SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Mathematics	**Length of Course:** 30 Cycles
Grade Level(s): 6	**Periods Per Cycle:** 6
Units of Credit: N/A	**Length of Period:** 80 Minutes
Classification: Required	**Total Instructional Time:** 240 Hours

Course Description

This course is designed to review and refine the basic mathematical and computational skills as they apply to whole numbers, decimals, and fractions. 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
- Study Island
- Teacher Demonstrations
- Teacher Observations
- Technology Integration
- Videos/DVDs
- Vocabulary (Cards, Strategies, and Lists)
- Wait Time
- Wait Time Extended

Assessments

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

Materials/Resources

- Anchor Charts
- Calculators
- Graphic Organizers
- Houghton Mifflin 2007
- Internet Resources
- Journals
- Manipulatives
- Resource Books
- Study Island
- Trade Books, Picture Books, Big Books
- Vocabulary (Cards, Strategies, and Lists)

Adopted: 5/18/88
Revised: 8/3/91; 8/18/99; 9/17/03; 8/17/09; 5/20/13; 5/20/2019

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Unit 1: Numbers and Operations	
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 – The Number System • Add and subtract whole numbers and decimals • Multiply whole numbers • Divide by one-digit divisors • Divide by two-digit divisors • Use multiplication properties *Emphasis on the distributive property • **Review:** Order of operations • **Review**: Divisibility, prime and composite numbers, prime factorization • Greatest common factor	**M06.A-N.2.1.1** - Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems. **M06.A-N.2.2.2** - Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. **M06.A-N.2.2.1**- Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.

Unit 1: Numbers and Operations - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.1 Numbers and Operations – The Number System • Least common multiple • **Review**: Fractions in simplest form and equivalent fractions • **Review**: Converting mixed numbers to improper fractions • Multiplying fractions *Incorporate multiplying mixed numbers • Divide fractions *Incorporate dividing mixed numbers -Divide fractions using models • Multiply decimals • Divide decimals by whole numbers • Divide decimals by decimals	**M06.A-N.2.2.1** - Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. **M06.A-N.1.1.1**- Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions. **M06.A-N.2.1.1** - Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.

Unit 2: Measurement and Data	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.4 Measurement and Data – Statistics and Probability • Measures of central tendency and variability • Measures of variability • Clusters, gaps, and outliers • Best measure of center or variability	**M06.D-S.1.1.2** - Determine quantitative measures of center (e.g., median, mean, and mode) and variability (e.g., range, interquartile range, mean absolute deviation). **M06.D-S.1.1.4** - Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
• Frequency tables and histograms • Make a box-and-whisker plot • Box-and-whisker plots (Interpreting)	**M06.D-S.1.1.1** - Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.
• Misleading data	**M06.D-S.1.1.3** - Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.
• Graph connections	**M06.D-S.1.1.2** - Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation). **M06.D-S.1.1.4** - Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Unit 3: Geometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.3 Geometry • Perimeter and area of rectangles and squares • **Review**: What a formula is and how to substitute information into a formula • Area of a parallelogram and trapezoid • Area of a triangle • **Review**: Multiplying fractions (A = ½bh)	**M06.C-G.1.1.1** - Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid). Formulas will be provided.
• Lesson: Areas of irregular or compound polygons	**M06.C-G.1.1.2** - Determine the area of irregular or compound polygons
• Integers • Graph coordinate points in the coordinate plane	**M06.A-N.3.1.3** - Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.
• Lesson: Coordinate geometry	**M06.C-G.1.1.4** - Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals). **M06.A-N.3.2.3** - Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
• Solid figures	**M06.C-G.1.1.3** - Determine the volume of right rectangular prisms with fractional edge lengths. **M06.C-G.1.1.5** - Represent three-dimensional figures using nets made of rectangles and triangles.

Unit 3: Geometry - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.3 Geometry • Volume of rectangular prisms (Connects to measurement in science) • Surface area	**M06.C-G.1.1.3** - Determine the volume of right rectangular prisms with fractional edge lengths. **M06.C-G.1.1.5** - Represent three-dimensional figures using nets made of rectangles and triangles. **M06.C-G.1.1.6** - Determine the surface area of triangular and rectangular prisms (including cubes). Formulas will be provided.

