

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
<p>Standard 1: Students will understand simple number concepts and relationships.</p>	<p>Standard 1: Students will acquire number sense and perform simple operations with whole numbers.</p>	<p>Standard 1: Students will acquire number sense with whole numbers and fractions and perform operations with whole numbers.</p>	<p>Standard 1: Students will understand the base-ten numeration system, place value; simple fractions and perform operations with whole numbers.</p>	<p>Standard 1: Students will acquire number sense and perform operations with whole numbers, simple fractions, and decimals.</p>	<p>Standard 1: Students will expand number sense to include integers and perform operations with whole numbers, simple fractions, and decimals.</p>	<p>Standard 1: Students will expand number sense to include operations with rational numbers.</p>
<p>Objective 1: Identify and use whole numbers.</p> <p>a. Represent whole numbers using concrete, pictorial, and symbolic representations.</p> <p>b. Order a set of up to ten objects and use ordinal numbers from first to tenth to identify the position of the object in the chosen order.</p> <p>c. Use one-to-one correspondence when counting a set of objects and develop a strategy for keeping track of counted and uncounted objects.</p>	<p>Objective 1: Represent and use whole numbers up to 100 with whole numbers.</p> <p>a. Count, read, and write whole numbers.</p> <p>b. Represent whole numbers using the number line, models, and number sentences.</p> <p>c. Represent whole numbers greater than 10 in groups of tens and ones using objects, pictures, and expanded notation.</p>	<p>Objective 1: Identify and represent relationships among numbers, quantities, and place value in whole numbers up to 1000.</p> <p>a. Represent whole numbers in groups of hundreds, tens, and ones using base ten models and write the numeral representing the set in standard and expanded form.</p> <p>b. Identify the place and the value of a given digit in a three-digit numeral.</p> <p>c. Represent the composition and decomposition of numbers in a variety of ways.</p> <p>d. Compare and order numbers using the terms, greater than, less than, or equal to, and the symbols, $>$, $<$, and $=$, using various strategies, including the number line.</p> <p>e. Identify and describe even and odd whole numbers.</p>	<p>Objective 1: Represent whole numbers up to 10,000, comprehend place value concepts; identify relationships among whole numbers using base-ten models and symbolic notation.</p> <p>a. Read, write, and represent whole numbers using standard and expanded form.</p> <p>b. Demonstrate multiple ways to represent numbers using models and symbolic representations.</p> <p>c. Identify the place and the value of a given digit in a four-digit numeral and round numbers to the nearest ten, hundred, and thousand.</p> <p>d. Order and compare whole numbers on a number line and use the symbols $<$, $>$, \neq, and $=$ when comparing whole numbers.</p> <p>e. Identify factors and multiples of whole numbers.</p>	<p>Objective 1: Demonstrate multiple ways to represent whole numbers and decimals, from hundredths to one million, and fractions.</p> <p>a. Read and write numbers in standard and expanded form.</p> <p>b. Demonstrate multiple ways to represent whole numbers and decimals by using models and symbolic representations. (e.g., 36 is the same as the square of six, three dozen, or 9×4).</p> <p>c. Identify the place and the value of a given digit in a six-digit numeral, including decimals to hundredths, and round to the nearest tenth.</p> <p>d. Divide regions, lengths, and sets of objects into equal parts using a variety of models and illustrations.</p> <p>e. Name and write a fraction to represent a portion of a unit whole, length, or set for halves, thirds, fourths, fifths, sixths, eighths, and tenths.</p> <p>f. Identify and represent square numbers using models and symbols.</p>	<p>Objective 1: Represent whole numbers and decimals from thousandths to one billion, fractions, percents, and integers.</p> <p>a. Read and write numbers in standard and expanded form.</p> <p>b. Demonstrate multiple ways to represent whole numbers, decimals, fractions, percents, and integers using models and symbolic representations (e.g., $108 = 2 \times 50 + 8$; $108 = 10^2 + 8$; $90\% = 90$ out of 100 squares on a hundred chart).</p> <p>c. Identify, read, and locate fractions, mixed numbers, decimals, and integers on the number line.</p> <p>d. Represent repeated factors using exponents.</p> <p>e. Describe situations where integers could be used in the students' environment.</p>	<p>Objective 1: Represent rational numbers in a variety of ways.</p> <p>a. Recognize a rational number as a ratio of two integers, a to b, where b is not equal to zero.</p> <p>b. Change whole numbers with exponents to standard form (e.g., $2^4 = 16$) and recognize that any non-zero whole number to the zero power equals 1 (e.g., $9^0 = 1$).</p> <p>c. Write a whole number in expanded form using exponents (e.g., $876,539 = 8 \times 10^5 + 7 \times 10^4 + 6 \times 10^3 + 5 \times 10^2 + 3 \times 10^1 + 9 \times 10^0$).</p> <p>d. Express numbers in scientific notation using positive powers of ten.</p>

