Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

Grade 1 Curriculum
Instructional Plan for Algebra
Submitted by Cathy S. Tinkey
July 2019

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

	Content Type	Objectives	Standards	Assessment	Materials
AUGUST & SEPTEMBER	• 24 • Chapter 1--Real Numbers and the Language of Algebra • Chapter 2--Linear Equations in One Variable	• SWBAT o translate word phrases into Algebra o simplify Algebraic expressions o write formulas o apply addition and multiplication properties of equality o solve linear equations in one variable o clear fractions o clear decimals o solve absolute value equations o solve word problems o solve mixture problems	• M.8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and use patterns to rewrite a decimal expansion that repeats into a rational number. • M.8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi\pi 2$). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations • M.8.EE.C.7 Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into equivalent forms. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• Lessons 1.1-2.9 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills
OCTOBER	• 20 • Chapter 3--Linear Equations in Two Variables • Chapter 4--Linear Inequalities	• SWBAT o graph linear equations in two variables o identify slope using x- and y-intercepts, slope-intercept form and point-slope form o graph and write equations for parallel and perpendicular lines o apply addition and multiplication properties of inequality to solve inequalities o write inequalities for word problems o graph linear inequalities in two variables	• M.8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. • M.8.EE.C.7 Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into equivalent forms. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	• Lessons 3.1-4.8 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills

	Content Type	Objectives	Standards	Assessment	Materials

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

NOVEMBER	• 19 • Chapter 5--Systems of Equations • Chapter 6--Polynomial Arithmetic	• SWBAT o solve systems by graphing, substitution, and elimination o apply systems of equations o add polynomials o subtract polynomials o multiply polynomials ▪ multiply monomials ▪ multiply binomials ▪ square binomials ▪ multiply conjugates	• M.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables by graphing and analyzing tables. Solve simple cases represented in algebraic symbols by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 cannot simultaneously be 5 and 6. c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair	• Lessons 5.1-6.7 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills
DECEMBER	• 15 • Chapter 6--Polynomial Arithmetic	• SWBAT o multiply polynomials horizontally and vertically o divide polynomials ▪ divide monomials ▪ divide a poly by a monomial ▪ divide a poly by a binomial o solve equations written in scientific notation o simplify and solve polynomial equations o write equations for polygons	• M.8.EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 x 108 and the population of the world as 7 x 109, and determine that the world population is more than 20 times larger. • M.8.EE.A.4 Perform operations with numbers expressed in scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology and comparing magnitude of numbers.	• Lessons 6.8-end of chapter 6 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

	Content Type	Objectives	Standards	Assessment	Materials
JANUARY	• 21 • Chapter 7--Polynomial Factoring	• SWBAT o factor polynomials by factoring a common factor from the poly, factor Perfect Square Trinomials, and the difference between two squares o factor polynomials with leading coefficients of 1 and other than 1 o factor trinomials with a second independent variable o apply the Zero Factor Property to factoring polynomials	• M.N.CN.A.8 (+) Extend polynomial identities to the complex numbers. For example, rewrite x2+ 4 as (x + 2i)(x - 2i). • M.N.CN.A.9 (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	• Lessons 7.1-7.11 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills
FEBRUARY	• 18 • Chapter 8--Radical Expressions and Equations	• SWBAT o identify roots and radicals o remove perfect square factors o add and subtract radicals o multiply radical expressions o rationalize single-term and two-term denominators o rationalize exponents o solve radical equations o apply Pythagorean Theorem and distance formula	• M.8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 x 3-5 = 3-3 = 1/33 = 1/27. • M.8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	• Lessons 8.1-8.9 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

	Content Type	Objectives	Standards	Assessment	Materials
MARCH	• 17 • Chapter 9--Quadratic Equations	• SWBAT o solve quadratic equations by factoring o extract roots o complete the square o solve quadratic equations using the quadratic formula o choose a method for solving quadratic equations o apply quadratic equations	• M.N.CN.A.7 Solve quadratic equations with real coefficients that have complex solutions.	• Lessons 9.1-9.7 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills
APRIL	• 20 • Chapter 10--Statistics and Probability • Chapter 11 Geometry	• SWBAT o interpret and/or construct ▪ bar graphs ▪ circle graphs ▪ stem-and-leaf plots ▪ histograms ▪ box-and-whisker plots o determine the probability of a single event and multiple events o construct, bisect , translate, rotate and reflect basic geometric shapes o determine congruency of basic geometric shapes	• M.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. • M.8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. • M.8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. • M.8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? • M.8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.	• Lessons 10.1-10.10 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

			• M.8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them • M.8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. • M.8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two dimensional figures, describe a sequence that exhibits the similarity between them. • M.8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.		

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019

	Content Type	Objectives	Standards	Assessment	Materials
MAY	• 24 • Chapter 12--Rational Expressions and Equations • Chapter 13--Functions	• SWBAT o simplify rational expressions o multiply and divide rational expressions o add and subtract with a common denominator o add and subtract with different denominators (LCD) o simplify complex fractions o solve rational equations o apply ratios and proportions o determine if y is a function of x o find the domain of a function o find the zeros of a function and graph the parabola	• M.8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. • M.8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a numerically valued function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.) • M.8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. • M.8.F.A.3 Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line. • M.8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. • M.8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, continuous or discrete). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	• Lessons 11.1-12.8 • quizzes • tests	Abeka Algebra 1 Saxon Math Speed Drills

Grade Curriculum Map
Instructional Plan for Algebra
Cathy S. Tinkey
St. Paul's Lutheran School
Written: July 2019