RIMROCK JR/SR HIGH SCHOOL
COURSE SYLLABUS

BASIC INFORMATION
Course title: Purple Group
Year: 2015-2016
Teacher's name: Dale Burk
Class location: Room 104
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COURSE DESCRIPTION
Algebra is a branch of mathematics that uses symbols in place of numbers to describe and generalize relationships. This is a custom course that I designed to help prepare students for College Algebra. You will explore relationships between mathematical quantities, how to reason with equations and inequalities, graphing, functions, and mathematical modeling. You will build on your knowledge of variables, exponents, expressions, and algebraic terminology by applying algebra to real-world situations.

COURSE OBJECTIVES & EXPECTATIONS

By the end of this course, you will:

- Derive the equations $y = mx$ and $y = mx + b$.
- Understand functions, describe properties of linear and nonlinear functions, and compare properties of functions represented in different ways.
- Construct and interpret functions given in verbal descriptions, two coordinate values, tables, or a graph.
- Perform addition, subtraction, multiplication, and division with monomial, binomial, and other polynomial expressions.
- Graph linear equations and inequalities on a coordinate plane.
- Find the slope and intercepts of a linear equation.
- Apply the slope-intercept and point-slope forms of an equation of a line.
- Graph a system of linear equations and inequalities.
- Solve linear systems using substitution, linear combinations, and addition.
- Use sequences and patterns to predict future events.
- Interpret statements and represent real-world situations using function notation.
- Find the domain and range of a function.
- Simplify rational exponents.
- Classify polynomials and perform operations with polynomials.
- Factor polynomials, including binomials and trinomials.
- Rewrite formulas to solve word problems.

- Solve quadratic equations by completing squares, factoring, or using the quadratic formula.
- Solve quadratic inequalities.
- Find the features of a parabola, including its x- and y-intercepts and vertex.

Required Student Resources

Notebook paper, spiral notebook, and pencil. iPads and calculators are provided.

Course Schedule/Outline/Calendar of Events

The scope and sequence of this course is subject to change due to various circumstances, such as the pace at which the student works as well as the constraints of a 4-day school week.

Unit 2: Linear Equations

Summary

In this unit, you will solve linear equations with rational coefficients and give examples of linear equations with one, infinitely many, or no solutions. You will graph proportional relationships by interpreting the unit rate as the slope. You will then compare two different proportional relationships represented in different ways. Finally, you will derive the equations $y = mx$ and $y = mx + b$ and use similar triangles to explain why the slope is the same between any two points on a line.

Day	Activity/*Objective*	Type
3 days:	**Solving Linear Equations** *Solve linear equations with rational coefficients.*	Lesson
3 days:	**Solutions to Linear Equations** *Give examples of linear equations with one, infinitely many, or no solutions.*	Lesson
Day	**Activity/*Objective***	**Type**
3 days:	**Slope** *Graph proportional relationships, interpreting the unit rate as the slope.*	Lesson
3 days:	**Comparing Proportional Relationships** *Compare two different proportional relationships represented in different ways.*	Lesson
3 days:	**Equations of a Line** *Derive the equations $y = mx$ and $y = mx + b$.*	Lesson
4 days:	**Slope and Similar Triangles** *Use similar triangles to explain why the slope is the same between any two points.*	Course Activity
6 days:	**Unit Activity and Discussion—Unit 2**	Unit Activity Discussion

1 day:	**Posttest—Unit 2**	Assessment

Unit 4: Functions

Summary

In this unit, you will understand that a function assigns one output to each input and that the graph of a function is a set of ordered pairs of inputs and corresponding outputs.

You will describe properties of linear and nonlinear functions and compare properties of functions represented in different ways. Lastly, you will construct and interpret functions given in verbal descriptions, two coordinate values, tables, or a graph.

