictures, or diagrams), and tree diagrams to model probability (4.1.A1) **$**;	The opportunity to address this objective is available. See the following: SE: 605, 636–637, 650–655, 662, 739, 754, 755 TWE: 605, 636–637, 650–655, 662, 739, 754, 755
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 describe, interpret, and analyze data (2.1.A2, 2.3.A1–2, 4.1.A1–2, 4.2.A1–3) **$**;	The opportunity to address this objective is available. See the following: SE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 239, 408, 410, 411, 412, 422, 427, 429, 606–611, 627, 633, 658, 659, 660, 722–723, 726, 752, 753 TWE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 239, 408, 410, 411, 412, 422, 427, 429, 606–611, 627, 633, 658, 659, 660, 722–723, 726, 752, 753

CONTENT STANDARDS	PAGE REFERENCES
l. Venn diagrams to sort data and show relationships.	The opportunity to address this objective is available. See the following: SE: 164, 441 TWE: 164, 441
2. selects a mathematical model and justifies why some mathematical models are more accurate than other mathematical models in certain situations, e.g., recognizes that change over time is better represented through a line graph than through a table of ordered pairs.	The opportunity to address this objective is available throughout. See, for example: SE: 65, 99, 103, 123, 162, 207, 276–280, 328–329, 394, 465, 477, 518–519, 565, 656 TWE: 65, 99, 103, 123, 162, 207, 276–280, 328–329, 394, 465, 477, 518–519, 565, 656
3. uses the mathematical modeling process to make inferences about real-world situations when the mathematical model used to represent the situation is given. (For the purpose of assessment, the focus will be on function tables, coordinate planes, and Venn diagrams.)	The opportunity to address this objective is available throughout. See, for example: SE: 62–63, 99, 106, 132, 162, 210, 286–287, 328–329, 388, 453, 498–499, 522, 563, 656 TWE: 62–63, 99, 106, 132, 162, 210, 286–287, 328–329, 388, 453, 498–499, 522, 563, 656
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 figures and compares their properties in a variety of situations.**	
Seventh Grade Knowledge Base Indicators The student…	
1. recognizes and compares properties of two- and three-dimensional figures using concrete objects, constructions, drawings, appropriate terminology, and appropriate technology (2.4.K1h).	SE: 492–551, 553, 554–555, 556–561, 562, 563–567, 568–572, 573–582, 583, 584–588, 589, 595, 596, 597, 598–599 TWE: 492–551, 553, 554–555, 556–561, 562, 563–567, 568–572, 573–582, 583, 584–588, 589, 595, 596, 597, 598–599
2. classifies regular and irregular polygons having through ten sides as convex or concave.	The opportunity to address this objective is available. See the following: SE: 527–528, 530 TWE: 527–528, 530
3. identifies angle and side properties of triangles and quadrilaterals (2.4.K1h):	
a. sum of the interior angles of any triangle is 180°;	SE: 453 TWE: 453

CONTENT STANDARDS	PAGE REFERENCES
b. sum of the interior angles of any quadrilateral is 360°;	
i. parallelograms have opposite sides that are parallel and congruent;	SE: 514 TWE: 514
ii. rectangles have angles of 90°, opposite sides are congruent;	SE: 514 TWE: 514
iii. rhombi have all sides the same length, opposite angles are congruent;	SE: 514 TWE: 514
iv. squares have angles of 90°, all sides congruent;	SE: 514, 515 TWE: 514, 515
v. trapezoids have one pair of opposite sides parallel and the other pair of opposites sides are not parallel.	SE: 514, 515, 547 TWE: 514, 515, 547
4. identifies and describes (2.4.K1h):	
a. the altitude and base of a rectangular prism and triangular prism,	SE: 557, 563 TWE: 557, 563
b. the radius and diameter of a cylinder.	SE: 565 TWE: 565
5. identifies corresponding parts of similar and congruent triangles and quadrilaterals (2.4.K1h).	SE: 471–475, 486, 500–503, 511, 517, 545, 549 TWE: 471–475, 486, 500–503, 511, 517, 545, 549
6. uses symbols for right angle within a figure (_), parallel(||), perpendicular (_), and triangle (_) to describe geometric figures(2.4.K1h).	SE: 453–457, 447–451, 457, 471–475, 477–481, 484–486, 492–497, 500–504, 745 TWE: 453–457, 447–451, 457, 471–475, 477–481, 484–486, 492–497, 500–504, 745
7. classifies triangles as (2.4.K1h):	
a. scalene, isosceles, or equilateral;	SE: 455 TWE: 455
b. right, acute, obtuse, or equiangular.	SE: 454, 456, 462, 485, 746 TWE: 454, 456, 462, 485, 746