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<p>Objective 2: Identify and use simple relationships among whole numbers up to 30.</p> <p>a. Estimate quantities in a set of objects using multiples of 10 as benchmark numbers. b. Compose and decompose quantities to establish a relationship between the parts and the whole. c. Recognize 5 or 10 as a part of the part-whole relationship of numbers. d. Compare sets of objects and determine whether they have the same, fewer, or more objects.</p>	<p>Objective 2: Identify simple relationships among whole numbers up to 100.</p> <p>a. Compare and order sets of objects and numbers using the terms greater than, less than, and equal to when describing the comparisons. b. Make reasonable estimates of the quantitative difference between two sets of objects. c. Identify one more, one less, 10 more, and 10 less than a given number. d. Identify numbers missing from a counting sequence. e. Represent part-whole relationships using the number line.</p>	<p>Objective 2: Use unit fractions to identify parts of the whole and parts of a set.</p> <p>a. Divide geometric shapes into two, three, or four equal parts and identify the parts as halves, thirds, or fourths. b. Divide sets of objects into two, three, or four parts of equal number of objects and identify the parts as halves, thirds, or fourths. c. Represent the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ with objects, pictures, words (e.g., ___ out of ___ equal parts), and symbols.</p>	<p>Objective 2: Use fractions to describe and compare parts of the whole.</p> <p>a. Identify the denominator of a fraction as the number of equal parts of the unit whole and the numerator of a fraction as the number of equal parts being considered. b. Define regions and sets of objects as a whole and divide the whole into equal parts using a variety of objects, models, and illustrations. c. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, sixths, eighths. d. Place fractions on the number line and compare and order fractions using models, pictures, the number line, and symbols. e. Find equivalent fractions using concrete and pictorial representations.</p>	<p>Objective 2: Analyze relationships among whole numbers, commonly used fractions, and decimals to hundredths.</p> <p>a. Compare the relative size of numbers (e.g., 475 is comparable to 500; 475 is small compared to 10,000 but large compared to 98). b. Order whole numbers up to six digits, simple fractions, and decimals using a variety of methods (e.g., number line, fraction pieces) and use the symbols $<$, $>$, and $=$ to show relationships. c. Identify a number that is between two given numbers (e.g., 3.2 is between 3 and 4; find a number between 0.1 and 0.2). d. Identify equivalences between fractions and decimals by connecting models to symbols. e. Generate equivalent fractions and simplify fractions using models, pictures, and symbols.</p>	<p>Objective 2: Explain relationships and equivalencies among integers, fractions, decimals, and percents.</p> <p>a. Compare fractions by finding a common denominator. b. Order integers, fractions (including mixed numbers), and decimals using a variety of methods, including the number line. c. Rewrite mixed numbers and improper fractions from one form to the other and represent each using regions, sets of objects, or line segments. d. Represent commonly used fractions as decimals and percents in a variety of ways (e.g., models, fraction strips, pictures, calculators, algorithms). e. Model and calculate equivalent forms of a fraction (including simplest form). f. Rename whole numbers as fractions with different denominators (e.g., $5 = \frac{5}{1}$, $3 = \frac{6}{2}$, $1 = \frac{7}{7}$)</p>	<p>Objective 2: Explain relationships and equivalencies among rational numbers.</p> <p>a. Place rational numbers on the number line. b. Compare and order rational numbers, including positive and negative mixed fractions and decimals, using a variety of methods and symbols, including the number line and finding common denominators. c. Find equivalent forms for common fractions, decimals, percents, and ratios, including repeating or terminating decimals. d. Relate percents less than 1% or greater than 100% to equivalent fractions, decimals, whole numbers, and mixed numbers. e. Recognize that the sum of an integer and its additive inverse is zero.</p>

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<p>Objective 3: Model, describe, and illustrate meanings of addition and subtraction for whole numbers less than ten.</p> <p>a. Demonstrate the joining and separating of sets of objects to solve problems. b. Describe the joining or separating of sets with informal language when using models. c. Record pictorially the results from joining or separating of sets.</p>	<p>Objective 3: Model, describe, and illustrate the meanings of addition and subtraction and use these operations to solve problems.</p> <p>a. Use a variety of models, including objects, length-based models, the number line and the ten frame to describe problem types (i.e., part-whole, combine, separate, compare). b. Use the properties of addition (i.e., commutativity, associativity, identity element) and the c. Compute basic addition facts (up to 10 + 10) and the related subtraction facts using strategies (e.g., $6 + 7 = (6 + 4) + 3 = 10 + 3 = 13$). d. Find the sum of three one-digit numbers.</p>	<p>Objective 3: Estimate, model, illustrate, describe, and solve problems involving 2 and 3 digit addition and subtraction.</p> <p>a. Demonstrate quick recall of addition facts (up to $10 + 10$) and related subtraction facts b. Model addition and subtraction of two- and three-digit whole numbers (sums and minuends to 1000) in a variety of ways. c. Write a story problem that relates to a given addition or subtraction equation, and write a number sentence to solve a story problem. d. Demonstrate fluency with two- and three-digit addition and subtraction problems, using efficient, accurate, generalizable strategies that include standard algorithms and mental arithmetic, and describe why the procedures work. e. Use the mathematical relationship between addition and subtraction and properties of addition to model and solve problems.</p>	<p>Objective 3: Model problems involving addition, subtraction, multiplication, and division.</p> <p>a. Demonstrate the meaning of multiplication and division of whole numbers through the use of a variety of representations b. Use a variety of strategies and tools, such as repeated addition or subtraction, equal jumps on the number line, and counters arranged in arrays to model multiplication and division problems. c. Using objects show that multiplication and division by the same number are inverse operations. d. Demonstrate the effect of place value when multiplying whole numbers by 10. e. Write a story problem that relates to a given addition, subtraction, or multiplication equation, and write a number sentence to solve a problem.</p>	<p>Objective 3: Model and illustrate meanings of multiplication and division of whole numbers and addition and subtraction of fractions.</p> <p>a. Model multiplication, place value, and properties of operations to represent multiplication of a 1 or 2 digit factor by a 2 digit factor; connect that to an algorithm. b. Use rectangular arrays to interpret factoring c. Demonstrate the mathematical relationship between multiplication and division and use that relationship to explain that division by zero is not possible. d. Represent division of a three-digit dividend by a one-digit divisor, including whole number remainders, using a variety of methods and connect the representation to an algorithm. e. Use models to add and subtract simple fractions where one single-digit denominator is 1, 2, or 3 times the other</p>	<p>Objective 3: Use number theory concepts to develop and use divisibility tests; classify whole numbers to 50 as prime, composite, or neither; and find common multiples and factors.</p> <p>a. Identify patterns with skip counting and multiples to develop and use divisibility tests for determining whether a whole number is divisible by 2, 3, 5, 6, 9, and 10. b. Use strategies for classifying whole numbers to 50 as prime, composite, or neither. c. Rewrite a composite number between 2 and 50 as a product of only prime numbers. d. Find common multiples and factors and apply to adding and subtracting fractions.</p>	<p>Objective 3: Use number theory concepts to find prime factorizations, least common multiples, and greatest common factors.</p> <p>a. Determine whether whole numbers to 100 are prime, composite, or neither. b. Find the prime factorization of composite numbers to 100. c. Find the greatest common factor and least common multiple for two numbers using a variety of methods (e.g., list of multiples, prime factorization).</p>

