**Algebra Course Syllabus**

*Textbook: Glencoe Algebra 1: Integration, Applications, and Connections*

Course Description: The purpose of this course is to satisfy the Algebra I requirement of the Common Core Mathematics Standards recently adopted by the State of Washington. This course fits into an overall program of mathematics studies with a rigorous academic core by extending what students have learned in the introductory-­‐level mathematics courses as well as introducing more advanced topics.

Chapter 1: Exploring Expressions, Equations, and Functions

Variables and Expressions, Patterns and Sequences, Order of Operations, Stem and Leaf Plots, Open Sentences, Identity and Equality Properties, The Distributive Property, Commutative and Associative Properties, and A Preview of Graphs and Functions.

Chapter 2: Exploring Rational Numbers

Integers and the Number Line, Line Plots, Adding and Subtracting Rational Numbers, Multiplying Rational Numbers, Dividing Rational Numbers, Square Roots and Real Numbers, and Problem Solving: Write Equations and Formulas.

Chapter 3: Solving Linear Equations

Solving Equations by Using Addition and Subtraction, Solving Equations by Using Multiplication and Division, Solving Multi-Step Equations, Geometry Angles and Triangles, Solving Equations with the Variable on Both Sides, Solving Equations and Formulas, and Statistics Measures of Central Tendency.

Chapter 4: Using Proportional Reasoning

Ratios and Proportions, Similar Triangles, Percent’s, Percent of Change, Probability and Odds, and Weighted Averages

Chapter 5: Graphing Relations and Functions

The Coordinate Plane, Relations, Equations as Relations, Graphing Linear Equations, Functions, Writing Equations from Patterns, and Measures of Variation.

Chapter 6: Analyzing Linear Equations

Slope, Writing Linear Equations in Point Slope and Standard Forms, Writing Linear Equations in Slope Intercept From, Graphing Linear Equations, Parallel and Perpendicular Lines, Midpoint of a Line Segment.

Chapter 7: Solving Linear Inequalities

Solving Inequalities by Using Addition and Subtraction, Solving Inequalities by Using Multiplication and Division, Solving Multi Step Inequalities, Solving Compound Inequalities, Compound Events, Solving Open Sentences Involving Absolute Value, Box and Whisker Plots, and Graphing Inequalities in Two Variables.

Chapter 8: Solving Systems of Linear Equations and Inequalities

Graphing Systems of Equations, Substitution, Elimination Using Addition and Subtraction, Elimination Using Multiplication, and Graphing Systems of Inequalities.

Chapter 9: Exploring Polynomials

Multiplying and Dividing by Monomials, Scientific Notation, Polynomials, Adding and Subtracting Polynomials, Multiplying a Polynomial by a Monomial, Multiplying Polynomials, and Special Products.

Chapter 10: Using Factoring

Factors and Greatest Common Factor, Factoring Using the Distributive Property, Factoring Trinomials, Factoring Differences of Squares, Perfect Squares and Factoring, and Solving Equations by Factoring.

Chapter 11: Exploring Quadratic and Exponential Functions

Graphing Quadratic Functions, Solving Quadratic Equations by Graphing, Solving Quadratic Equations by Using the Quadratic Formula, Exponential Functions, and Growth and Decay.

Chapter 12: Exploring Rational Expressions and Equations

Simplifying Rational Expressions, Multiplying Rational Expressions, Dividing Rational Expressions, Dividing Polynomials, Rational Expressions with Like Denominators, Rational Expressions with Unlike Denominators, Mixed Expressions and Complex Fractions, and Solving Rational Equations.

Chapter 13: Exploring Radical Expressions and Equations

The Pythagorean Theorem, Simplifying Radical Expressions, Operations with Radical Expressions, Radical Equations, The Distance Formula, and Solving Quadratic Equations by Completing the Square.

*Technology: Graphing Calculator, Smartboard*

**Geometry Course Syllabus**

*Textbook: Glencoe Geometry: Integration, Applications, and Connections*

Course Description: The content emphasis of the class is the geometry content strand of the Common Core State Standards

Chapter 1: Discovering Points, Lines, Planes and Angles

The Coordinate Plane, Points Lines and Planes, Using Formulas, Measuring Segments, Midpoints and Segment Congruence, Exploring Angles, and Angle Relationships.

