eSchool Course Syllabus

Syllabus for Algebra 1 – Semester 2
The Plano ISD eSchool Mission is to create a borderless classroom based on a positive student-teacher relationship that fosters independent, innovative critical thinking and empowers students to thrive, contribute, and compete in a global society.

Course Title: Algebra 1 (ALG 1)

Communications
All communication with your teacher will be through the utilization of electronic tools such as email and discussion boards. Your assignments will be submitted directly into the Blackboard Learning Management System. You will receive a Welcome email from your teacher when your course is ready for you. You may email your teacher at any time with questions that you might have.

Course Description
The second semester of Algebra 1 introduces students to concepts that will serve as the foundation for their study of mathematics throughout high school and into college. Students will explore the topics of linear inequalities, linear systems, quadratics, and exponential equations. Students will demonstrate understanding numerically, graphically, analytically, and verbally through the use of assignments, written journals, written discussion board responses, unit exams, and a cumulative final exam.

Course Objectives and Student Learning Outcomes
Upon successful completion of this course, the student will be able to:
- understand the importance of the skills required to manipulate symbols in order to solve problems and use the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations.
- understand that a function represents a dependence of one quantity on another and can be described in a variety of ways.
- formulate equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.
- use the properties and attributes of functions.
- demonstrate an understanding of linear functions.
- formulate and use linear equations and inequalities.
- describe functional relationships in a variety of ways.
- demonstrate an understanding of the properties and attributes of functions.
- demonstrate an understanding of quadratic and other nonlinear functions.
- gather and records data, or uses data sets, to determine functional (systematic) relationships between quantities.
- represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.

Prerequisites

Basic computer skills are necessary to progress normally through your online course. It is not necessary to be an expert, but a student must know how to use the basic capabilities of a computer: e.g. using the keyboard and mouse, Internet browsing, and open/save files on your computer.

Hardware: Students must have a working, current computer available, with adequate storage to download and save large files. A display of at least 1024X768 resolution is preferred. A sound card and speakers will be required for most courses, and a microphone is required for language courses. The availability of a printer is recommended

Software/Applications: Microsoft Office (2007 or higher) or a similar word processing, spreadsheet and presentation manager is required. A current version of a web browser (such as Internet Explorer, Cortana, Firefox, Safari, Chrome), is required. Adobe Acrobat Reader (free download) is required in many courses.

Internet Connectivity: Students must have availability of a working Internet connection. Direct high-speed Internet connection is recommended.

Email: Students must have an active, functioning email account with an "appropriate" email address to use for communicating with your teacher throughout the course and for communications with the eSchool office.

Course Materials

All course materials are available within the Learning Management System (Blackboard) or on websites specified within the course.

It is recommended that the student purchase a graphing calculator (such as a Texas Instruments Model TI-83 Plus, TI 84 Plus, or Casio fx-9750) However, this is not required, as a link to a freely available

Academic Integrity/Copyright Policy:

Academic integrity violations, plagiarism, and copyright violations will not be tolerated. The Introductory unit of your course will teach you the details of PISD's expectations on such topics. Your teacher will utilize plagiarism check tools throughout the course.

Online Etiquette ("Netiquette"):

Netiquette is meant to help you communicate professionally and effectively in an online collaborative setting. Students will follow all guidelines relating to internet etiquette and will communicate respectfully with all people. The Introductory unit of your course will teach you the details of PISD's expectations on such topics. Your course will contain discussion boards, journals, blogs and/or wikis where your "netiquette" is important.

Grading and Evaluation

In order to earn credit for an online course, a student must:

1.   complete all course work
and
2.   in that process of completing all course work, earn a passing average of at least 70.

That average is determined by the number of points that a student earns divided by the total number of points available in the course.

For example, if you earn 690 points in the course, your grade will be:

$$690 \div 739 = 0.933 \text{ for a grade of } 93.$$

A student or parent may check the course grade at any time. The first step is to log into the course. On the toolbar to the left, click the tab for Tools, and then click My Grades.

Teacher discretion may always be used when accepting and grading work. Please note that a teacher may deduct points for work submitted past the student's specific due date/s. If all course work is not submitted before the specified course end date, the student will not be awarded credit for the course.