Day	Activity/*Objective*	Type
3 days:	**Introduction to Functions** *Understand that a function assigns one output to each input and that the graph of a function is a set of ordered pairs of inputs and corresponding outputs.*	Lesson
3 days:	**Properties of Functions** *Describe properties of linear and nonlinear functions.*	Lesson
3 days:	**Comparing Functions** *Compare properties of functions represented in different ways.*	Lesson
3 days:	**Constructing and Interpreting Functions** *Construct and interpret functions given in verbal descriptions, two coordinate values, tables, or a graph.*	Lesson
6 days:	**Unit Activity and Discussion—Unit 4**	Unit Activity Discussion
1 day:	**Posttest—Unit 4**	Assessment

Unit 1: Single-Variable Expressions, Equations, and Inequalities

Summary

In this unit, you will focus on expressions, equations, and inequalities with a single variable. In the first half of the unit, you will perform simple operations with monomial and binomial expressions. In the latter part of the unit, you will write equations and inequalities to represent and solve word problems.

Day	Activity / *Plato Objective*	Type
1 day:	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
1 day:	**Adding Monomials** *Add monomials.*	Lesson
1 day:	**Subtracting Monomials** *Subtract monomials.*	Lesson
1 day:	**Multiplying Monomials** *Multiply monomials.*	Lesson
1 day:	**Dividing Monomials** *Divide monomials.*	Lesson
1 day:	**Adding Binomials and Monomials** *Add binomials.*	Lesson
1 day:	**Subtracting Binomials and Monomials** *Subtract binomials.*	Lesson
1 day:	**Multiplying Monomials and Binomials** *Multiply binomials.*	Lesson
1 day:	**Dividing Binomials by Monomials** *Divide binomials.*	Lesson
1 day:	**Linear Equations in 1 Variable: Isolating the Variable** *Solve more-difficult linear equations by isolating the variable.*	Lesson
1 day:	**Literal Equations** *Write literal equations to solve math problems.*	Lesson
2 days:	**Using Linear Equations to Solve Problems** *Use linear math sentences in one variable to solve practical problems.*	Lesson
1 day:	**Linear Inequalities in 1 Variable, Part 1** *Solve linear inequalities using addition and subtraction.*	Lesson
1 day:	**Linear Inequalities in 1 Variable, Part 2** *Solve linear inequalities for which multiplication and division are required.*	Lesson
1 day:	**More-Difficult Linear Inequalities in 1 Variable** *Solve more-difficult linear inequalities by isolating the variable.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 1**	Unit Activity
1 day:	**Posttest—Unit 1**	Assessment

Unit 2: Two-Variable Equations and Graphs

Summary

In this unit, you will graph equations in two variables and interpret the graphs. You will create two-variable equations to represent linear relationships and graph the equations on a coordinate plane. You will find the slope and intercepts of a linear equation by looking at its graph. Finally, you will use the point-slope form and the slope-intercept form to determine the equation of a given line.

Day	Activity / *Plato Objective*	Type
2 days:	**Ordered Pairs as Solutions of Linear Equations** *Determine whether an ordered pair is a solution of a linear equation.*	Lesson
1 day:	**Graphing Linear Equations in 2 Variables** *Determine if a point is on the graph of a linear equation.*	Lesson
2 days:	**Graphs, Slopes, and *y*-Intercepts** *Determine the slope and intercept of a linear relationship from its graph.*	Lesson
1 day:	**Finding *x*- and *y*-Intercepts of a Linear Equation** *Find the intercepts of a linear equation.*	Lesson
2 days:	**Equations, Graphs, Slopes, and *y*-Intercepts** *Use the slope and intercept of linear functions to write an equation from a graph and draw a graph from an equation.*	Lesson
1 day:	**Slope-Intercept Form** *Apply the slope-intercept form of the equation of a line.*	Lesson
1 day:	**Point-Slope Form** *Apply the point-slope form of the equation of a line.*	Lesson
1 day:	**Interpreting Graphs to Solve Problems** *Solve problems or answer questions based on linear graphs that represent real-world situations.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 2**	Unit Activity
1 day:	**Posttest—Unit 2**	Assessment

Unit 3: Systems of Equations

Summary

In this unit, you will use systems of linear equations and systems of linear inequalities to represent word problems and find the solution of a system by graphing. You will also use substitution, linear combinations, and addition to solve systems of equations.