Chapter 2: Connecting Reasoning and Proof

Inductive Reasoning and Conjecturing, If Then Statements and Postulates, Deductive Reasoning, Using Proof in Algebra, Verifying Segment Relationships, and Verifying Angle Relationships.

Chapter 3: Using Perpendicular and Parallel Lines

Parallel Lines and Transversals, Angles and parallel Lines, Slopes of Lines, Proving Lines Parallel, Parallels and Distance, and Spherical Geometry.

Chapter 4: Identifying Congruent Triangles

Classifying Triangles, Measuring Angles in Triangles, Exploring Congruent Triangles, Proving Triangles Congruent, More Congruent Triangles, and Analyzing Isosceles Triangles.

Chapter 5: Applying Congruent Triangles

Special Segments in Triangles, Right Triangles, Indirect Proof and Inequalities, Inequalities for Sides and Angles of a Triangle, The Triangle Inequality, and Inequalities Involving Two Triangles.

Chapter 6: Exploring Quadrilaterals

Parallelograms, Tests for Parallelograms, Rectangles, Squares and Rhombi, and Trapezoids.

Chapter 7: Connecting Proportion and Similarity

Using Proportions, Exploring Similar Polygons, Identifying Similar Triangles, Parallel Lines and Proportional Parts, Parts of Similar Triangles, and Fractals and Self Similarity.

Chapter 8: Applying Right Triangles and Trigonometry

Geometric Mean and the Pythagorean Theorem, Special Right Triangles, Rations in Right Triangles, Angles of Elevation and Depression, Sing the Law of Sines, and Using the Law of Cosines.

Chapter 9: Analyzing Circles

Exploring Circles, Angles and Arcs, Arcs and Chords, Inscribed Angles, Tangents, Secants Tangents and Angle Measure, Special Segments in a Circle, and Equations of Circles.

Chapter 10: Exploring Polygons and Area

Polygons, Tessellations, Area of Parallelograms, Area of Regular Polygons and Circles, Geometric Probability, and Polygons as Networks.

Chapter 11: Investigating Surface Area and Volume

Exploring 3-D Figures, Nets and Surface Area, Surface Area of Prisms and Cylinders, Surface Area of Pyramids and Cones, Volume of Prisms and Cylinders, Volume of Pyramids and Cones, Surface Area and Volume of Spheres, and Congruent and Similar Solids.

Chapter 12: Continuing Coordinate Geometry

Graphing Linear Equations, Writing Equations of Lines, Scatter Plots and Slopes, Coordinate Proof, Vectors, and Coordinates in Space.

Chapter 13: Investigating Loci and Coordinate Transformations

What is Locus?, Locus and Systems of Linear Equations, Intersection of Loci, Mappings, Reflections, Translations, Rotations, and Dilations.

Projects: Farmer Problem, Creating a Polyhedron, and Tangrams.

*Technology: Graphing Calculator, Smartboard*

**Algebra II Course Syllabus**

*Textbook: Glencoe Algebra II: Integration, Applications, and Connections*

Course Description: The purpose of this course is to satisfy the Algebra II requirement of the Common Core Mathematics Standards recently adopted by the State of Washington. This upper level course fits into an overall program of mathematics studies with a rigorous academic core by extending what students have learned in the introductory--‐level mathematics courses as well as introducing more advanced topics.

Chapter 1: Analyzing Equations and Inequalities

Expressions and Formulas, Properties of Real Numbers, Statistics Graphs and Measures of Central Tendency, Solving Equations, Solving Absolute Value Equations, Solving Inequalities, and Solving Absolute Value Inequalities.

Chapter 2: Graphing Linear Relations and Functions

Relations and Functions, Linear Equations, Slope, Writing Linear Equations, Special Functions, and Linear Inequalities.