Assessments:

All courses contain a number of self-assessments (allowing the student to gauge their understanding of the material before proceeding to a graded assessment. Graded assessments include quizzes as well as exams. The student's school district (known as the receiving district), is required to prove proctors for major exams.

Class Participation:

Every student will have a specific schedule for completing and submitting assignments and tests. Students are required to adhere to their schedule. Students must maintain consistent email communication with their teacher. Students must complete the discussion assignments and collaborative activities throughout the course. Students who are not adhering to their course schedule, or students who are not maintaining the basic requirements of participation, such as maintaining email communication with their teacher, may be dropped from the course.

Drop Policy:

Students may choose to drop the course within 15 days from their start date without penalty. Notify your school's/district's site coordinator to have them indicate such a drop situation to TxVSN.

Unit-by-Unit Course Content and Assignments	
Introductory Unit	**Unit Objectives** Upon completion of this unit, you will understand terms related to academic integrity, such as plagiarism, cheating, paraphrasing, quoting, citing, public domain, fair use, academic dishonesty, copyright, and self-plagiarism. In addition, you will become familiar with the guidelines for avoiding academic dishonesty, Netiquette, and how to respond on discussion boards used in this course. **Assignments** • Journal Activity • Introductory Unit Notes and Activities **Discussion** • Netiquette Discussion Board
Unit 2	**Unit Title: Solving and Graphing Inequalities** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: • solve inequalities with two variables; and • graph inequalities with two variables. **Multimedia / Presentations** • Introductory Video • 4 Presentations **Readings** • Notes included with each assignments **Discussion** • 1 Wiki **Assignments / Assessments** • 4 Assignments • 1 Journal • 1 Unit Exam

Unit-by-Unit Course Content and Assignments	
Unit 3	**Unit Title: Systems of Linear Equations** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: • identify solutions of systems of linear equations in two variables; • solve systems of linear equations by graphing, substitution, and linear combinations; and • write systems of equations for a given situation and determine the reasonableness of the solution. **Multimedia / Presentations** • Introductory Video • 4 Presentations **Readings** • Notes included with each assignments **Discussion** • 1 Discussion Board **Assignments / Assessments** • 4 Assignments • 1 Journal • 1 Unit Exam
Unit 4	**Unit Title: Graphing Quadratic Equations** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: • recognize patterns that are linear or quadratic given tables or equations, • use the standard from of a parabola to determine the axis of symmetry, vertex, and y-intercept, • draw a quadratic graph given tables, equations in standard form, and equation in vertex form, • determine the effects of changing a and c on the graphs of quadratic equations, and • solve problems dealing with parabolic applications. **Multimedia / Presentations** • Introductory Video • 6 Presentations **Readings** • Notes included with each assignments **Discussion** **Assignments / Assessments** • 6 Assignments • 1 Journal • 1 Unit Exam

Unit-by-Unit Course Content and Assignments	
Unit 5	**Unit Title: Multiplying Quadratics** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: • use multiplication and division rules for Laws of Exponents; • simplify polynomials using single and double distribution; • find x-intercepts from factored form; and • graph quadratic equations from factored and standard form. **Multimedia / Presentations** • Introductory Video • 6 Presentations **Readings** • Notes included with each assignments **Discussion** • 1 Discussion Board **Assignments / Assessments** • 6 Assignments • 1 Journal • 1 Unit Exam
Unit 6	**Unit Title: Factoring Quadratics** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: • **recognize the Greatest Common Factor in a group of monomial expressions; and** • **factor polynomial expressions using:** **- greatest Common Factor,** **- grouping to factor trinomials in the form x2 + bx + c and ax2 + bx + c,** **- difference of squares.** **Multimedia / Presentations** • Introductory Video • 6 Presentations **Readings** • Notes included with each assignments **Discussion** • 1 Wiki **Assignments / Assessments** • 6 Assignments • 1 Journal • 1 Unit Exam