Day	Activity / *Plato Objective*	Type
2 days:	**Graphing Linear Inequalities in Two Variables** *Graph linear inequalities in two variables.*	Lesson
1 day:	**Solving and Graphing Systems of Equations** *Solve a system of linear equations.*	Lesson
2 days:	**Solving Systems of Linear Inequalities by Graphing** *Solve a system of inequalities by graphing.*	Lesson
1 day:	**Solving Problems with Systems of Linear Equations** *Solve practical problems with two variables.*	Lesson
1 day:	**Solving Linear Systems Using Substitution** *Solve linear equations using the substitution method.*	Lesson
1 day:	**Solving Linear Systems Using Linear Combinations** *Solve systems of linear equations using the linear combinations method.*	Lesson
1 day:	**Solving Linear Systems of Equations: Addition** *Solve a system of equations by adding or subtracting.*	Lesson
1 day:	**Solving Problems with Linear Systems** *Solve word problems using a system of two linear equations or inequalities.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 3**	Unit Activity
1 day:	**Posttest—Unit 3**	Assessment

Unit 4: Functions

Summary

In this unit, you will use functions to represent and solve word problems. First, you will explore patterns and sequences and see how to predict future events in a series. Next, you will study function notation and find the domain and range of a function. Finally, you will use linear functions and exponential functions to represent and solve word problems.

Day	Activity / *Plato Objective*	Type
1 day:	**Patterns and Sequences** *Study different types of patterns and predict future items in these patterns.*	Lesson
2 days:	**Function Notation** *Study and use function notation.*	Lesson

1 day:	**Finding the Domain and Range of a Function** *Find the domain and range of a function.*	Lesson
2 days:	**Describing Functions with Equations, Tables, and Graphs** *Study how equations, tables, and graphs can represent the same function.*	Lesson
1 day:	**Exponential Growth** *Solve problems that involve exponential growth.*	Lesson
1 day:	**Exponential Decay** *Solve problems that involve exponential decay.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 4**	Unit Activity
1 day:	**Posttest—Unit 4**	Assessment

Unit 6: Rules of Exponents and Polynomials

Summary

In this unit, you will study expressions with radicals and rational exponents. You will simplify expressions with integer exponents using the product, quotient, and power rules. You will explore the rule for exponents and use it to rationalize the denominator in rational expressions. You will apply the rules for exponents and radicals to simplify rational expressions.

Day	Activity / *Plato Objective*	Type
1 day:	**Integer Exponents and the Product Rule** *Simplify a product using the product rule for exponents.*	Lesson
1 day:	**Integer Exponents and the Quotient Rule** *Divide exponential forms with the same base using the quotient rule for exponents.*	Lesson
1 day:	**Integer Exponents and the Power Rule, Part 1** *Use the power rule for exponents to simplify an expression with exponents raised to a power.*	Lesson
1 day:	**Integer Exponents and the Power Rule, Part 2** *Use the power rule for exponents to simplify an expression with exponents raised to a power.*	Lesson
2 days:	**Rational Exponents** *Study and apply properties of exponents to rational exponents.*	Lesson
1 day:	**Rationalizing the Denominator in Rational Expressions** *Rationalize the denominator in rational expressions using the rules for exponents.*	Lesson

Unit 1: Polynomials

Summary

In this unit, you will explore how to classify different types of polynomial expressions and how to perform addition, subtraction, multiplication, and division with polynomial expressions.

Day	Activity / *Plato Objective*	Type
1 day:	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
1 day:	**Classifying Polynomials** *Classify polynomials.*	Lesson
1 day:	**Polynomial Sum** *Find the sum of two polynomials.*	Lesson
1 day:	**Polynomial Difference** *Find the difference of two polynomials.*	Lesson
1 day:	**Product of a Monomial and Polynomial** *Find the product of monomials and polynomials.*	Lesson
1 day:	**Product of Polynomials** *Find the product of polynomials.*	Lesson
1 day:	**Quotient of a Monomial and Polynomial** *Divide a polynomial by a monomial.*	Lesson
1 day:	**Quotient of a Binomial and Polynomial** *Divide a polynomial by a binomial.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 1**	Unit Activity
1 day:	**Posttest—Unit 1**	Assessment

Unit 2: Factoring

Summary

In this unit, you will factor monomials, binomials, and trinomials.