Unit 4: Operations and Algebraic Thinking	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Ratios and equivalent ratios	**M06.A-R.1.1.1** - Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. **M06.A-R.1.1.2** - Find the unit rate a/b associated with a ratio a:b (with b ≠ 0) and use rate language in the context of a ratio relationship. **M06.A-R.1.1.3** - Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.
• Rates	**M06.A-R.1.1.4** - Solve unit rate problems including those involving unit pricing and constant speed. **M06.B-E.3.1.1** - Write an equation to express the relationship between the dependent and independent variables.
• Distance, speed and time	**M06.B-E.3.1.2** - Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.
• Percent as a ratio	**M06.A-R.1.1.1** - Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. **M06.A-R.1.1.2** - Find the unit rate a/b associated with a ratio a:b (with b ≠ 0) and use rate language in the context of a ratio relationship.

Unit 4: Operations and Algebraic Thinking - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Relate fraction, decimal, and percent	**M06.A-R.1.1.1** - Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. **M06.A-R.1.1.2** - Find the unit rate a/b associated with a ratio a: b (with b ≠ 0) and use rate language in the context of a ratio relationship. **M06.A-R.1.1.5** - Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percentage.
• Find a percent of a number	
• Compare and order integers	**M06.A-N.3.1.1** - Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). **M06.A-N.3.1.2** - Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., – (–3) = 3; 0 is its own opposite). **M06.A-N.3.1.3** - Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.
• Add integers	**M06.A-N.3.2.1** - Write, interpret, and explain statements of order for rational numbers in real-world contexts.

Unit 4: Operations and Algebraic Thinking - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Subtract integers	**M06.A-N.2.1.1** - Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems. **M06.B-E.2.1.3** - Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all non-negative rational numbers.
• Multiply integers	
• Divide integers	
• Write an expression	**M06.B-E.1.1.1** - Write and evaluate numerical expressions involving whole-number exponents. **M06.B-E.1.1.2** - Write algebraic expressions from verbal descriptions. **M06.B-E.1.1.3** - Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity). **M06.B-E.1.1.4** - Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems. **M06.B-E.1.1.5** - Apply the properties of operations to generate equivalent expressions.
• Write an equation	**M06.B-E.2.1.1** - Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **M06.B-E.2.1.2** - Write algebraic expressions to represent real-world or mathematical problems. **M06.B-E.2.1.3** - Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all non-negative rational numbers.

Unit 4: Operations and Algebraic Thinking - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Solve addition and subtraction equations • Solve multiplication and division equations	**M06.B-E.2.1.1** - Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **M06.B-E.2.1.2** - Write algebraic expressions to represent real-world or mathematical problems. **M06.B-E.2.1.3** - Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all non-negative rational numbers.
• Functions and graphing functions	**M06.B-E.3.1.1** - Write an equation to express the relationship between the dependent and independent variables. **M06.B-E.3.1.2** - Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.
• Compare and order rational numbers	**M06.B-E.2.1.3** - Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all non-negative rational numbers. **M06.A-N.3.2.1** - Write, interpret, and explain statements of order for rational numbers in real-world contexts. **M06.A-N.3.2.2** -Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.
• Expressions with rational numbers	**M06.B-E.1.1.1** - Write and evaluate numerical expressions involving whole-number exponents. **M06.B-E.1.1.2** - Write algebraic expressions from verbal descriptions. **M06.B-E.1.1.3** - Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity).

Unit 4: Operations and Algebraic Thinking - continued	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
2.2 Algebraic Concepts • Write expressions with rational numbers	**M06.B-E.1.1.1** - Write and evaluate numerical expressions involving whole-number exponents. **M06.B-E.1.1.2** - Write algebraic expressions from verbal descriptions. **M06.B-E.1.1.3** - Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity).
• Inequalities	**M06.B-E.2.1.1** - Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **M06.B-E.2.1.4** - Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.