	Unit-by-Unit Course Content and Assignments
Unit 7	**Unit Title: Solving Quadratic Equations** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: - solve quadratic equations using: - difference of squares, - Zero Product Property, - the Quadratic Formula; - identify the discriminant and find the number of real solutions to a quadratic equation; and - choose the best method for solving a particular quadratic equation. **Multimedia / Presentations** - Introductory Video 6 Presentations **Readings** - Notes included with each assignments **Assignments / Assessments** 6 Assignments 1 Journal 1 Unit Exam
Unit 8	**Unit Title: Other Nonlinear Functions** **Unit Objectives:** Upon successful completion of this unit, the student will be able to: - model exponential growth with tables and graphs; - model exponential decay with tables and graphs; and - recognize patterns that are linear, quadratic, and exponential from equations and tables. - analyze data and represent situations involving inverse variation **Multimedia / Presentations** - Introductory Video 5 Presentations **Readings** - Notes included with each assignments **Assignments / Assessments** 5 Assignments 1 Journal **1 Unit Exam**
Final Exam	**A Final Exam is required of all students**

TEKS	Bloom's Taxonomy	How / where addressed
(1) Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways. The student is expected to:		
(A) describe independent and dependent quantities in functional relationships;	Understand	S1-U5L1
(B) gather and record data and use data sets to determine functional relationships between quantities;	Analyze	S1-Project, S1-U5L2, S1-U5L3 S2-U4L1, S2-U4L6, S2-U8L2
(C) describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations;	Understand	S1-U3L4, S1-U4L2, S1-U5L4, S1-U6L6 S2-U2L1, S2-U7L5
(D) represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities; and	Apply	S1-Project, S1-U3L4, S1-U4L2, S1-U5L2, S1-U5L5 S2-U2L2, S2-U4L4, S2-U4L6, S2-U5L4, S2-U5L6, S2-U7L5, S2-U8L1, S2-U8L2, S2-U8L4
(E) interpret and make decisions, predictions, and critical judgments from functional relationships.	Evaluate	S1-U5L2, S1-U6L6 S2-U4L1, S2-U7L2, S2-U7L3, S2-U7L5
(2) Foundations for functions. The student uses the properties and attributes of functions. The student is expected to:		
(A) identify and sketch the general forms of linear (y = x) and quadratic (y = x2) parent functions;	Apply	S1-U6L2 S2-U4L3
(B) identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete;	Apply	S1-U5L3, S1-U5L4, S1-U5L5 S2-U8L2, S2-U8L3
(C) interpret situations in terms of given graphs or creates situations that fit given graphs; and	Evaluate	S1-U5L2

TEKS	Bloom's Taxonomy	How / where addressed
(D) collect and organize data, make and interpret scatterplots (including recognizing positive, negative, or no correlation for data approximating linear situations), and model, predict, and make decisions and critical judgments in problem situations.	Evaluate	S1-U5L6
(3) Foundations for functions. The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations. The student is expected to:		
(A) use symbols to represent unknowns and variables; and	Apply	S1-U2L6, S1-U3L1,S1- U3L4, S1-U6L4, S1-U6L6 S2-U3L1, S2-U3L2, S2-U3L3, S2-U3L4, S2-U5L3, S2-U8L1
(B) look for patterns and represent generalizations algebraically.	Analyze	S1-U3L1, S1-U6L6 S2-U5L2, S2-U5L3, S2-U6L1, S2-U8L1, S2-U8L2, S2-U8L3, S2-U8L4
(4) Foundations for functions. The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations. The student is expected to:		
(A) find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations;	Apply	S1-U2L1, S1-U3L1, S1-U3L3, S1-U3L4, S1-U3L5, S1-Unit 4 Discussion Board, S1-U4L1, S1-U4L2, S1-U4L3, S1-U4L4 S2-U5L1, S2-U5L3, S2-U5L4, S2-U5L5, S2-U5L6, S2-U7L1, S2-U7L2, S2-U8L3, S2-U8L4
(B) use the commutative, associative, and distributive properties to simplify algebraic expressions; and	Analyze	S1-Unit 3 Discussion Board, S1-U3L2, S1-Unit 4 Discussion Board, S1-U4L2 S2-U5L3, S2-U5L4, S2-U5L5, S2-U5L6, S2-U6L1, S2-U6L2, S2-U6L3, S2-U6L4, S2-U6L5, S2-U6L6
(C) connect equation notation with function notation, such as $y = x + 1$ and $f(x) = x + 1$.	Create	S1-U5L4
(5) Linear functions. The student understands that linear functions can be represented in different ways and translates among their various representations. The student is expected to:		

