

# Phoenix Christian High School

## MTH0090 Pre Algebra

### Course Scope & Sequence (2010)

#### **COURSE DESCRIPTION**

The goal of the mathematics program is to provide students with a well-rounded base of mathematical knowledge that they will be able to apply in a variety of contexts. We also underscore the hand of God in creation through mathematics. The Pre Algebra objective is to prepare students for Algebra 1 by learning to solve simple equations that involve whole numbers, fractions and decimals.

#### **REQUIRED TEXTS AND \*KEY SUPPLEMENTAL MATERIALS**

*Pre-Algebra Tools for a Changing World*, Prentice Hall

#### **COURSE SCOPE AND SEQUENCE**

##### **First Quarter**

Algebra Expressions and Integers 3 Weeks

*Key Concepts:* Variables and Expressions, The Order of Operations, Evaluating Expressions, Integers and Absolute Value, Adding and Subtracting Integers, Inductive Reasoning, Look for a Pattern as a Problem Solving Strategy, Multiplying and Dividing Integers, The Coordinate Plane.

*Assessments:* Two Tests, Quizzes, Homework Assignments.

Solving One Step Equations and Inequalities 3 Weeks

*Key Concepts:* Properties of Numbers, The Distributive Property, Simplifying Variable Expressions, Variables and Expressions, Solving Equations by Adding and Subtracting, Solving Equations by Multiplying and Dividing, Inequalities and Their Graphs, Solving One-Step Inequalities by Adding or Subtracting, Solving One-Step Inequalities by Multiplying or Dividing.

*Assessments:* Two Tests, Quizzes, Homework Assignments.

Decimals and Equations 3 Weeks

*Key Concepts:* Rounding and Estimating, Estimating Decimals Products and Quotients, Mean-Median-and Mode, Using Formulas, Solving Equations by Adding or Subtracting Decimals, Solving Equations by Multiplying or Dividing Decimals, Using the Metric System, Simplify a Problem as a Problem Solving Strategy

*Assessments:* Two Tests, Quizzes, Homework Assignments.

*Biblical Integration:* The infinite nature of God will be addressed in this unit on operations with real numbers. Just as our numbering system extends without end so does the universe that God created. Students will discover that some entities, such as God's love, are immeasurable and just can't be quantified within the parameters of mathematics

## Second Quarter

### Factors, Fractions, and Exponents 4 Weeks

*Key Concepts:* Divisibility and Factors, Exponents, Prime Factorization and Greatest Common Factor, Simplifying Fractions, Rational Numbers, Exponents and Multiplication, Exponents and Division, Scientific Notation  
*Assessments:* Two Tests, Quizzes, Homework Assignments.

### Operations with Fractions 4 Weeks

*Key Concepts:* Comparing and Ordering Fractions, Fractions and Decimals, Estimating with Fractions and Mixed Numbers, Adding and Subtracting Fractions, Multiplying and Dividing Fractions, Customary Units of Measurement, Greatest Possible Error, Working Backward to Solve a Problem, Solving Equations by Adding or Subtracting Fractions, Solving Equations by Multiplying Fractions, Powers of Products and Quotients.  
*Assessments:* Two Tests, Quizzes, Homework Assignments.

### Final Exam Preparation 1 Week

*Key Concepts:* Unit 1-5 Review  
*Assessments:* Final Exam

*Biblical Integration:* The constant, unchanging character of God will be addressed in this unit. Students will extrapolate the constant nature of math to the constant nature of God. Students will further recognize that the unchanging nature of the universe is what makes mathematics possible.

## Third Quarter

### Ratios, Proportions, and Percents 4 Weeks

*Key Concepts:* Ratios and Unit Rates, Converting Between Measurement Systems, Proportions, Similar Figures and Scale Drawings, Dilations, Probability, Fractions – Decimals - and Percents, Proportions and Percents, Percents and Equations, Percent of Change, Markup and Discount  
*Assessments:* Two Tests, Quizzes, Homework Assignments.

### Solving Equations and Inequalities 5 Weeks

*Key Concepts:* Solving Two-Step Equations, Solving Multi-Step Equations, Multi-Step Equations with Fractions and Decimals, Write an Equation to Help Solve a Problem, Solving Equations with Variables on Both Sides, Solving Two-Step Inequalities, Compound Inequalities, Transforming Formulas, Simple and Compound Interest  
*Assessments:* Two Tests, Quizzes, Homework Assignments.

*Biblical Integration:* The unit on similarity will provide an opportunity to discuss how we are created in God's image but yet we are not equal to God. Polygons can have certain congruent attributes but yet be distinctively different from each other. When solving equations, students will note that the variable changes in

value from one problem to the next. Students will recognize that there is no variability with God.

#### **Fourth Quarter**

##### Linear Functions and Graphing 2 Weeks

*Key Concepts:* Relating Graphs to Events, Relations and Functions, Equations with Two Variables, Direct Variation, Slope and y-intercept, Graphing Lines, Writing Rules for Linear Functions, Scatter Plots, Solving Problems by Graphing, Solving Systems of Equations, Graphing Linear Inequalities

*Assessments:* Two Tests, Quizzes, Homework Assignments.

##### Spatial Thinking 2 Weeks

*Key Concepts:* Introduction to Geometry, Points, Lines and Planes, Angle Relationships and Parallel Lines, Classifying Polygons, Drawing a Diagram to Solve a Problem, Circles

*Assessments:* Two Tests, Quizzes, Homework Assignments.

##### Area and Volume 2 Weeks

*Key Concepts:* Area: Parallelograms, Area: Triangles and Trapezoids, Area: Circles, Space Figures, Surface Area: Prisms and Cylinders, Surface Area: Pyramids – Cones - and Spheres, Volume: Prisms and Cylinders, Volume: Pyramids, Cones, and Spheres

*Assessments:* Two Tests, Quizzes, Homework Assignments.

##### Right Triangles in Algebra 2 Weeks

*Key Concepts:* Square Roots and Irrational Numbers, The Pythagorean Theorem, Distance and Midpoint Formulas, Special Right Triangles

*Assessments:* Two Tests, Quizzes, Homework Assignments.

##### Final Exam Review 1 Week

*Key Concepts:* Review Units 6-11

*Assessments:* Final Exam

*Biblical Integration:* Galileo stated that “mathematics is the alphabet with which God wrote the universe.” Students will learn in this unit on geometry that mankind uses math to quantify God’s creation. By definition, geometry means to measure the earth. When measuring finite objects, such as prisms and cylinders, students will be challenged to recognize entities that can only be comparatively measured in light years, atomic mass units, etc.