SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Mathematics	**Length of Course:** 30 Cycles
Grade Level(s): 4	**Periods Per Cycle:** 6
Units of Credit: N/A	**Length of Period:** 60 Minutes
Classification: Required	**Total Instructional Time:** 180 Hours

Course Description

This course is designed to present developmentally appropriate basic number facts and computational skills. It covers a variety of fundamental mathematical skills that include: Numbers and Operations, Algebraic Concepts, Geometry, Measurement, Data and Probability.

Instructional Strategies, Learning Practices, Activities, and Experiences

- Anchor Charts
- Anticipatory Sets
- Assessments (Chapter, Unit, Teacher-Created)
- Bell Ringers
- Calculators
- Class Discussions
- Closure
- Critical Thinking
- Fact Fluency
- Flexible Groups
- Graphic Organizers
- Guided Practice
- Higher-Level Questioning
- Homework
- Interaction Sequence
- Journals
- Manipulatives
- Posted Objectives
- Practice Exercises
- Presentations
- Projects
- PSSA Preparation
- Small Group Interventions
- Teacher Demonstrations
- Teacher Observations
- Technology Integration
- Instructional Videos
- Vocabulary (Cards, Strategies, and Lists)
- Wait Time
- Wait Time Extended

Assessments

- Assessments (Chapter, Unit, Benchmark, Teacher-Created)
- Closure
- Fact Fluency
- Higher-Level Questioning
- Presentations
- Projects
- Teacher Observations

Materials/Resources

- Anchor Charts
- Calculators
- Graphic Organizers
- Internet Resources
- Journals
- Manipulatives
- Resource Books (Math in Practice)
- Trade Books, Picture Books
- Instructional Videos
- Vocabulary (Cards, Strategies, and Lists)

Adopted: 1/27/88
Revised: 9/3/91; 9/16/98; 9/17/03; 8/17/09; 5/20/13; 5/20/2019

Unit 1: Numbers and Operations: Base Ten	
The Standards of Mathematical Practices	
Make sense of problems and persevere in solving them. **Construct viable arguments and critique the reasoning of others.** **Use appropriate tools strategically.** **Look for and make use of structure.**	**Reason abstractly and quantitatively.** **Model with mathematics.** **Attend to precision.** **Look for and express regularity in repeated reasoning.**
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.1 Numbers and Operations – Base Ten • Place value through one million	**M04.A-T.1.1.2** - Read and write whole numbers in expanded, standard, and word form through 1,000,000. **M04.A-T.1.1.1** - Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one-place represents ten times what it represents in the place to its right.
• Compare and order numbers	**M04.A-T.1.1.3** - Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place. Using the >, =, and < symbols.
• Round numbers	**M04.A-T.1.1.4** - Round multi-digit whole numbers (through 1,000,000) to any place.
• Estimate addition, subtraction, and multiplication	**M04.A-T.2.1.4** - Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than two digits x one digit, excluding powers of ten).
• Place value through one million	**M04.A-T.2.1.1** - Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000).
• Multiply whole numbers (four digits by a one-digit number) (two digits by a two-digit number)	**M04.A-T.2.1.2** - Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers.
• Problem solve with multiplication	**M04.B-0.1.1.2** - Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.

Unit 2: Operations and Algebraic Thinking	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Factors and multiples Prime and composite	**M04.B-O.2.1.1** - Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one-digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.
• Interpret a multiplication equation as a comparison	**M04.B-O.1.1.1** - Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. **Example:** Interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.
• Missing symbols Order of operations	**M04.B-0.1.1.4** - Identify the missing symbol (+, -, x, ÷, =, <, >) that makes a number sentence true (single-digit divisor only).
• Divide whole numbers (four-digit dividend by a one-digit divisor)	**M04.A-T.2.1.3** - Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.
• Problem solve with division	**M04.B-0.1.1.2** - Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.
• Divide by whole numbers (four-digit dividend by a one-digit divisor)	**M04.B-0.1.1.3** - Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity.
• Number and shape patterns	**M04.B-0.3.1.1** - Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
• Function tables	**M04.B-0.3.1.2** - Determine the missing elements in a function table (limit to +, -, or x and to whole numbers or money). **M04.B-0.3.1.3** - Determine the rule for a function given a table (limit to +, -, or x and to whole numbers).

Unit 3: Numbers and Operations: Base Ten – Multidigit Computation	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.1 Numbers and Operations in Base Ten • Fractions, equivalent fractions, order and compare fractions	**M04.A-F.1.1.1** - Recognize and generate equivalent fractions. **M04.A-F.1.1.2** - Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or <, and justify the conclusions.
• Problem solving with fractions and whole numbers (Computation and word problems)	**M04.A-F.2.1.1** - Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be reduced; no improper fractions as the final answer). **M04.A-F.2.1.2** - Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (for example, by using a visual fraction model). **M04.A-F.2.1.3** - Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with subtraction; fractions do not need to be reduced; no improper fractions as the final answers). **M04.A-F.2.1.4** - Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100). **M04.A-F.2.1.5** - Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; final answers do not need to be reduced or written as a mixed number). **M04.A-F.2.1.6** - Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; final answers do not need to be reduced or written as a mixed number). **M04.A-F.2.1.7** - Solve word problems involving multiplication of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).
• Convert fractions and decimals	**M04.A-F.3.1.1** - Add two fractions with respective denominators 10 and 100. **M04.A-F.3.1.2** - Use decimal notation for fractions with denominators 10 or 100. **M04.A-F.3.1.3** - Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions.

Unit 4: Geometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.3 Geometry • Points, lines, line segments, rays, and angles • Perpendicular and parallel lines • Symmetry • Using tools to measure angles	**M04.C-G.1.1.1** - Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two dimensional figures. **M04.C-G.1.1.2** - Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. **M04.D-M.3.1.1** - Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of specified measure. **M04.D-M.3.1.2** - Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. (Angles must be adjacent and non-overlapping.)

Unit 5: Measurement and Data	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.4 Measurement and Data • Length, weight, liquid volume	**M04.D-M.1.1.1** - Know relative sizes of measurement units within one system of units including standard units (in., ft., yd., mi.; oz., lb.; c., pt., qt., gal.) metric units (cm, m, km; g, kg; mL, L), and time (sec., min., hr., day, wk., mo., yr.). **M04.D-M.1.1.2** - Use the four operations to solve word problems involving distances, intervals of time (such as elapsed time), liquid volumes, masses of objects; money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
• Area and perimeter	**M04.D-M.1.1.3** - Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. The formulas will be provided.
• Time	**M04.D-M.1.1.4** - Identify time (analog or digital) as the amount of minutes before or after the hour.
• Line plot, bar graph, pictograph, table, chart	**M04.D-M.2.1.1** - Make a line plot to display a data set of measurements in fractions of a unit (e.g., intervals of 1/2, 1/4 or 1/8). **M04.D-M.2.1.2** - Solve problems involving addition and subtraction of fractions by using information presented in line plots. **M04.D-M.2.1.3** - Translate information from one type of display to another (table, chart, bar graph, or pictograph).