TEKS	Bloom's Taxonomy	How / where addressed
(A) determine whether or not given situations can be represented by linear functions;	Evaluate	S1-U6L1 S2-U4L2
(B) determine the domain and range for linear functions in given situations; and	Evaluate	S1-Project, S1- U5L3, S1-U5L4, S1-U5L5
(C) use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions.	Apply	S1-U5L2, S1-U6L1

(6) Linear functions. The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to:

TEKS	Bloom's Taxonomy	How / where addressed
(A) develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations;	Understand	S1-U6L3, S1-U6L4
(B) interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs;	Evaluate	S1-U6L3, S1-U6L4, S1-U6L8
(C) investigate, describe, and predict the effects of changes in m and b on the graph of y = mx + b;	Analyze	S1-U6L2, S1-U6L3, S1-U6L4, S1-U6L6,
(D) graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept;	Analyze	S1-U6L5, S1-U6L7, S1-U6L9
(E) determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations;	Analyze	S1-U6L8
(F) interpret and predict the effects of changing slope and y-intercept in applied situations; and	Evaluate	S1-Project, S1-U6L2
(G) relate direct variation to linear functions and solve problems involving proportional change.	Apply	S1-U4L4, S1-U6L6

(7) Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to:		
(A) analyze situations involving linear functions and formulate linear equations or inequalities to solve problems;	Analyze	S1-U3L3, S1-U3L4, S1-U3L5, S1-U7L1, S1-U7L2, S1-U7L4, S1-U7L5, S1-U7L6 S2-U2L1, U2L3, U2L4
(B) investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities; and	Analyze	S1-U3L3, S1-U3L4, S1-U4L1, S1-U4L2, S1-U4L3, S1-U7L1, S1-U7L2, S1-U7L3, S1-U7L4, S1-U7L5, S1-U7L6 S2-U2L1, S2-U2L2, S2-U2L4
(C) interpret and determine the reasonableness of solutions to linear equations and inequalities.	Evaluate	S1-U6 Journal, S1-U7 Journal S2-U2L1, S2-U2L4

(8) Linear functions. The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to:		
(A) analyze situations and formulate systems of linear equations in two unknowns to solve problems;	Analyze	S2-U3L3, S2-U3L4
(B) solve systems of linear equations using concrete models, graphs, tables, and algebraic methods; and	Analyze	S2-U3L1, S2-U3L2, S2-U3L3, S2-U3L4, S2-Unit 3 Discussion Board
(C) interpret and determine the reasonableness of solutions to systems of linear equations.	Evaluate	S2-U3L1, S2-U3L2, S2-U3L3, S2-U3L4

(9) Quadratic and other nonlinear functions. The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. The student is expected to:		
(A) determine the domain and range for quadratic functions in given situations;	Understand	S2-U4L2, S2-U4L3, S2-U4L4, S2-U4L6, S2-U5L6
(B) investigate, describe, and predict the effects of changes in a on the graph of $y = ax^2 + c$;	Analyze	S2-U4L3, S2-U4L4
(C) investigate, describe, and predict the effects of changes in c on the graph of $y = ax^2 + c$; and	Analyze	S2-U4L3, S2-U4L4
(D) analyze graphs of quadratic functions and draw conclusions.	Analyze	S2-U4L1, S2-U4L4, S2-U4L5, S2-U4L6, S2-U5L5, S2-U5L6, S2-U7L3

(10) Quadratic and other nonlinear functions. The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. The student is expected to:		
(A) solve quadratic equations using concrete models, tables, graphs, and algebraic methods; and	Evaluate	S2-U7L1, S2-U7L2, S2-U7L4, S2-U7L5, S2-U7L6, S2-U5 Discussion Board
(B) make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function.	Apply	S2-U7L3, S2-U7L4, S2-U7L5

(11) Quadratic and other nonlinear functions. The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations. The student is expected to:		
(A) use patterns to generate the laws of exponents and apply them in problem-solving situations;	Apply	S2-U5L1, S2-U5L2,
(B) analyze data and represent situations involving inverse variation using concrete models, tables, graphs, or algebraic methods; and	Analyze	S2-U8L5
(C) analyze data and represent situations involving exponential growth and decay using concrete models, tables, graphs, or algebraic methods.	Analyze	S2-U8L1, S2-U8L2, S2-U8L3