CONTENT STANDARDS	PAGE REFERENCES
8. determines if a triangle can be constructed given sides of three different lengths (2.4.K1h).	The opportunity to address this objective is available. See the following: SE: 460–464, 473, 474, 485 TWE: 460–464, 473, 474, 485
9. generates a pattern for the sum of angles for 3-, 4-, 5-, … n-sides polygons (2.4.K1a).	SE: 527–531 TWE: 527–531
10. describes the relationship between the diameter and the circumference of a circle (2.4.K1h).	SE: 533–536 TWE: 533–536
Seventh Grade Application Indicators The student…	
1. solves real-world problems by applying the properties of (2.4.A1a):	
a. plane figures (regular and irregular polygons through 10 sides, circles, and semicircles) and the line(s) of symmetry; e.g., two guide wires are used to stabilize a tower. The wires with the ground form an isosceles triangle with the two base angles form 20 degree angles with the ground. What is the size of the vertex angle made where the wires meet on the tower?	SE: 505, 529, 530 TWE: 505, 529, 530
b. solids (cubes, rectangular prisms, cylinders, cones, spheres, triangular prisms) emphasizing faces, edges, vertices, and bases; e.g., ex. Lace is to be glued on all of the edges of a cube. If one edge measures 34 cm, how much lace is needed? 408 cm	SE: 556 TWE: 556
2. decomposes geometric figures made from (2.4.A1h):	
a. regular and irregular polygons through 10 sides, circles, and semicircles;	SE: 520, 539–543, 548 TWE: 520, 539–543, 548
b. nets (two-dimensional shapes that can be folded into three-dimensional figures), e.g., the cardboard net that becomes a shoebox;	SE: 555, 573, 574, 578–579 TWE: 555, 573, 574, 578–579
c. prisms, pyramids, cylinders, cones, spheres, and hemispheres.	SE: 564, 571 TWE: 564, 571

CONTENT STANDARDS	PAGE REFERENCES
3. composes geometric figures made from (2.4.A1h):	
a. regular and irregular polygons through 10 sides, circles, and semicircles;	The opportunity to address this objective is available. See the following: SE: 520, 539–543, 548 TWE: 520, 539–543, 548
b. nets (two-dimensional shapes that can be folded into three-dimensional figures);	The opportunity to address this objective is available. See the following: SE: 555, 573, 574, 578–579 TWE: 555, 573, 574, 578–579
c. prisms, pyramids, cylinders, cones, spheres, and hemispheres.	The opportunity to address this objective is available. See the following: SE: 564, 571 TWE: 564, 571
Benchmark 2: Measurement and Estimation **The student estimates, measures, and uses measurement formulas in a variety of situations.**	
Seventh Grade Knowledge Base Indicators 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) **$**.	SE: 594, 672 TWE: 594, 672
2. selects and uses measurement tools, units of measure, and level of precision appropriate for a given situation to find accurate rational number representations for length, weight, volume, temperature, time, perimeter, area, and angle measurements (2.4.K1a) **$**.	SE: 590–594 TWE: 590–594
3. converts within the customary system and within the metric system (2.4.K1a).	SE: 168, 263, 272, 718–721, 734 TWE: 168, 263, 272, 718–721, 734
4. recognizes and states perimeter and area formulas for circles, squares, rectangles, triangles, and parallelograms (2.4.K1h).	SE: 132–133, 140, 335, 520–523, 533–535, 548 TWE: 132–133, 140, 335, 520–523, 533–535, 548

