MATH FOUNDATIONS SCOPE & SEQUENCE

SEMESTER 1 CONTENT:

Unit 1: Whole Numbers (2 weeks)

Introduction to Whole Numbers
Add and Subtract Whole Numbers
Multiply Whole Numbers
Divide Whole Numbers
Order of Operations

Unit 2: Factors and Exponents (2 weeks)

Multiples and Factors
Powers and Exponents
Perfect Squares & Square Roots
Prime Factorization
Greatest Common Factor
Least Common Multiple

Unit 3: Fractions (3 weeks)

Write and Simplify Fractions
Equivalent Fractions (Mixed Numbers/Improper Fractions)
Add and Subtract Fractions with Common Denominators
Add and Subtract Fractions with Different Denominators
Multiply Fractions
Divide Fractions

Unit 4: Decimals and Scientific Notation (3 weeks)

Decimals and Place Value
Round and Compare Decimals
Add and Subtract Decimals
Multiply Decimals
Divide Decimals by Whole Numbers
Divide Decimal Numbers by Decimal Numbers
Convert Fractions and Decimals
Scientific Notation (positive exponents only)

Unit 5: Integers and Absolute Value (3 weeks)

Introduction to Integers
Compare and Order Integers
Absolute Value
Add Integers
Subtract Integers
Multiply and Divide Integers
Order of Operations with Integers
The Coordinate Plane
Graph Ordered Pairs with Integral Coordinates

Unit 6: Algebraic Expressions (3 weeks)

Structure of Algebraic Expressions
Evaluate Expressions
Write Expressions
Equivalent Expressions
Simplify Expressions (Combine/Distribute)
Factor Expressions

SEMESTER 2 CONTENT:

Unit 7: Equations and Inequalities (4 weeks)

Write Equations in One Variable
Properties of Equality
Solve One-Step Equations with Addition or Subtraction (Whole Numbers)
Solve One-Step Equations with Multiplication or Division (Whole Numbers)
Solve One-Step Equations with Rational Numbers and Integers
Application of Equations
Write and Graph Inequalities
Solve One-Step Inequalities
Solutions of Inequalities
Application of Inequalities

Unit 8: Ratios, Rates, and Proportions (2 weeks)

Understand Ratios
Rates and Unit Rates
Proportional vs. Nonproportional Relationships
Write and Solve Proportions
Application of Proportions

Unit 9: Percent and Money (2 weeks)

Understand Percent
Compare and Order Fractions, Decimals, and Percent
Percent Equation
General Application of Percent (e.g. sales tax, discount, etc.)

Unit 10: Unit Conversions (1 week)

Convert Units within the US Customary System
Convert Units within the Metric System
Convert between US and Metric Systems

Unit 11: Introduction to Geometry (2 weeks)

Angle and Line Properties
Classify Triangles
Apply Triangle Sum Theory
Classify Quadrilaterals
Shape Properties (e.g. congruence, symmetry)
Transformations of Shapes

Unit 12: Measurement (3 weeks)

Perimeter of Triangles and Quadrilaterals
Area of Triangles and Quadrilaterals
Area and Circumference of Circles
Area and Perimeter of Composite Figures
Three-Dimensional Figures
Using Decomposition Nets and Formulas to find Surface Area
Volumes of Prisms and Cylinders

Unit 13: Data and Statistics (2 weeks)

Measures of Center (Mean, Median, Mode)
Range, Quartiles, Interquartile Range
Mean Absolute Deviation
Stem-and-Leaf Plots
Histograms
Box-and-Whisker Plots

Unit 14: Probability (2 weeks)

Outcomes and Events
Theoretical vs. Experimental Probability
Fundamental Counting Principal
Compound Probability of Independent Events

PRE-ALGEBRA SCOPE & SEQUENCE

SEMESTER 1 CONTENT:

Unit 1: The Real Numbers (6 weeks)

Integers and Absolute Value
Integer Operations
Simplifying Fractions, Mixed vs. Improper Forms
Fraction Operations
Fractions, Decimals, and Percent
Decimal Operations
Exponents (Including Zero and Negative)
Perfect Squares and Cubes
Square Roots and Cube Roots
Comparing and Ordering Number Forms
Order of Operations
Scientific Notation (Positive and Negative Exponents)
Classifying Real Numbers
Properties of Real Numbers

Unit 2: Algebraic Expressions (4 weeks)

Algebraic Language
Translating Expressions
Combining Like Terms
Distributive Property
Simplifying Expressions (Distribute and Combine)
Factoring Expressions
Simplify Vs. Factor
Multiplying Monomials
Dividing Monomials
Powers of Monomials
Adding and Subtracting Polynomials

Unit 3: Equations and Inequalities (4 weeks)

Review One-Step Equations
Solve Two-Step Equations
Radical and Rational Equations
Solve Multi-Step Equations
Solve Equations with Variables on Both Sides
Special Cases: No Solution/Infinite Solutions
Solve by Clearing Fractions
Applications
Writing and Graphing Inequalities
Solve Two-Step Inequalities
Solve Multi-Step Inequalities

Unit 4: Ratios and Proportions (2 weeks)

Ratios and Rates
Proportional Vs. Non-Proportional Relationships
Write and Solve Proportions
Scale Drawing and Models
Similar Figures
Indirect Measurement

SEMESTER 2 CONTENT:

Unit 5: Percent (2 weeks)

