

Algebra ½ Course Syllabus

Franklin High School

2019-2020

Course Title: Algebra 1/2

Grade Level(s): 9th, 10th,
11th, 12th

Prerequisites:

This course is open to students who have not yet earned 1.0 credit in Algebra 1-2.

Course description:

The course is structured around problems and investigations that build the conceptual understanding of algebraic topics and an awareness of connections between the different ideas. There are strong threads woven throughout the course on multiple representations and the meaning of a solution. Students will be asked to justify their thinking, generalize relationships, make connections between ideas and reverse thinking to solve problems. A major focus of Algebra 1-2 is to develop multiple strategies to solve problems and to recognize multiple ways of understanding concepts.

Standards:

[HSS.ID.A.1](#) Represent data with plots on the real number line (dot plots, histograms, and box plots).

[HSS.ID.A.2](#) Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

[HSA.REI.B.3](#) Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

[HSA.SSE.A.1.A](#) Interpret parts of an expression, such as terms, factors, and coefficients.

[HSA.CED.A.2](#) Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

[HSF.LE.B.5](#) Interpret the parameters in a linear or exponential function in terms of a context.

[HSA.BF.A.1](#) Write a function that describes a relationship between two quantities.*

[HSF.IF.C.7.A](#) Graph linear and quadratic functions and show intercepts, maxima, and minima.

[HSF.IE.B.5](#) Interpret the parameters in a linear or exponential function in terms of a context.

[HSA.SSE.A.1](#) Interpret expressions that represent a quantity in terms of its context.*

[HSA.REI.D.10](#) Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

[HSS.ID.B.6](#) Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

[HSS.ID.B.6.A](#) Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

[HSS.ID.B.6.C](#) Fit a linear function for a scatter plot that suggests a linear association.

[HSS.ID.C.7](#) Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

[HSA.REI.C.6](#) Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

[HSA.CED.A.1](#) Create equations and inequalities in one variable and use them to solve problems.

[HSA.REI.D.12](#) Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

[HSF.IF.B.4](#) For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

[HSA.SSE.B.3.B](#) Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

[HSA.REI.B.4](#) Solve quadratic equations in one variable.

[HSF.IE.A.2](#) Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs

Schedule of topics/units covered:

1. Statistics: One-variable
2. Solving and evaluating linear equations
3. Creating and representing linear functions: Slope-intercept form
4. Creating and representing linear functions: Standard and point-slope form
5. Statistics: Two-variable
6. Systems of equations
7. Inequalities
8. Creating and representing exponential functions
9. Creating and representing quadratic functions
10. Sequences

Differentiation/accessibility strategies and supports (TAG, ELL, SpEd, other):

Leveled, standards-based assessments with clear benchmarks for C-, B- and A-level work. Flexible timeline for demonstrating proficiency. Multiple attempts to retake and/or revise assessments. Honors credit available for interested students. Clearly posted and chunked agenda, daily learning target(s) and content vocabulary. Investigative, problem-based curricular model to attend to CCSS Mathematical Practices of 'making sense of problems and persevere in solving them'; 'Reason abstractly'; and 'look for and make use of structure,' for example. Explicit instruction using guided notes and teacher-provided notes.

Final proficiencies:

- I can create and interpret dot plots, box plots and histograms
- I can identify and contextualize appropriate measures of center and spread for a given set or shape of data.
- I can solve linear equations
- I can rewrite expressions using algebraic properties
- I can write or represent a linear function using a table, graph, or other situation.

I can solve and evaluate a linear function

I can identify which situations can be modeled with a linear relation in slope-intercept form

I can represent a linear function using function notation.

I can model a linear relationship with a standard or point-slope form equation

I can change a linear equation from standard and/or point-slope form to slope-intercept form.

I can link the form of a linear equation to particular contexts

I can represent a linear equation using function notation

I can define and represent two quantitative variables on a scatterplot and describe how the variables are related (direction, shape, strength).

I can distinguish between data sets that should be modeled by a linear function compared with an exponential function or other relationship.

I can explain what the parameters of a model mean in the context of the situation (rate of change, initial value).

I can differentiate between categorical and quantitative data.

I can model linear systems in multiple ways (equations, graphs, tables)

I can solve linear systems using algebra (equal values, substitution, elimination)

I can solve any system using graphing

I can create inequalities in one variable to represent constraints and solve problems.

I can use inequalities to determine which points are viable solutions

I can graph the solutions to one-variable inequalities on the number line and a system of linear inequalities of two half-planes.

I can write, represent, evaluate, and solve exponential function using a table, graph, or situation.

I can explain the properties of negative, fractional, and zero exponents

I can identify which situations can be modeled with an exponential function.

I can write quadratic functions in standard, vertex, or factored form to model real-world and mathematical situations

I can graph quadratic functions given a table or equation in any form

I can solve quadratic equations algebraically or graphically
I can use arithmetic and geometric sequences to model situations

Assessment (pre/post)/evaluation/grading policy:

Grades should be based the student's demonstration of understanding of the standards.

Standard Grading Scale:

90-100% - A

80-89% - B

70-79% - C

60-69% - D

59- below - F

Daily quiz (formative assessment). Flexible timeline for demonstrating proficiency. Multiple attempts to retake and/or revise tests (summative assessments). Students can use notes on tests.

Grades will be weighted as follows:

Tests (summative assessments): 99%

Quizzes (formative assessments): 1%

Behavioral expectations:

Students are expected to be respectful to their teacher and peers at all times. Students are also expected to work both independently and collaboratively in study teams. Students and teachers will refer to the Franklin High School Student Climate Guide.

Safety issues and requirements:

Students and teachers will refer to the Franklin High School Student Climate Guide.