CONTENT STANDARDS	PAGE REFERENCES
5. knows and uses perimeter and area formulas for circles, squares, rectangles, triangles, and parallelograms (2.4.K1h).	SE: 132, 133, 134, 137, 140, 141, 152, 224, 302, 335, 336, 349, 359, 363, 385, 417, 518–519, 520, 521, 522, 523, 530, 533–538, 548, 671, 676, 701, 730, 749, 767 TWE: 132, 133, 134, 137, 140, 141, 152, 224, 302, 335, 336, 349, 359, 363, 385, 417, 518–519, 520, 521, 522, 523, 530, 533–538, 548, 671, 676, 701, 730, 749, 767
6. finds perimeter and area of two-dimensional composite figures of circles, squares, rectangles, and triangles (2.4.K1h).	SE: 539–543, 548 TWE: 539–543, 548
7. uses given measurement formulas to find (2.4.K1h):	
a. surface area of cubes,	SE: 157, 694 TWE: 157, 694
b. volume of rectangular prisms.	SE: 563–567, 596 TWE: 563–567, 596
8. finds surface area of rectangular prisms using concrete objects (2.4.K1h).	The opportunity to address this objective is available. See the following: SE: 573–576, 597 TWE: 573–576, 597
9. uses appropriate units to describe rate as a unit of measure (2.4.K1a), e.g., miles per hour.	SE: 265–266, 316 TWE: 265–266, 316
10. finds missing angle measurements in triangles and quadrilaterals (2.4.K1h).	SE: 453–454, 456–457, 514–517 TWE: 453–454, 456–457, 514–517
Seventh Grade Application Indicators The student…	
1. solves real-world problems by **$**:	
a. converting within the customary and metric systems (2.4.A1a), e.g., James added 30 grams of sand to his model boat that weighed 2 kg before it sank. With the sand included, what is the total weight of his boat?	SE: 272, 719 TWE: 272, 719

CONTENT STANDARDS	PAGE REFERENCES
b. finding perimeter and area of circles, squares, rectangles, triangles, and parallelograms (2.4.A1h), e.g., what is the total length of molding needed to repair the wall if the floor length is 22 feet and the height of the room is 12 feet?	SE: 135, 417, 523, 534, 536–537, 539, 541–543, 701, 767 TWE: 135, 417, 523, 534, 536–537, 539, 541–543, 701, 767
c. finding perimeter and area of two-dimensional composite figures of circles, squares, rectangles, and triangles (2.4.A1h), e.g., the front of a barn is rectangular in shape with a height of 10 feet and a width of 48 feet. Above the rectangle is a triangle that is 7 feet high with sides 25 feet long. What is the area of the front of the barn?	SE: 539, 541 TWE: 539, 541
d. using appropriate units to describe rate as a unit of measure (2.4.A1a), e.g., a person traveled 20 miles in 10 minutes. What is the rate of travel? The answer could be 2 miles per minute or 120 miles per hour.	SE: 265–268 TWE: 265–268
e. finding missing angle measurements in triangles and quadrilaterals (2.4.A1h), e.g., a fenced pasture is a quadrilateral with angles of 30^{o}, 120^{o}, and 90^{o} degrees. What is the measure of the fourth angle?	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 1 ©2004
f. applying various measurement techniques (selecting and using measurement tools, units of measure, and level of precision) to find accurate rational number representations for length, weight, volume, temperature, time, perimeter, and area appropriate to a given situation (2.4.A1a).	The opportunity to address this objective is available in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
2. estimates to check whether or not measurements or calculations for length, width, weight, volume, temperature, time, perimeter, and area in real-world problems are reasonable and adjusts original measurement or estimation based on additional information (a frame of reference) (2.4.A1a) **$**, e.g., students estimate the weight of their book in grams. Then the weight of their calculator is measured in grams. Students then adjust their estimate.	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 1 ©2004

CONTENT STANDARDS	PAGE REFERENCES
Benchmark 3: Transformational Geometry **The student recognizes and performs transformations on two- and three-dimensional geometric figures in a variety of situations.**	
Seventh Grade Knowledge Base Indicators 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).	SE: 506–511, 512, 545, 546, 686 TWE: 506–511, 512, 545, 546, 686
2. identifies three-dimensional figures from various perspectives (top, bottom, sides, corners) (2.4.K1a).	SE: 556–557 TWE: 556–557
3. draws three-dimensional figures from various perspectives (top, bottom, sides, corners) (2.4.K1a).	This objective is taught in Glencoe *Mathematics: Applications and Concepts*, Course 2 ©2004
4. generates a tessellation (2.4.K1a).	SE: 531, 532 TWE: 531, 532
Seventh Grade Application Indicators The student…	
1. describes the impact of transformations [reflection, rotation, translation, reduction (contraction/shrinking), enlargement (magnification/growing)] on the perimeter and area of squares and rectangles (2.4.A1a); e.g., when the length of the sides of a square are doubled, the perimeter doubles, and the area is 4 times bigger; however, when the square is rotated, the perimeter and area stays the same.	The opportunity to address this objective is available. See the following: SE: 506–511, 512, 545–546, 686 TWE: 506–511, 512, 545–546, 686
2. investigates congruency and similarity of geometric figures using transformations (2.4.A1h).	The opportunity to address this objective is available. See the following: SE: 506–511, 512, 545–546, 686 TWE: 506–511, 512, 545–546, 686
3. determines the actual dimensions and/or measurements of a two-dimensional figure represented in a scale drawing (2.4A1i).	SE: 278–280, 317 TWE: 278–280, 317

