

Course Description

Middle / High School

Math I

Philosophy Statement: In Mathematics, God has blessed His creation with the ability to count, tell time, and make change. This is not an accident; it is a reflection of God's goodness. As students learn to appreciate God's gift of numbers and use of addition, subtraction, multiplication, and division, they should concurrently develop a heart of praise and thanksgiving in their study of mathematics. In mathematics the student will see the order and truth God created. Just as the Bible says "precept upon precept, line upon line . . ." (Isaiah 28: 10), students will build concept upon concept in mathematics.

Course Objective: The students will explore and experience a variety of different concepts of mathematics including linear and nonlinear functions, slope, inequalities, polynomials, and quadratic functions. They will use manipulatives with geometry and graphing. They will work weekly on problem solving adjacent to the unit themes.

Textbook: Reveal Math Algebra 1 McGraw Hill

Time Allotment: 45 minutes one day per week, 90 minutes two days per week

Biblical Integration: *The Lord calls His people to obedience and guides them. Math provides ways to calculate details for building and construction. (1 Kings 6: 11-13) "Now the word of the Lord came to Solomon, Concerning this house that you are building, if you will walk in my statutes and obey my rules and keep all my commandments and walk in them, then I will establish my word with you, which I spoke to David your father. And I will dwell among the children of Israel and will not forsake my people Israel." (1 Kings 6:1-6) Solomon Builds the Temple "In the four hundred and eightieth year after the people of Israel came out of the land of Egypt, in the fourth year of Solomon's reign over Israel, in the month of Ziv, which is the second month, he began to build the house of the LORD. The house that King Solomon built for the LORD was sixty cubits long, twenty cubits wide, and thirty cubits high. The vestibule in front of the nave of the house was twenty cubits long, equal to the width of the house, and ten cubits deep in front of the house. And he made for the house windows with recessed frames. He also built a structure against the wall of the house, running around the walls of the house, both the nave and the inner sanctuary. And he made side chambers all around. The lowest story was five cubits broad, the middle one was six cubits broad, and the third was seven cubits broad. For around the outside of the house he made offsets on the wall in order that the supporting beams should not be inserted into the walls of the house."*

Course Content:

Weeks 1-6

Module 1: Expressions

- I can use the order of operations to find the value of numerical expressions and translate between verbal expressions and numerical expressions
- I can translate between verbal and algebraic expressions and evaluate algebraic expressions
- I can identify and use the properties of real numbers
- I can solve problems with absolute value
- I can use descriptive modeling to solve problems
- I can determine accuracy and use it in problem solving

Weeks 7-11

Module 2: Equations in One Variable

- I can write and interpret equations
- I can use the properties of equality to find the value of the variable that makes an equation true
- I can use multiple properties of equality find the value of the variable that makes an equation true and to solve equations that have variables as their coefficients
- I can use the distributive property and the properties of equality to solve equations with the variable on both sides of the equals sign
- I can solve equations with absolute values
- I can solve proportions
- I can solve equations for given variables and use dimensional analysis

Weeks 12-15

Module 4: Linear Relationships and Slope **This module is from the Math 8 Curriculum******

- I can use proportional relationships and unit rates to find slopes
- I can find slope from a graph and from a table
- I can find slope using a formula and identify zero and undefined slopes
- I can find slope using similar triangles
- I can find the direct variation from graphs, words and tables.
- I can use graphs, words and tables to find the slope-intercept form of a line
- I can use graphs, words and tables to find the slope-intercept form of a line
- I can graph vertical and horizontal lines from linear equations

Weeks 15-18

Module 3: Relations and Functions

- I can identify relations and scales on a coordinate system
- I can identify and evaluate functions

- I can examine features of graphs and tables to determine continuity and linearity
- I can find intercepts of graphs
- I can solve equations by graphing
- I can find extrema and end behavior of graphs
- I can graph functions and compare

Weeks 20-25

Module 4: Linear and Nonlinear functions

- I can use tables and intercepts to graph linear functions
- I can find and interpret rate of change and slope
- I can write and graph linear equations in slope intercept form
- I can transform linear functions
- I can identify arithmetic sequences and write linear functions to represent them
- I can identify geometric sequences and use explicit and recursive formulas to find missing values
- I can graph piecewise and step functions using equations, tables and verbal descriptions.
- I can graph absolute value functions and identify transformations of them

Weeks 26-28

Module 6: Linear Inequalities

- I can solve and graph inequalities on a number line
- I can write and solve multi step inequalities
- I can use compound inequalities to represent real-world situations
- I can solve absolute value inequalities
- I can model real world situations with graphs of inequalities in two variables

Week 29-32

Module 7: Systems of linear equations and inequalities

- I can solve a system of equations by graphing and use a system of linear equations in two variables to solve linear equations in one variable
- I can write systems of linear equations to model real-world situations and solve systems of linear equations using substitution
- I can solve systems of equations by using elimination with addition and subtraction
- I can solve systems of equations by using elimination with multiplication
- I can solve systems of inequalities by graphing

Week 33

Module 8: Exponents and Roots

- I can apply the multiplication properties of exponents to simplify expressions

- I can apply the division properties of exponents to simplify expressions
- I can apply the properties of zero and negative exponents to simplify expressions
- I can apply the properties of rational exponents to simplify expressions
- I can simplify radical expressions
- I can solve exponential equations

Week 34-36

Module 10: Polynomials

- I can add and subtract polynomials by combining like terms
- I can multiply polynomials by monomials
- I can multiply polynomials by polynomials
- I can multiply binomials by applying special patterns
- I can factor polynomials by using the distributive property
- I can factor trinomials into two binomials
- I can factor polynomials by applying special patterns

****Week 35: Iowa Testing****

Week 37-38

Module 11: Quadratic Functions

- I can analyze and graph quadratic functions
- I can identify the effects of transformations of the graphs of quadratic functions
- I can solve quadratic equations by graphing
- I can solve quadratic equations by factoring
- I can solve quadratic equations by completing the square
- I can solve quadratic equations by using the quadratic formula
- I can solve systems of linear and quadratic equations graphically and algebraically

Week 39: Year End Testing

Resources:

- Delta Math website
- Teacher-made materials
- Student calculators (Ti83 for 8th -10th Grades)
- Math manipulatives
- Pre-assessments

Areas of Evaluation:

- Class assignments
- Homework
- Quizzes, Module tests
- Teacher observations (whole group, independent, small group practice)
- Class projects