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		<p>Objective 4: Model, illustrate, and pictorially record solutions to simple multiplication and division problems.</p> <p>a. Represent multiplication with equal groups using concrete objects and skip counting by twos, fives, and tens. b. Represent division as fair shares using concrete objects or pictures.</p>	<p>Objective 4: Compute and solve problems involving addition and subtraction of 3- and 4-digit numbers and basic facts of multiplication and division.</p> <p>a. Use a variety of methods to facilitate computation (e.g., estimation, mental math strategies, paper and pencil). b. Find the sum or difference of numbers, including monetary amounts, using models and strategies such as expanded form, compensation, partial sums, and the standard algorithm. c. Compute basic multiplication facts (0-10) and related division facts using a variety of strategies based on properties of addition and multiplication (i.e., commutative, associative, identity, zero, and distributive properties).</p>	<p>Objective 4: Solve problems involving multiplication and division of whole numbers and addition and subtraction of simple fractions and decimals.</p> <p>a. Use estimation, mental math, paper and pencil, and calculators to perform mathematical calculations and identify when to use each one appropriately. b. Select appropriate methods to solve a single operation problem and estimate computational results or calculate them directly, depending on the context and numbers involved in a problem. c. Write a story problem that relates to a given multiplication or division equation, and select and write a number sentence to solve a problem related to the environment. d. Solve problems involving simple fractions and interpret the meaning of the solution.</p>	<p>Objective 4: Model and illustrate meanings of multiplication and division.</p> <p>a. Represent division-with-remainder using whole numbers, decimals, or fractions. b. Describe the effect of place value when multiplying and dividing whole numbers and decimals by 10, 100, and 1,000. c. Model multiplication of fractions and decimals (e.g., tenths multiplied by tenths, a whole number multiplied by tenths, or a whole number with tenths multiplied by tenths) in a variety of ways (e.g., manipulatives, number line and area models, patterns).</p>	<p>Objective 4: Model and illustrate meanings of operations and describe how they relate.</p> <p>a. Relate fractions to multiplication and division and use this relationship to explain procedures for multiplying and dividing fractions. b. Recognize that ratios derive from pairs of rows in the multiplication table and connect with equivalent fractions. c. Give mixed number and decimal solutions to division problems with whole numbers.</p>

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				<p>Objective 5: Compute problems involving multiplication and division of whole numbers and addition and subtraction of simple fractions and decimals.</p> <p>a. Demonstrate quick recall of basic multiplication and division facts.</p> <p>b. Multiply up to a three-digit factor by a two-digit factor with fluency, using efficient procedures.</p> <p>c. Divide up to a three-digit dividend by a one-digit divisor with fluency, using efficient procedures.</p> <p>d. Add and subtract decimals and simple fractions where one single-digit denominator is 1, 2, or 3 times the other.</p>	<p>Objective 5: Solve problems involving one or two operations.</p> <p>a. Determine when it is appropriate to use estimation, mental math strategies, paper and pencil, and algorithms.</p> <p>b. Make reasonable estimations of fraction and decimal sums, differences, and products, including knowing whether results obtained using a calculator are reasonable.</p> <p>c. Write number sentences that can be used to solve a two-step problem.</p> <p>d. Interpret division-with-remainder problems as they apply to the environment.</p> <p>Objective 6: Demonstrate proficiency with multiplication and division of whole numbers and compute problems involving addition, subtraction, and multiplication of decimals and fractions.</p> <p>a. Multiply multi-digit whole numbers by a two-digit whole number with fluency, using efficient procedures.</p> <p>b. Divide multi-digit dividends by a one-digit divisor with fluency, using efficient procedures.</p> <p>c. Add and subtract decimals with fluency, using efficient procedures.</p> <p>d. Add and subtract fractions with fluency.</p> <p>e. Multiply fractions.</p>	<p>Objective 5: Solve problems involving multiple steps.</p> <p>a. Select appropriate methods to solve a multi-step problem involving multiplication and division of fractions and decimals.</p> <p>b. Use estimation to determine whether results obtained using a calculator are reasonable.</p> <p>c. Use estimation or calculation to compute results, depending on the context and numbers involved in the problem.</p> <p>d. Solve problems involving ratios and proportions.</p> <p>Objective 6: Demonstrate proficiency with the four operations, with positive rational numbers, and with addition and subtraction of integers.</p> <p>a. Multiply and divide a multi-digit number by a two-digit number, including decimals.</p> <p>b. Add, subtract, multiply, and divide fractions and mixed numbers.</p> <p>c. Add and subtract integers</p>