CONTENT STANDARDS	PAGE REFERENCES
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.**	
Seventh Grade Knowledge Base Indicators The student…	
1. finds the distance between the points on a number line by computing the absolute value of their difference (2.4.K1a).	SE: 58–59, 64, 65, 90 TWE: 58–59, 64, 65, 90
2. uses all four quadrants of a coordinate plane to (2.4.K1g):	
a. identify in which quadrant or on which axis a point lies when given the coordinates of a point,	SE: 85, 86, 87, 92, 93 TWE: 85, 86, 87, 92, 93
b. plot points,	SE: 55, 85, 86, 87, 92, 93 TWE: 55, 85, 86, 87, 92, 93
c. identify points,	SE: 55, 85, 86, 87, 92, 93 TWE: 55, 85, 86, 87, 92, 93
d. list through five ordered pairs of a given line.	The opportunity to address this objective is available. See the following: SE: 370–373, 376–379, 381–384, 422, 425, 742 TWE: 370–373, 376–379, 381–384, 422, 425, 742
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).	SE: 375–379, 381–385, 425 TWE: 375–379, 381–385, 425
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)	The opportunity to address this objective is available. See the following: SE: 507–511, 512, 545–546, 549 TWE: 507–511, 512, 545–546, 549
Seventh Grade Application Indicators The student…	
1. represents and/or generates real-world problems using a coordinate plane to find (2.4.A1g-h):	
a. perimeter of squares and rectangles; e.g., determine the distance Jack traveled if he started at the school (1, 2), traveled to the post office (3 1/2, 2), then went by the fire station (3 1/2, 3), then visited the park (1, 3), and finally returned to the school.	The opportunity to address this objective is available. See the following: SE: 506–511, 545–546 TWE: 506–511, 545–546

CONTENT STANDARDS	PAGE REFERENCES
b. circumference (perimeter) of circles, e.g., determine the area that the sprinkler can water if the sprinkler head is centered at (3, 4) and we know it reaches point (3, -2) on the coordinate plane	This objective is taught in Glencoe *Geometry* ©2004.
c. area of circles, parallelograms, triangles, squares, and rectangles	The opportunity to address this objective is available. See the following: SE: 506–511, 545–546 TWE: 506–511, 545–546
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, generate convincing arguments, and make predictions and decisions including the use of concrete objects in a variety of situations.**	
Seventh Grade Knowledge Base Indicators The student…	
1. finds the probability of a compound event composed of two independent events in an experiment or simulation (2.4.K1i) **$**.	SE: 650–655, 662 TWE: 650–655, 662
2. explains and gives examples of simple or compound events in an experiment or simulation having probability of zero or one.	SE: 310–312, 650–652, 662 TWE: 310–312, 650–652, 662
3. uses a fraction, decimal, and percent to represent the probability of (2.4.K1c):	
a. a simple event in an experiment or simulation;	SE: 310–312 TWE: 310–312
b. a compound event composed of two independent events in an experiment or simulation.	SE: 650–655, 662 TWE: 650–655, 662
4. finds the probability of a simple event in an experiment or simulation using geometric models (2.4.K1i)	The opportunity to address this objective is available. See the following: SE: 310–312 TWE: 310–312