Day	Activity / *Plato Objective*	Type
1 day:	**Greatest Common Factors of Monomials** *Find the greatest common factor of two or more monomials.*	Lesson
1 day:	**Monomial Factors of Polynomials** *Factor a polynomial that has monomial factors.*	Lesson

1 day:	**Binomial Factors of Polynomials, Part 1** *Use the distributive property to write an expression as the product of two sums or differences.*	Lesson
1 day:	**Binomial Factors of Polynomials, Part 2** *Group terms to write an expression as the product of two sums or differences.*	Lesson
1 day:	**Factoring the Difference of Two Squares** *Factor a difference of squares.*	Lesson
1 day:	**Factoring Perfect Square Trinomials** *Factor a perfect square trinomial.*	Lesson
1 day:	**Factoring Trinomials, Part 1** *Factor trinomials of the form* $x^2 + bx + c$.	Lesson
1 day:	**Factoring Trinomials, Part 2** *Factor trinomials of the form* $x^2 + bx + c$.	Lesson

3 days: 21–23	**Unit Activity/Threaded Discussion—Unit 2**	Unit Activity
1 day: 24	**Posttest—Unit 2**	Assessment

Unit 3: Single-Variable Quadratic Equations

Summary

In this unit, you will solve quadratic equations in one variable by using factoring and by using the quadratic formula. You will also use quadratic equations to represent and solve a word problem.

Day	Activity / *Plato Objective*	Type
1 day:	**Adapting and Using Formulas** *Rewrite formulas to solve problems with variables.*	Lesson
2 days:	**Special Quadratic Equations, Part 1** *Solve quadratic equations in which both sides are perfect squares.*	Lesson
2 days:	**Special Quadratic Equations, Part 2** *Solve certain types of quadratic equations by factoring.*	Lesson
2 days:	**Using Quadratic Equations to Solve Problems** *Use quadratic equations in one variable to solve practical problems.*	Lesson
2 days:	**Solving Simple Quadratic Equations** *Find the solution for quadratic equations of the form* $x^2 + bx + c = 0$.	Lesson
1 day:	**Solving Quadratic Equations by Factoring, Part 1** *Find the solution set of quadratic equations that factor as the difference of two squares.*	Lesson

1 day:	**Solving Quadratic Equations by Factoring, Part 2** *Find the solution set of a quadratic equation that is the perfect square of a binomial.*	Lesson
1 day:	**Solving Quadratic Equations by Factoring, Part 3** *Find the solution set of quadratic equations by factoring.*	Lesson
2 days:	**Quadratic Formula** *Use the quadratic formula to find a solution set for a quadratic equation.*	Lesson
2 days:	**Review: Equations and Inequalities** *Review how to solve equations and inequalities.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 3**	Unit Activity
1 day: 44	**Posttest—Unit 3**	Assessment

Unit 4: Graphing Functions

Summary

In this unit, you will solve systems of linear and quadratic equations, both algebraically and graphically. You will explore various features of the graph of a quadratic equation. You will also graph piecewise and absolute value functions.

Day	Activity / *Plato Objective*	Type
2 days:	**Solving Linear-Quadratic Systems of Equations** *Solve linear-quadratic equations algebraically and graphically.*	Lesson
1 day:	**Parabola and Its Intercepts** *Find the x- and y-intercepts of a parabola.*	Lesson
1 day:	**Parabola and Its Vertex** *Find the vertex of a parabola.*	Lesson
1 day:	**Parabola and Its Coefficients** *Learn how changing the coefficients of a parabola affects its position and shape.*	Lesson
2 days:	**Graphing Piecewise Functions** *Graph greatest integer and general piecewise functions.*	Lesson
2 days:	**Graphing Absolute Value Functions** *Graph absolute value functions.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 4**	Unit Activity
1 day:	**Posttest—Unit 4**	Assessment

Unit 5: Properties of Functions

Summary

In this unit, you will study the properties of different types of functions. You will solve problems using linear and quadratic functions. You will explore the properties of logarithmic and exponential functions. Finally, you will analyze and compare the features of different types of functions.