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<p>Standard 2: Students will sort and classify objects as well as recognize and create simple patterns.</p>	<p>Standard 2: Students will identify and use number patterns and properties to describe and represent mathematical relationships.</p>	<p>Standard 2: Students will model, represent, and interpret patterns and number relationships to create and solve problems with addition and subtraction.</p>	<p>Standard 2: Students will use patterns, symbols, operations, and properties of addition multiplication to represent and describe simple number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent mathematical problems and number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent and analyze mathematical problems and number relationships using algebraic symbols.</p>	<p>Standard 2: Students will use patterns, relations, and algebraic expressions to represent and analyze mathematical problems and number relationships.</p>
<p>Objective 1: Identify, sort, and classify objects according to common attributes.</p> <p>a. Sort objects into groups by attribute and identify which attribute was used. b. Describe multiple ways to sort and classify a group of objects.</p>	<p>Objective 1: Recognize, describe, and represent patterns with more than one attribute.</p> <p>a. Sort and classify objects using more than one attribute. b. Identify, create, and label repeating patterns using objects, pictures, and symbolic notation. c. Identify, create, and label growing patterns using objects, pictures, and symbolic notation. d. Use patterns to establish skip counting by twos, fives, and ten</p>	<p>Objective 1: Recognize, describe, create, and extend growing patterns.</p> <p>a. Determine the next term in linear patterns (e.g., 2, 4, 6...; the number of hands on one person, two people, three people). b. Construct models and skip count by twos, threes, fives, and tens and relate to repeat addition.</p>	<p>Objective 1: Create, represent, and analyze growing patterns.</p> <p>a. Create and extend growing patterns using objects, numbers, and tables. b. Describe how patterns are extended using manipulatives, pictures, and numerical representations.</p>	<p>Objective 1: Identify, analyze, and determine rules for describing numerical patterns involving operations and non-numerical growing patterns.</p> <p>a. Analyze growing patterns using objects, pictures, numbers, and tables to determine a rule for the pattern. b. Recognize, represent, and extend simple patterns involving multiples and other number patterns. c. Identify simple relationships in real-life contexts and use mathematical operations to describe the pattern.</p>	<p>Objective 1: Identify, analyze and determine a rule for predicting and extending numerical patterns involving operations whole numbers, decimals, and fractions.</p> <p>a. Analyze and make predictions about numeric patterns, including decimals and fractions. b. Determine a rule for the pattern using organized lists, tables, objects, and variables.</p>	<p>Objective 1: Analyze algebraic expressions, tables, and graphs to determine patterns, relations, and rules.</p> <p>a. Describe simple relationships by creating and analyzing tables, equations, and expressions. b. Draw a graph and write an equation from a table of values. c. Draw a graph and create a table of values from an equation.</p>

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<p>Objective 2: Identify, duplicate, describe, and extend simple repeating and growing patterns.</p> <p>a. Identify and describe simple repeating patterns with numbers and shapes. b. Duplicate and extend simple repeating patterns with numbers and shapes. c. Describe simple growing patterns with shapes. d. Identify simple patterns in the environment.</p>	<p>Objective 2: Recognize and represent mathematical relationships using symbols and use number sentences with operational symbols to solve problems.</p> <p>a. Recognize that “=” indicates that the two sides of an equation are expressions of the same number. b. Recognize that “+” indicates the joining of sets and that “-” indicates the separation of sets. c. Write and solve number sentences from problem situations involving addition and subtraction, using symbolic notation for the missing value (e.g., $\Delta + 4 = 7$). d. Create problem situations from given number sentences involving addition and subtraction.</p>	<p>Objective 2: Use unit fractions to identify parts of the whole and parts of a set.</p> <p>a. Divide geometric shapes into two, three, or four equal parts and identify the parts as halves, thirds, or fourths. b. Divide sets of objects into two, three, or four parts of equal number of objects and identify the parts as halves, thirds, or fourths. c. Represent the unit fractions $1/2$, $1/3$, and $1/4$ with objects, pictures, words (e.g., ___ out of ___ equal parts), and symbols.</p>	<p>Objective 2: Use fractions to describe and compare parts of the whole.</p> <p>a. Identify the denominator of a fraction as the number of equal parts of the unit whole and the numerator of a fraction as the number of equal parts being considered. b. Define regions and sets of objects as a whole and divide the whole into equal parts using a variety of objects, models, and illustrations. c. Name and write a fraction to represent a portion of a unit whole for halves, thirds, fourths, sixths, and eighths. d. Place fractions on the number line and compare and order fractions using models, pictures, the number line, and symbols. e. Find equivalent fractions using concrete and pictorial representations.</p>	<p>Objective 2: Use algebraic expressions, symbols, and properties of the operations to represent, simplify, and solve mathematical equations an inequalities.</p> <p>a. Use the order of operations to evaluate, simplify, and compare mathematical expressions involving the four operations, parentheses, and the symbols $<$, $>$, and $=$. b. Express single-operation problem situations as equations and solve the equation. c. Recognize that a symbol represents the same number throughout an equation or expression (e.g., $\Delta + \Delta = 8$; thus, $\Delta = 4$). d. Describe and use the commutative, associative, distributive, and identity properties of addition and multiplication, and the zero property of multiplication.</p>	<p>Objective 2: Use algebraic expressions, inequalities, or equations to represent and solve simple real-world problems.</p> <p>a. Use properties and the order of operations involving addition, subtraction, multiplication, division, and the use of parentheses to compute with whole numbers, decimals, and fractions. b. Use patterns, models, and relationships as contexts for writing and solving simple equations and inequalities with solutions whole number .</p>	<p>Objective 2: Write, interpret, and use mathematical expressions, equations, and formulas to represent and solve problems that correspond to given situations.</p> <p>a. Solve single variable linear equations using a variety of strategies. b. Recognize that expressions in different forms can be equivalent and rewrite an expression to represent a quantity in a different way. c. Evaluate and simplify expressions and formulas, substituting given values for the variables.</p>