CONTENT STANDARDS	PAGE REFERENCES
Seventh Grade Application Indicators The student…	
1. conducts an experiment or simulation with a compound event composed of two independent events including the use of concrete objects; records the results in a chart, table, or graph; and uses the results to draw conclusions and make predictions about future events (2.4.A1j-k).	SE: 650–651, 662 TWE: 650–651, 662
2. analyzes the results of an experiment or simulation of a compound event composed of two independent events to draw conclusions, generate convincing arguments, and make predictions and decisions in a variety of real-world situations (2.4.A1j-k), e.g., whether to take your umbrella to school tomorrow if there is a 70% chance of rain.	SE: 310–314, 320, 409, 410, 412, 413 TWE: 310–314, 320, 409, 410, 412, 413
3. compares expected results (theoretical probability) with experimental results (empirical probability) in an experiment or situation with a compound event composed of two simple independent events and understands that the larger the sample size, the greater the likelihood that the experimental results will equal the theoretical probability (2.4.A1j).	SE: 311 TWE: 311
4. makes predictions based on the theoretical probability of a simple event in an experiment or simulation (2.4.A1j).	SE: 310–311 TWE: 310–311
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.**	
Seventh Grade Knowledge Base Indicators The student…	
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) **$**:	
a. frequency tables;	SE: 627 TWE: 627
b. bar, line, and circle graphs;	SE: 451, 452, 722–723 TWE: 451, 452, 722–723
c. Venn diagrams or other pictorial displays;	SE: 164, 441 TWE: 164, 441

CONTENT STANDARDS	PAGE REFERENCES
d. charts and tables;	SE: 708 TWE: 708
e. stem-and-leaf plots (single);	SE: 606–611, 658, 681, 752 TWE: 606–611, 658, 681, 752
f. scatter plots;	SE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 408, 410, 411, 412, 422, 427, 429, 726 TWE: 39, 40–42, 43, 45–46, 50, 61, 68, 107, 408, 410, 411, 412, 422, 427, 429, 726
g. box-and-whiskers plots.	SE: 633, 659, 753 TWE: 633, 659, 753
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.	SE: 237 TWE: 237
3. conducts experiments with sampling and describes the results.	SE: 39, 180, 237, 275, 386, 392, 562, 656, 657 TWE: 39, 180, 237, 275, 386, 392, 562, 656, 657
4. determines the measures of central tendency (mode, median, mean) for a rational number data set (2.4.K1a) **$**.	SE: 238–242, 258, 605, 735 TWE: 238–242, 258, 605, 735
5. identifies and determines the range and the quartiles of a rational number data set (2.4.K1a) **$**.	SE: 35, 36, 37, 44, 50, 51, 136, 367, 612–616, 618, 628, 659, 725, 753 TWE: 35, 36, 37, 44, 50, 51, 136, 367, 612–616, 618, 628, 659, 725, 753
6. 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.	SE: 621 TWE: 621

CONTENT STANDARDS	PAGE REFERENCES
Seventh Grade Application Indicators The student…	
1. uses data analysis (mean, median, mode, range) of a rational number data set to make reasonable inferences and predictions, to analyze decisions, and to develop convincing arguments from these **data displays** (2.4.A1k) **$**:	
a. frequency tables;	The opportunity to address this objective is available. See the following: SE: 627 TWE: 627
b. bar, line, and circle graphs;	SE: 452 TWE: 452
c. Venn diagrams or other pictorial displays;	The opportunity to address this objective is available. See the following: SE: 164, 441 TWE: 164, 441
d. charts and tables;	The opportunity to address this objective is available. See the following: SE: 708 TWE: 708
e. stem-and-leaf plots (single);	SE: 606–611 TWE: 606–611
f. scatter plots;	SE: 39, 40–42, 43, 45–46, 410, 411, 412, 427, 429, 726 TWE: 39, 40–42, 43, 45–46, 410, 411, 412, 427, 429, 726
g. box-and-whiskers plots.	The opportunity to address this objective is available. See the following: SE: 633, 659, 753 TWE: 633, 659, 753
2. explains advantages and disadvantages of various data displays for a given data set (2.4.A1k) **$**	SE: 722–723 TWE: 722–723

CONTENT STANDARDS	PAGE REFERENCES
3. ▲ recognizes and explains (2.4.A1k):	
a. misleading representations of data;	SE: 630–633 TWE: 630–633
b. the effects of scale or interval changes on graphs of data sets.	SE: 630–633 TWE: 630–633
4. determines and explains the advantages and disadvantages of using each measure of central tendency and the range to describe a data set (2.4.A1a) **$**.	The opportunity to address this objective is available. See the following: SE: 238–242, 258, 605, 735 TWE: 238–242, 258, 605, 735