Day	Activity / *Plato Objective*	Type
2 days:	**Solving Problems with Linear Functions** *Describe real-world situations as linear functions.*	Lesson
2 days:	**Solving Problems with Quadratic Functions** *Describe real-world situations as quadratic functions.*	Lesson
1 day:	**Properties of Exponential Functions** *Study the properties of exponential functions.*	Lesson
1 day:	**Properties of Logarithmic Functions** *Study the properties of logarithmic functions.*	Lesson
1 day:	**Recognizing Graphs of Types of Functions** *Identify exponential and logarithmic functions by looking at graphs of these functions.*	Lesson
2 days:	**Function Models and Features** *Relate a domain to a function written in context and compare the growth of different types of functions.*	Lesson
3 days:	**Unit Activity/Threaded Discussion—Unit 5**	Unit Activity
1 day:	**Posttest—Unit 5**	Assessment

EVALUATION PROCEDURES AND GRADING CRITERIA

The Edmentum Grade consists of many features within the program – Module Mastery, Tutorial Completion, Applications, Mastery Tests, and Post Tests.
The Offline Grade consists of a Journal Grade and a Participation Grade.

Criteria for grading follows the adopted grading scale in accordance with Policy 604.6

Edmentum Grade:	75% of final grade	A = > 90%
Offline Grade:	25% of final grade	B= 80 to <90%
	100%	C = 70 to < 80%
		D = 60 to < 70%
		F = <60%

Grade Checks

Parents and students may check grades through the Powerschool portal. A personal ID and password may be obtained at the school office. Grades will be updated every Tuesday.

Athletes are responsible to have a weekly grade check sheet completed every Tuesday during the season and turn in to the coach.

Attendance Policy

All students (grades 6-12) in school District #365 shall be in attendance for at least 90 percent of the instructional time that a subject is being taught as established by the Board of Trustees. (1) Responsibility for student compliance with the above regulation rests with the parent or guardian. (2) Students who fail to fulfill attendance requirements in a class have not earned a credit. A student will not meet their 90% when they achieve their 7th absence in a class.

Tardies

A tardy occurs when any student is late to any class. Once a student surpasses three tardies in a semester they will be assigned a detention and one absence. Every tardy in that class thereafter will result in a detention.

Making-Up Missed Work

When a student is absent from school, the student is expected to make up the work missed. A time limit of two class sessions for each day absent is allowed to hand in make-up work unless otherwise arranged with the teacher.

A/B Not Yet

Students who complete their assignments on time will have the opportunity to re-do assignments for a higher grade.

Raider Time

Students may attend Raider Time on Thursdays after school for additional assistance and to make-up class assignments, quizzes and /or tests. Teachers may also assign students to attend Raider Time.

Academic Integrity

Cheating is not an acceptable behavior at Rimrock JR/SR High School. All students involved will be given a zero for the assignment or test and the parents will be notified by the teacher in writing and/or by phone and may face additional disciplinary action. Habitual cheating may result in suspension and/or loss of credit.

Electronic Devices

Electronic devices should not be brought to school. Electronic devices belonging to students that are educationally distractive such as cell phones, music players, headphones, etc., will not be allowed in the classroom at any time except in special circumstances approved by the classroom teacher. Students caught with these items during class time will have the item confiscated. The item can be returned one week from the day of infraction or a $10 fee can be paid to have the item returned at the end of the school day. The fine will be doubled increasingly after each infraction. **The school has no responsibility if your personal electronic device is stolen, lost or damaged.**

PLEASE RETURN THIS PAGE TO THE CLASSROOM TEACHER. KEEP THE PREVIOUS PAGES FOR YOUR RECORDS.

I have read and understand the Course Syllabus for (Name of Course or Teacher).

Parent/Guardian Signature:_____ **Date:**_____

Parent/Guardian's Email Address: _____ **Phone:** _____

Student Signature: _____ **Date:** _____