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<p>Standard 2: Students will sort and classify objects as well as recognize and create simple patterns.</p>	<p>Standard 2: Students will identify and use number patterns and properties to describe and represent mathematical relationships.</p>	<p>Standard 2: Students will model, represent, and interpret patterns and number relationships to create and solve problems with addition and subtraction.</p>	<p>Standard 2: Students will use patterns, symbols, operations, and properties of addition multiplication to represent and describe simple number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent mathematical problems and number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent and analyze mathematical problems and number relationships using algebraic symbols.</p>	<p>Standard 2: Students will use patterns, relations, and algebraic expressions to represent and analyze mathematical problems and number relationships.</p>
<p>Objective 3: Model, describe, and illustrate meanings of addition and subtraction for whole numbers less than ten.</p> <p>a. Demonstrate the joining and separating of sets of objects to solve problems. b. Describe the joining or separating of sets with informal language when using models. c. Record pictorially the results from joining or separating of sets.</p>	<p>Objective 3: Model, describe, and illustrate the meanings of addition and subtraction and use these operations to solve problems.</p> <p>a. Use a variety of models, including objects, length-based models, the number line and the ten frame to describe problem types (i.e., part-whole, combine, separate, compare). b. Use the properties of addition (i.e., commutativity, associativity, identity element) and the mathematical relationship between addition and subtraction to solve problems. c. Compute basic addition facts (up to 10 + 10) and the related subtraction facts using strategies (e.g., $6 + 7 = (6 + 4) + 3 = 10 + 3 = 13$). d. Find the sum of three one-digit numbers.</p>	<p>Objective 3: Estimate, model, illustrate, describe, and solve problems involving two- and three digit addition and subtraction.</p> <p>a. Demonstrate quick recall of addition facts (up to $10 + 10$) and related subtraction facts. b. Model addition and subtraction of two- and three-digit whole numbers (sums and minuends to 1000) in a variety of ways. c. Write a story problem that relates to a given addition or subtraction equation; write a number sentence to solve a story problem that is related to the environment. d. Demonstrate fluency with two- and three-digit addition and subtraction problems, using efficient, accurate; generalizable strategies that include standard algorithms and mental arithmetic and describe why the procedures work. e. Use the mathematical relationship between addition and subtraction and properties of addition to model and solve problems.</p>	<p>Objective 3: Model problems involving addition, subtraction, multiplication, and division.</p> <p>a. Demonstrate the meaning of multiplication and division of whole numbers through a variety of representations. b. Use a variety of strategies and tools, such as repeated addition or subtraction, jumps on a number line, and counters in arrays to model multiplication and division problems. c. Using objects, demonstrate that multiplication and division by the same number are inverse operations. d. Demonstrate the effect of place value when multiplying whole numbers by 10. e. Write a story problem that relates to a given addition, subtraction, or multiplication equation, and write a number sentence to solve a problem.</p>	<p>Objective 3: Model and illustrate meanings of multiplication and division of whole numbers and the addition and subtraction of fractions.</p> <p>a. Model multiplication (e.g., equal-sized groups, rectangular arrays, area models, equal intervals on the number line), place value, and properties of operations to represent multiplication of a one- or two-digit factor by a two-digit factor and connect the representation to an algorithm. b. Use rectangular arrays to interpret factoring. c. Demonstrate the mathematical relationship between multiplication and division . d. Represent division of a three-digit dividend by a one-digit divisor, including whole number remainders, using a variety of methods. e. Use models to add and subtract simple fractions where one single-digit denominator is 1, 2, or 3 times the other.</p>	<p>Objective 3: Use number theory concepts to develop and use divisibility tests; classify whole numbers to 50 as prime, composite, or neither; and find common multiples and factors.</p> <p>a. Identify patterns with skip counting and multiples to develop and use divisibility tests for determining whether a whole number is divisible by 2, 3, 5, 6, 9, and 10. b. Use strategies for classifying whole numbers to 50 as prime, composite, or neither. c. Rewrite a composite number between 2 and 50 as a product of only prime numbers. d. Find common multiples and factors and apply to adding and subtracting fractions.</p>	<p>Objective 3: Use number theory concepts to find prime factorizations, least common multiples, and greatest common factors.</p> <p>a. Determine whether whole numbers to 100 are prime, composite, or neither. b. Find the prime factorization of composite numbers to 100. c. Find the greatest common factor and least common multiple for two numbers using a variety of methods (e.g., list of multiples, prime factorization).</p>

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
<p>Standard 2: Students will sort and classify objects as well as recognize and create simple patterns.</p>	<p>Standard 2: Students will identify and use number patterns and properties to describe and represent mathematical relationships.</p>	<p>Standard 2: Students will model, represent, and interpret patterns and number relationships to create and solve problems with addition and subtraction.</p>	<p>Standard 2: Students will use patterns, symbols, operations, and properties of addition multiplication to represent and describe simple number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent mathematical problems and number relationships.</p>	<p>Standard 2: Students will use patterns and relations to represent and analyze mathematical problems and number relationships using algebraic symbols.</p>	<p>Standard 2: Students will use patterns, relations, and algebraic expressions to represent and analyze mathematical problems and number relationships.</p>
		<p>Objective 4: Model, illustrate, and pictorially record solutions to simple multiplication and division problems.</p> <p>a. Represent multiplication with equal groups using concrete objects and skip counting by twos, fives, and tens. b. Represent division as fair shares using concrete objects or pictures.</p>	<p>Objective 4: Compute and solve problems involving addition and subtraction of 3- and 4-digit numbers and basic facts of multiplication and division.</p> <p>a. Use a variety of methods to facilitate computation. b. Find the sum or difference of numbers, including monetary amounts, using models and strategies such as expanded form, compensation, partial sums, and the standard algorithm. c. Compute basic multiplication facts (0-10) and related division facts using a variety of strategies based on properties of addition and multiplication (i.e., commutative, associative, identity, zero, and the distributive properties).</p>	<p>Objective 4: Solve problems involving multiplication and division of whole numbers and addition and subtraction of simple fractions and decimals.</p> <p>a. Use estimation, mental math, paper and pencil, and calculators to perform mathematical calculations and identify when to use each one appropriately. b. Select appropriate methods to solve a single operation problem and estimate computational results or calculate them directly, depending on the context and numbers involved in a problem. c. Write a story problem that relates to a given multiplication or division equation, and select and write a number sentence to solve a problem related to the environment. d. Solve problems involving simple fractions and interpret the meaning of the solution.</p>	<p>Objective 4: Model and illustrate meanings of multiplication and division.</p> <p>a. Represent division-with-remainder using whole numbers, decimals, or fractions. b. Describe the effect of place value when multiplying and dividing whole numbers and decimals by 10, 100, and 1,000. c. Model multiplication of fractions and decimals (e.g., tenths multiplied by tenths, a whole number multiplied by tenths, or a whole number with tenths multiplied by tenths) in a variety of ways .</p>	<p>Objective 4: Model and illustrate meanings of operations and describe how they relate.</p> <p>a. Relate fractions to multiplication and division and use this relationship to explain procedures for multiplying and dividing fractions. b. Recognize that ratios derive from pairs of rows in the multiplication table and connect with equivalent fractions. c. Give mixed number and decimal solutions to division problems with whole numbers.</p>