Chapter 3: Solving Systems of Linear Equations and Inequalities

Systems of Equations by Graphing, Solving Systems of Equations Algebraically, Cramer’s Rule, Graphing Systems of Inequalities, Linear Programming, Applications of Linear Programming, and Solving Systems of Equations in Three Variables.

Chapter 4: Using Matrices

An Intro to Matrices, Adding and Subtracting Matrices, Multiplying Matrices, Matrices and Determinants, Identity and Inverse Matrices, Using Matrices to Solve Systems of Equations, Using Augmented Matrices, and Box and Whisker Plots.

Chapter 5: Exploring Polynomials and Radical Expressions

Monomials, Polynomials, Diving Polynomials, Factoring, Roots of Real Numbers, Radial Expressions, Rational Exponents, Solving Radical Equations and Inequalities, Complex Numbers, and Simplifying Expressions Containing Complex Numbers.

Chapter 6: Exploring Quadratic Functions and Inequalities

Solving Quadratic Equations by Graphing, Solving Quadratic Equations by Factoring, Competing the Square, The Quadratic formula and the Discriminant, Sum and Product of Roots, Analyzing Graphs of Quadratic Functions, and Graphing and Solving Quadratic Inequalities.

Chapter 7: Analyzing Conic Sections

The Distance and Midpoint Formulas, Parabolas, Circles, Ellipses, Hyperbolas, Conic Sections, and Solving Quadratic Systems.

Chapter 8: Exploring Polynomial Functions

Polynomial Functions, The Remainder and Factor Theorems, Graphing Polynomial Functions and Approximating Zeros, Roots and Zeros, Rational Zero Theorem, Using Quadratic Techniques to Solve Polynomial Equations, Composition of Functions, and Inverse Functions and Relations.

Chapter 9: Exploring Rational Expressions

Graphing Rational Functions, Multiplying and Dividing Rational Expressions, Adding and Subtracting Rational Expressions, and Solving Rational Equations and Inequalities.

Chapter 10: Exploring Exponential and Logarithmic Functions

Real Exponents and Exponential Functions, Logarithms and Logarithmic Functions, Properties of Logarithms, Common Logarithms, Natural Logarithms, Solving Exponential Equations, and Growth and Decay.

Chapter 13: Exploring Trigonometric Functions

An Introduction to Trigonometry, Angles and their Measure, Trigonometric Functions of General Angles, Law of Sines, Law of Cosines, Circular Functions, and Inverse Trig Functions.

SAT/ACT Prep

*Technology: Graphing Calculator, Smartboard*

**Pre-Calculus Course Syllabus**

*Textbook: Glencoe Advanced Mathematical Concepts: Pre-Calculus with Applications*

Chapter 1: Linear Relations and Functions

Relations and Functions, Composition of Functions, Graphing Linear Equations, Analyzing Families of Linear Graphs, Writing Linear Equations, Writing Equations of Parallel and Perpendicular Lines, Real-World with Linear Functions, and Graphing Linear Inequalities.

Chapter 2: Systems of Linear Equations and Inequalities

Solving Systems of Equations in Two Variables, Solving Systems of Equations in Three Variables, Real-World Data with Matrices, Motion with Matrices, Determinants and Multiplicative Inverses of Matrices, Solving Systems of Linear Inequalities, and Linear Programming.

Chapter 3: The Nature of Graphs

Symmetry and Coordinate Graphs, Families of Graphs, Graphs of Nonlinear Inequalities, Invers Functions and Relation, Continuity and End Behavior, Critical Points and Extrema, and Graphs of Rational Functions.

Chapter 4: Polynomial and Rational Functions

Polynomial Functions, Quadratic Equations, The Remainder and Factor Theorems, The Rational Root Theorem, Locating Zeroes of a Polynomial Function, Rational Equations and Partial Fractions, Radical Equations and Inequalities, and Real World Data with Polynomial Functions.

Chapter 5: The Trigonometric Functions

Angles and Degree Measure, Trigonometric Ratios in Right Triangles, Trigonometric Functions on the Unit Circle, Applying Trigonometric Functions, Solving Right Triangles, The Law of Sines, The Ambiguous Case for the Law of Sines, The Law of Cosines, and Solving Triangles.