Percent and Proportions
Percent Equation
Percent Application (discount, mark-up, tax, tip)
Percent of Change
Simple Interest

Unit 6: Linear Functions (3 weeks)

Coordinate Plane
Relations Vs. Functions
Domain and Range
Graphing Linear Functions by Table
Finding Slope (using graph and formula) and Intercepts
Slope-Intercept Form
Write Linear Equations
Standard Form
Linear Vs. Nonlinear Functions
Proportional Relationships (Direct Variation)

Unit 7: System of Equations (2 weeks)

Systems of Equations: Solve by Graphing
Systems of Equations: Solve by Substitution
Systems of Equations: Solve by Elimination
Special Cases: No Solution/Infinite Solution
Systems of Equations: Applications
Graph Linear Inequalities

Unit 8: Geometry (3 weeks)

Angles and Angle Relationships
Parallel Lines Cut by a Transversal
Classifying Triangles
Triangle Sum Theory
Pythagorean Theorem
Quadrilaterals
Congruent Polygons
Shape Transformations

Unit 9: Measurement (Area and Volume) (4 weeks)

Perimeter and Area of Plane Figures
Area and Circumference of Circles
Perimeter and Area of Composite Figures
Slicing 3D Figures
Surface Area of Prisms and Cylinders
Surface Area of Pyramids and Cones
Volume of Prisms and Cylinders
Volumes of Pyramids and Cones
Volume and Surface Area of Spheres
Perimeter and Area of Similar Figures
Volume and Surface Area of Similar Solids
Effects of Changing Dimensions

Unit 10: Probability and Statistics (4 weeks)

Counting Principle (Permutations and Combinations)
Theoretical vs. Experimental Probability
Compound Probability (Independent and Dependent Events)
Measures of Central Tendency
Mean Absolute Deviation
Box-and-Whisker Plots, Stem-and-Leaf Plots, Histograms
Collecting and Interpreting Data
Scatter Plots
Line of Best Fit

ALGEBRA 1 SCOPE & SEQUENCE

SEMESTER 1 CONTENT:

Unit 1: Algebra Foundations (4 weeks)
The Language of Algebra
Real Number System
Properties of Real Numbers
Order of Operations & Absolute Value
Evaluate and Simplify Expressions (Combine/Distribute)
Translating Expressions/Equations/Inequalities
Solving One and Two-Step Equations
Solving and Graphing Two-Step Inequalities

Unit 2: Multi-Step Equations & Inequalities (2 weeks)
Multi-Step Equations
Equations with Variables on Both Sides
Infinite & No Solution Equations
Literal Equations (Multi-Variable)
Multi-Step Inequalities
Compound Inequalities

Unit 3: Relations and Functions (4 weeks)
Relations, Domain, Range
Functions Vs. Relations
Continuous Relations
Evaluating and Graphing Functions
Application of Functions
Function Tables
Function Notation
Finding the Zeros of Functions
Analyzing Graphs

Unit 4: Linear Equations (3 weeks)
Find Rate of Change and Slope of a Line
Forms of Linear Equations
Graphing Linear Equations
Vertical and Horizontal Lines
Writing Linear Equations
Application of Linear Functions
Scatter Plots
Line of Best Fit

Unit 5: System of Equations and Inequalities (3 weeks)
Solve Systems of Equations by Graphing
Solve Systems of Equations by Substitution
Solve Systems of Equations by Elimination
Applications with Systems of Equations
Linear Inequalities
Systems of Linear Inequalities
Applications with Systems of Linear Inequalities

SEMESTER 2 CONTENT:

Unit 6: Exponents and Exponential Functions (3 weeks)
Adding and Subtracting Monomials
Multiplying Monomials (Product & Power Rules)
Dividing Monomials (Quotient Rule)
Negative Exponents and Exponent Rules
Scientific Notation
Graphing Exponential Functions
Exponential Growth & Decay

Unit 7: Polynomials and Factoring (3 weeks)
Intro to Polynomials (Classify, Add, Subtract)
Multiplying Polynomials
Dividing Polynomials by a Monomial
Factoring Polynomials
Dividing Polynomials by a Binomial

Unit 8: Quadratic Equations (4 weeks)
Intro to Quadratic Equations
Graphing Quadratic Functions
Vertex Form
Transformations
Quadratic Roots
Solve Quadratic Equations Using Factoring
Solve Quadratic Equations Using Square Roots
Solve Quadratic Equations Using Completing the Square
Solve Quadratic Equations Using the Quadratic Formula
Method Comparison
Area and Consecutive Integer Problems
Projectile Motion

Unit 9: Radical Equations and Functions (2 weeks)
Identify Linear, Quadratic, Exponential Functions
Writing Linear, Quadratic, Exponential Functions
Linear, Quadratic, Exponential Application
Linear, Quadratic, Exponential Regression
Non-Linear Systems

Unit 10: Radical Equations and Functions (2 weeks)
Simplify Radical Expressions
Solve Radical Equations
Model Mathematical Functions
Graph Functions Involving Square Roots and Cube Roots
Understand and Use Complex Numbers

Unit 11: Rational Equations and Functions (2 weeks)
Simplify Rational Expressions
Solve Rational Equations
Solve Rational Inequalities
Use Rational Functions to Solve Mathematical Models

Unit 12: Probability and Statistics (2 weeks)

Central Measures of Tendency
Statistical Graphs and Tables
Probability/Odds