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
<p>Standard 3: Students will understand basic geometry and measurement concepts as well as collect and organize data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will describe and analyze attributes of two-dimensional shapes.</p>	<p>Standard 3: Students will understand attributes and properties of plane geometric objects and spatial relationships.</p>	<p>Standard 3: Students will use spatial reasoning to recognize, describe, and analyze geometric shapes and principles..</p>	<p>Standard 3: Students will use spatial and logical reasoning to recognize, describe, and analyze geometric shapes and principles.</p>
<p>Objective 1: Identify and create simple geometric shapes and describe simple spatial relationships.</p> <p>a. Identify, name, describe, and draw circles, triangles, rectangles, and squares in various sizes and orientations.</p> <p>b. Combine shapes to create two-dimensional objects (e.g., using a triangle and square to create a picture of a house).</p> <p>c. Use words to describe position and distance.</p> <p>d. Investigate two- and three-dimensional shapes including hexagons, trapezoids, spheres, cubes, and cones.</p>	<p>Objective 1: Identify, describe, and create simple geometric figures.</p> <p>a. Name, create, and sort geometric plane figures (i.e., circle, triangle, rectangle, square, trapezoid, rhombus, parallelogram, hexagon).</p> <p>b. Identify geometric plane and solid figures (i.e., circle, triangle, rectangle, square, trapezoid, hexagon, rhombus, parallelogram, cube, sphere, cone) in the students' environment.</p> <p>c. Compose and decompose plane and solid figures (e.g., make two triangles from a square) and describe the part-whole relationships, the attributes of the figures, and how they are different and similar.</p>	<p>Objective 1: Describe, classify, and create geometric figures.</p> <p>a. Describe and classify plane and solid geometric figures (i.e., circle, triangle, rectangle, square, trapezoid, rhombus, parallelogram, pentagon, hexagon, cube, sphere, cone) according to the number of sides and angles or faces, edges, and vertices.</p> <p>b. Compose and decompose shapes and figures by substituting arrangements of smaller shapes for larger shapes or substituting larger shapes for arrangements of smaller shapes.</p> <p>c. Compose and decompose shapes and figures and describe the part-whole relationships, similarities, and differences.</p>	<p>Objective 1: Describe and compare attributes of two-dimensional shapes.</p> <p>a. Identify, describe, and classify polygons (e.g., pentagons, hexagons, octagons).</p> <p>b. Identify attributes for classifying triangles (e.g., two equal sides for the isosceles triangle, three equal sides for the equilateral triangle, right angle for the right triangle).</p> <p>c. Identify attributes for classifying quadrilaterals (e.g., parallel sides for the parallelogram, right angles for the rectangle, equal sides and right angles for the square).</p> <p>d. Identify right angles in geometric figures, or in appropriate objects, and determine whether other angles are greater or less than a right angle.</p>	<p>Objective 1: Identify and describe attributes of two-dimensional geometric shapes.</p> <p>a. Name and describe lines that are parallel, perpendicular, and intersecting.</p> <p>b. Identify and describe right, acute, obtuse, and straight angles.</p> <p>c. Identify and describe the radius and diameter of a circle.</p> <p>d. Identify and describe figures that have line symmetry and rotational symmetry.</p>	<p>Objective 1: Describe relationships between 2 and 3 dimensional shapes and analyze attributes; properties of geometric shapes.</p> <p>a. Draw, label, and describe line segments, rays, lines, parallel lines, and perpendicular lines.</p> <p>b. Draw, label, and define an angle as two rays sharing a common endpoint (vertex).</p> <p>c. Classify triangles and quadrilaterals and analyze the relationships among the shapes in each classification.</p> <p>d. Relate pyramids and right prisms to the two-dimensional shapes (nets) from which they were created.</p> <p>e. Identify properties and attributes of solids. and describe them by the number of edges, faces, and vertices as well as the types of faces.</p>	<p>Objective 1: Identify and analyze attributes and properties of geometric shapes to solve problems.</p> <p>a. Identify the midpoint of a line segment and the center and circumference of a circle.</p> <p>b. Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms.</p> <p>c. Develop and use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle in a triangle or quadrilateral.</p>

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Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
<p>Standard 3: Students will understand basic geometry and measurement concepts as well as collect and organize data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will describe and analyze attributes of two-dimensional shapes.</p>	<p>Standard 3: Students will understand attributes and properties of plane geometric objects and spatial relationships.</p>	<p>Standard 3: Students will use spatial reasoning to recognize, describe, and analyze geometric shapes and principles..</p>	<p>Standard 3: Students will use spatial and logical reasoning to recognize, describe, and analyze geometric shapes and principles.</p>
<p>Objective 2: Identify and use measurable attributes of objects and units of measurement.</p> <p>a. Identify clocks and calendars as tools that measure time.</p> <p>b. Identify a day, week, and month on a calendar and name the days of the week in order.</p> <p>c. Identify pennies, nickels, dimes, and quarters as units of money.</p> <p>d. Compare two objects by measurable attributes (i.e., length, weight) and order several objects by measurable attributes (i.e., length, weight).</p>	<p>Objective 2: Identify measurable attributes of objects and units of measurement, and use appropriate techniques and tools to determine measurements.</p> <p>a. Identify the appropriate tools for measuring length, weight, capacity, temperature, and time.</p> <p>b. Measure the length of an object using nonstandard units and count the units using groups of tens and ones.</p> <p>c. Identify the value of a penny, nickel, dime, quarter, and dollar, and determine the value of a set of the same coins that total 25¢ or less</p> <p>d. Tell time to the hour and half-hour.</p> <p>e. Name the months of the year and seasons in order, and use a calendar to determine the day of the week and date.</p>	<p>Objective 2: Identify and use units of measure, iterate (repeat) that unit, and compare the number of iterations to the item being measured.</p> <p>a. Identify and use measurement units to measure, to the nearest unit, length, weight in pounds, and capacity in cups.</p> <p>b. Estimate and measure length by iterating a nonstandard or standard unit of measure.</p> <p>c. Use different units to measure the length of the same object and recognize that the smaller the unit, the more iterations needed to cover a given length.</p> <p>d. Determine the value of a set of up to five coins that total \$1.00 or less (e.g., three dimes, one nickel, and one penny equals 36¢).</p> <p>e. Tell time to the quarter-hour and sequence a series of daily events by time.</p>	<p>Objective 2: Demonstrate the meaning of congruence through applying transformations.</p> <p>a. Demonstrate the effect of reflection, translation, or rotation using objects.</p> <p>b. Determine whether two polygons are congruent by reflecting, translating, or rotating one polygon to physically fit on top of the other.</p>	<p>Objective 2: Specify locations using grids and maps.</p> <p>a. Locate coordinates in the first quadrant of a coordinate grid.</p> <p>b. Give the coordinates in the first quadrant of a coordinate grid.</p> <p>c. Locate regions on a map of Utah.</p> <p>d. Give the regions of a position on a map of Utah.</p>	<p>Objective 2: Specify locations in a coordinate plane.</p> <p>a. Locate points defined by ordered pairs of integers.</p> <p>b. Write an ordered pair for a point in a coordinate plane with integer coordinates.</p> <p>c. Specify possible paths between locations on a coordinate plane and compare distances of the various paths.</p>	<p>Objective 2: Visualize and identify geometric shapes after applying transformations on a coordinate plane.</p> <p>a. Rotate a polygon about the origin by a multiple of 90° and identify the location of the new vertices.</p> <p>b. Translate a polygon either horizontally or vertically on a coordinate grid and identify the location of the new vertices.</p> <p>c. Reflect a polygon across either the x- or y-axis and identify the location of the new vertices.</p>