Chapter 6: Graphs of Trigonometric Functions

Angles and Radian Measure, Linear and Angular Velocity, Graphing Sine and Cosine Functions, Amplitude and Period of Sine and Cosine Functions, Translations of Sine and Cosine Functions, Real World Data with Sinusoidal Functions, Graphing Other Trigonometric Functions, and Trigonometric Inverses and Their Graphs.

Chapter 7: Trigonometric Identities and Equations

Basic Trigonometric Identities, Verifying Trigonometric Identities, Sum and Difference Identities, Reduction Identities, Double Angle and Half Angle Identities, Solving Trigonometric Equations, Normal Form of a Linear Equation, and Distance from a Point to a Line.

Chapter 8: Vectors and Parametric Equations

Geometric Vectors, Algebraic Vectors, Vectors in Three Dimensional Space, Perpendicular Vectors, Finding Cross Products, Applications with Vectors, Vectors and Parametric Equations, Motion Using Parametric Equations, and Transformational Matrices in Three Dimensional Space.

Chapter 9: Polar Coordinates and Complex Numbers

Polar Coordinates, Graphs of Polar Equations, Polar and Rectangular Coordinates, Polar Form of a Linear Equation, Simplifying Complex Numbers, The Complex Plane and Polar Form of Complex Numbers, Geometry in the Complex Plane, Products and Quotients of Complex Numbers in Polar Form, and Powers and Roots of Complex Numbers.

SAT/ACT Prep

*Technology: Graphing Calculator, Smartboard*

**Calculus Course Syllabus**

*Textbook: Glencoe Advanced Mathematical Concepts: Pre-Calculus with Applications*

Chapter 9: Polar Coordinates and Complex Numbers

Polar Coordinates, Graphs of Polar Equations, Polar and Rectangular Coordinates, Polar Form of a Linear Equation, Simplifying Complex Numbers, The Complex Plane and Polar Form of Complex Numbers, Geometry in the Complex Plane, Products and Quotients of Complex Numbers in Polar Form, and Powers and Roots of Complex Numbers.

Chapter 10: Conics

Introduction to Analytic Geometry, Circles, Ellipses, Hyperbolas, Parabolas, Rectangular and Parametric Forms of Conic Sections, Transformation of Conics, and Systems of Second-Degree Equations and Inequalities.

Chapter 11: Exponential and Logarithmic Functions

Real Exponents, Exponential Functions, The Number *e,* Logarithmic Functions, Common Logarithms, Natural Logarithms, Natural Logarithms and Area, and Real-World Data with Exponential and Logarithmic Functions.

Chapter 12: Sequences and Series

Arithmetic Sequences and Series, Geometric Sequences and Series, Infinite Sequences and Series, Continued Fractions, Convergent and Divergent Series, Sigma Notation and the nth Term, The Binomial Theorem, Special Sequences and Series, and Sequences and Iterations.

Chapter 13: Combinatorics and Probability

Permutations and Combinations, Permutations wit Repetitions and Circular Permutations, Probability and Odds, Probabilities of Compound Events, Conditional Probabilities, and Binomial Theorem and Probability.

Chapter 14: Statistics and Data Analysis

The Frequency Distribution, Measures of Central Tendency, Measures of Variability, The Normal Distribution, The Standard Normal Curve, and Sample Sets of Data.

Chapter 15: Introductions to Calculus

Limits, The Slope of a Curve, Derivatives and Antiderivatives, Area under a curve, and the fundamental theorem of Calculus.

SAT/ACT Prep

College Math Placement Test Practice

*Technology: Graphing Calculator, Smartboard*

**Math Lab Course Syllabus**

This class is for students who are not Algebra II, Pre-Calculus, and Calculus ready as a Junior or Senior. Also, there is remediation of Algebraic and Geometric concepts because most students who take this class have not passed the state test in Mathematics.

*Textbook: Glencoe Algebra I and II, Geometry: Integrations, Applications, and Connections.*

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College Math Placement Test Practice

Mathematics: Instructional support modules for extended learning

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