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Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
<p>Standard 3: Students will understand basic geometry and measurement concepts as well as collect and organize data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will understand simple geometry and measurement concepts as well as collect, represent, and draw conclusions from data.</p>	<p>Standard 3: Students will describe and analyze attributes of two-dimensional shapes.</p>	<p>Standard 3: Students will understand attributes and properties of plane geometric objects and spatial relationships.</p>	<p>Standard 3: Students will use spatial reasoning to recognize, describe, and analyze geometric shapes and principles..</p>	<p>Standard 3: Students will use spatial and logical reasoning to recognize, describe, and analyze geometric shapes and principles.</p>
<p>Objective 3: Collect and organize simple data.</p> <p>a. Pose questions and gather data about self and surroundings. b. Organize data obtained from sorting and classifying objects.</p>	<p>Objective 3: Collect, organize, and represent simple data.</p> <p>a. Collect and represent data using tables, tally marks, pictographs, and bar graphs. b. Describe and interpret data.</p>	<p>Objective 3: Collect, record, organize, display, and interpret numerical data.</p> <p>a. Collect and record data systematically, using a strategy for keeping track of what was counted. b. Organize and represent the same data in more than one way. c. Organize, display, and label information, including keys, using pictographs, tallies, bar graphs, and organized tables. d. Describe data represented on charts and graphs and answer simple questions related to data representations.</p>		<p>Objective 3: Visualize and identify geometric shapes after applying transformations.</p> <p>a. Identify a translation, rotation, or a reflection of a geometric shape. b. Recognize that 90°, 180°, 270°, and 360° are associated, respectively, with 1/4, 1/2, 3/4, and full turns.</p>		

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
			<p>Standard 4: Students will select and use appropriate units and measurement tools to solve problems.</p>	<p>Standard 4: Students will describe relationships among units of measure, use appropriate tools, and use formulas to find area measurements.</p>	<p>Standard 4: Students will determine area of polygons and surface area and volume of three-dimensional shapes.</p>	<p>Standard 4: Students will understand and apply measurement tools and techniques and find the circumference and area of a circle.</p>
			<p>Objective 1: Select and use appropriate tools and units to estimate and measure length, weight, capacity, time, and perimeter of two-dimensional figures.</p> <p>a. Describe the part-whole relationships (e.g., 3 feet in a yard, a foot is 1/3 of a yard) between metric units of length (i.e., centimeter, meter), and among customary units of length (i.e., inch, foot, yard), capacity (i.e., cup, quart), and weight (i.e., pound, oz.)</p> <p>b. Measure the length of objects to the nearest centimeter, meter, half- and quarter-inch, foot, and yard.</p> <p>c. Measure capacity using cups and quarts, and measure weight using pounds and ounces.</p> <p>d. Identify the number of minutes in an hour, of hours in a day, of days in a year, number of weeks in a year.</p> <p>e. Describe perimeter as a measurable attribute of two-dimensional figures; estimate and measure perimeter with metric and customary units.</p>	<p>Objective 1: Describe relationships among units of measure for length, capacity, and weight; determine measurements of angles using appropriate tools.</p> <p>a. Describe the relative size among metric units of length (i.e., millimeter, centimeter, meter), between metric units of capacity (i.e., milliliter, liter), and between metric units of weight (i.e., gram, kilogram).</p> <p>b. Describe the relative size among customary units of capacity (i.e., cup, pint, quart, gallon).</p> <p>c. Estimate and measure capacity using milliliters, liters, cups, pints, quarts, and gallons, and measure weight using grams and kilograms.</p> <p>d. Recognize that angles are measured in degrees and develop benchmark angles (e.g., 45°, 60°, 120°) using 90° angles to estimate angle measurement.</p> <p>e. Measure angles using a protractor or angle ruler.</p>	<p>Objective 1: Determine the area of polygons and apply to real-world problems.</p> <p>a. Determine the area of a trapezoid by the composition and decomposition of rectangles, triangles, and parallelograms.</p> <p>b. Determine the area of irregular and regular polygons by the composition and decomposition of rectangles, triangles, and parallelograms.</p> <p>c. Compare areas of polygons using different units of measure within the same measurement system (e.g., square feet, square yards).</p>	<p>Objective 1: Describe and find the circumference and area of a circle.</p> <p>a. Explore the relationship between the radius and diameter of a circle to the circle's circumference to develop the formula for circumference.</p> <p>b. Find the circumference of a circle using a formula.</p> <p>c. Describe pi as the ratio of the circumference to the diameter of a circle.</p> <p>d. Decompose a circle into a number of wedges and rearrange the wedges into a shape that approximates a parallelogram to develop the formula for the area of a circle.</p> <p>e. Find the area of a circle using a formula.</p>

K-6 Elementary Mathematics Core Curriculum in Table Format

Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
			<p>Standard 4: Students will select and use appropriate units and measurement tools to solve problems.</p>	<p>Standard 4: Students will describe relationships among units of measure, use appropriate tools, and use formulas to find area measurements.</p>	<p>Standard 4: Students will determine area of polygons and surface area and volume of three-dimensional shapes.</p>	<p>Standard 4: Students will understand and apply measurement tools and techniques and find the circumference and area of a circle.</p>
			<p>Objective 2: Solve problems involving measurements.</p> <p>a. Determine simple equivalences of measurements (e.g., 30 inches = 2 feet and 6 inches; 6 cups = 1½ quarts; 90 min. = 1 hr. 30 min.).</p> <p>b. Compare given objects according to measurable attributes (i.e., length, weight, capacity).</p> <p>c. Solve problems involving perimeter.</p> <p>d. Determine elapsed time in hours (e.g., 7:00 a.m. to 2:00 p.m.).</p>	<p>Objective 2: Recognize and describe area as a measurable attribute of two-dimensional shapes and calculate area measurements.</p> <p>a. Quantify area by finding the total number of same-sized units of area needed to fill the region without gaps or overlaps.</p> <p>b. Recognize that a square that is 1 unit on a side is the standard unit for measuring area.</p> <p>c. Develop the area formula for a rectangle and connect it with the area model for multiplication.</p> <p>d. Develop and use the area formula for a right triangle by comparing with the formula for a rectangle (e.g., two of the same right triangles makes a rectangle).</p> <p>e. Develop, use, and justify the relationships among area formulas of triangles and parallelograms by decomposing and comparing with areas of right triangles and rectangles.</p> <p>f. Determine possible perimeters, in whole units, for a rectangle with a fixed area, and determine possible areas when given a rectangle with a fixed perimeter.</p>	<p>Objective 2: Explain relationships and equivalencies among integers, fractions, decimals, and percents.</p> <p>a. Compare fractions by finding a common denominator.</p> <p>b. Order integers, fractions (including mixed numbers), and decimals using a variety of methods, including the number line.</p> <p>c. Rewrite mixed numbers and improper fractions from one form to the other and represent each using regions, sets of objects, or line segments.</p> <p>d. Represent commonly used fractions as decimals and percents in a variety of ways (e.g., models, fraction strips, pictures, calculators, algorithms).</p> <p>e. Model and calculate equivalent forms of a fraction (including simplest form).</p> <p>f. Rename whole numbers as fractions with different denominators (e.g., $5 = 5/1$, $3 = 6/2$, $1 = 7/7$).</p>	<p>Objective 2: Identify and describe measurable attributes of objects and units of measurement, and solve problems involving measurement.</p> <p>a. Recognize that measurements are approximations and describe how the size of the unit used in measuring affects the precision.</p> <p>b. Convert units of measurement within the metric system and convert units of measurement within the customary system.</p> <p>c. Compare a meter to a yard, a liter to a quart, and a kilometer to a mile.</p> <p>d. Determine when it is appropriate to estimate or use precise measurement when solving problems.</p> <p>e. Derive and use the formula to determine the surface area and volume of a cylinder.</p>

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Kindergarten	1 st Grade	2 nd Grade	3 rd Grade	4 th Grade	5 th Grade	6 th Grade
			<p>Standard 5: Students will collect and organize data to make predictions and identify basic concepts of probability.</p>	<p>Standard 5: Students will interpret and organize collected data to make predictions, answer questions, and describe basic concepts of probability.</p>	<p>Standard 5: Students will construct, analyze, and construct reasonable conclusions from data and apply basic concepts of probability.</p>	<p>Standard 5: Students will analyze, draw conclusions, and make predictions based upon data and apply basic concepts of probability.</p>
			<p>Objective 1: Collect, organize, and display data to make predictions.</p> <p>a. Collect, read, represent, and interpret data using tables, graphs, and charts, including keys (e.g., pictographs, bar graphs, frequency tables, line plots). b. Make predictions based on a data display.</p>	<p>Objective 1: Collect, organize, and display data to answer questions.</p> <p>a. Identify a question that can be answered by collecting data. b. Collect, read, and interpret data from tables, graphs, charts, surveys, and observations. c. Represent data using frequency tables, bar graphs, line plots, and stem and leaf plots. d. Identify and distinguish between clusters and outliers of a data set.</p>	<p>Objective 1: Formulate and answer questions using statistical methods to compare data, and propose and justify inferences based on data.</p> <p>a. Construct, analyze, and display data using an appropriate format (e.g., line plots, bar graphs, line graphs). b. Recognize the differences in representing categorical and numerical data. c. Identify minimum and maximum values for a set of data. d. Identify and calculate the mean, median, mode, and range.</p> <p>Objective 2: Apply basic concepts of probability.</p> <p>a. Describe the results of experiments involving random outcomes using a variety of notations (e.g., 4 out of 9, 4/9).</p> <p>b. Recognize that probability is always a value between 0 and 1 (inclusively). c. Express the likelihood of an outcome in a simple experiment as a value between 0 and 1 (inclusively).</p>	<p>Objective 1: Design investigations to reach conclusions using statistical methods to make inferences based on data.</p> <p>a. Design investigations to answer questions. b. Extend data display to include scatter plots and circle graphs. c. Compare two similar sets of data on the same graph and compare two graphs representing the same set of data. d. Recognize that changing the scale influences the appearance of a data display. e. Propose and justify inferences and predictions based on data.</p> <p>Objective 2: Apply basic concepts of probability and justify outcomes.</p> <p>a. Write the results of a probability experiment as a fraction between zero and one, or an equivalent percent. b. Compare experimental results with theoretical results. c. Compare individual, small group, and large group results of a probability experiment in order to more accurately estimate the actual probabilities.</p>

