Huntsville City Schools - Instructional Guide

2017 – 2018

Algebra 1 (NON-BLOCK SCHEDULE: 7 PERIOD DAY) Grades: 8-10

Table of Contents:

Overall Algebra 1 Helpful Resources:

1. Mixed Reviews are at end of sections. Helpful in teacher book for list of standards next to questions.

2. www.interactmath.com , www.commoncorepal.com , and www.poweralgbra.com are good resources for practice and review.

3. Cumulative Standards Review are located at the end of each chapter for in-depth practice problems.

**Please Note: For each chapter, the "Total Days" includes one day for review and one day for testing of the chapter.

Additional Resources:

- **Dan Meyer Resources**
  - **Blog**
    - http://blog.mrmeyer.com/category/3acts/
  - **List of Activities**
    - https://docs.google.com/spreadsheet/ccc?key=0AjIqyKM9d7ZYdEhtR3BJMmdBWnM2YWxWYVM1UWowTEE#gid=0

- **Granite City Math Vocabulary**
  - http://www.graniteschools.org/mathvocabulary/

- **Wiki Space Classrooms**
  - http://mrallens.wikispaces.com/House+C+Mathematics

- ***Debbie Waggoner Resources***
  - http://www.debbiewaggoner.com/secondary-grades-6-12.html

IXL.com Correlations

Pearson Chap-Sec	IXL Assignments	Pearson Chap-Sec	IXL Assignments	Pearson Chap-Sec	IXL Assignments
1.1	I.1, I.4	4.7	P.1-P.7	9.3	BB.4, BB.5
1.2	B.1, B.3, B.7 (Possibly V.1 & V.8)	5.1	S.2, S.3, S.4	9.4	BB.6
1.3	A.1, A.2, A.4	5.2	R.1, R.2, R.3, R.4, R.5	9.5	BB.7, BB.8
1.4	H.1, H.2, H.3, H.4	5.3	S.5, S.6, S.7, S.8	9.6	BB.9, BB.10
1.5	B.2, B.4, B.6	5.4	S.17, S.18, S.19	9.7	CC.1, CC.2
1.6	A.3, A.7, B.5	5.5	S.12, S.13, S.14	9.8	BB.11
1.7	(None)	5.6	S.20, S.21	10.1	(None)
1.8	I.5, I.6, I.7	5.7	N.6	10.2	EE.1, EE.2
1.9	J.2	5.8	DD.1, DD.2, DD.3, DD.4	10.3	EE.3, EE.4, EE.5, EE.6, EE.7
2.1	J.3	6.1	U.1, U.2, U.4	10.4	FF.1, FF.2, FF.3, FF.4
2.2	J.4	6.2	U.8	10.5	(None)
2.3	J.5	6.3	U.5, U.10	11.1	GG.3
2.4	J.6	6.4	U.3, U.9, U.11, U.13, U.14, U.15	11.2	GG.4
2.5	S.9	6.5	T.1, T.2, T.3, T.4	11.3	GG.5
2.6	C.1, C.2, C.3 (C.4)	6.6	T.5, T.6	11.4	GG.6
2.7	C.5, C.6	7.1	V.3	11.5	GG.7
2.8	C.7	7.2	V.4	11.6	R.6, R.7, R.8
2.9	D.1, D.2, D.3	7.3	V.7	11.7	GG.1
2.10	D.4, D.5, D.6, D.7, D.8	7.4	V.5, V.6, V.9	12.1	M.1-M.2, M.3, M.4, M.5, M.6
3.1	K.1, K.2, K.3	7.5	V.10	12.2	N.2
3.2	K.4	7.6	X.1, X.2	12.3	KK.1
3.3	K.5 (Mix of 3.2-3.2: K.6, K.7)	7.7	X.3	12.4	N.5, KK.2
3.4	K.8, K.9, K.10, K.11	7.8	P.1-P.7	12.5	KK.3, KK.4, KK.5, KK.6, KK.7, KK.8
3.5	(None)	8.1	(Review with Y.1-Y.5) Z.1, Z.4, Z.5	12.6	JJ.6, JJ.8 (JJ.4, JJ.5, JJ.7)
3.6	K.12, K.13, K.14, K.15	8.2	Z.6, Z.10, AA.1, AA.2	12.7	JJ.1, JJ.2
3.7	L.1, L.2, L.3, L.4	8.3	Z.8		JJ.3
3.8	(None)	8.4	Z.9		
4.1	Q.1	8.5	AA.3		
4.2	Q.3, Q.13, Q.14	8.6	AA.4		
4.3	S.1, Q.4, Q.5, Q.6	8.7	AA.5		
4.4	Q.7, Q.8, Q.9	8.8	AA.7 (AA.8 is good review)		
4.5	Q.10	9.1	BB.1, BB.2		

4.6	Q.2	9.2	BB.3		

First Nine Weeks

Standard	Resources	Approximate Pacing Number of Days
UNIT 1: Foundations for Algebra		
ALCOS 7.a (6.a). (A-SSE1a) Interpret parts of an expression such as terms, factors, and coefficients.	Ch. 1.1,1.2	Unit 1 Pacing: 10 Days (including 1st week of school obligations)
ALCOS 3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. [N-RN3]	Ch. 1.6 FAL: Evaluating Statements About Radicals	
ALCOS 7a (A-SSE1a) Interpret parts of an expression such as terms, factors, and coefficients.	Ch. 1.7	
ALCOS 22 (A-REI10) 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).	Ch. 1.9 FAL: Interpreting Algebraic Expressions FAL: Solving Equations and Identities	
	LTF Lessons: none SMALLabs: Constant Velocity Review: Ch. 1.3, 1.4, 1.5, 1.6 support N-RN3 Notes: Pg. 22 #71 is the only explicit mention for cube roots A-REI1	

	Ch. 1.8 will be covered in Ch. 2.1	
Unit 2: Solving Equations		
ALCOS 12 (A-CED1) Create equations and inequalities in one variable, and use them to solve problems. Include equations rising from linear and quadratic functions, and simple rational and exponential functions.	Ch. 2.1, Ch. 2.3, Ch. 2.4, Ch. 2.8	Unit 2 Pacing: 17 days
ALCOS 17 (A-REI3) Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Ch. 2.2, Ch. 2.7 FAL: Building and Solving Complet Equations **Note: Integrate geometry questions from Ch. 2.2	
ALCOS 15 (A-CED4) Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. Example: Rearrange Ohm's law $V = IR$ to highlight resistance R. ALCOS 16 (A-REI1): Explain each step in solving a simple equation as following the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Ch. 2.5 FAL: Modeling Motion: Rolling Cups	
ALCOS 4 (N-Q1): Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Ch. 2.6	
ALCOS 6 (N-Q3): Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Ch. 2.9, Ch. 2.10	
	LTF Lessons: ALCOS #4, #13 Connecting a Verbal Description to a Table or Graph (1.5 days) Walk the Line (2 days) also partially covers 8-F5 ALCOS #15, #16, #17 Literal Equations – Reviewing and Foreshadowing (1 day) ALCOS #12, #15 Linear Functions (1 day) Dan Meyer: Circle-Square	

	World Record Airbag Falling Glowsticks Falling Rocks SMALLabs: Constant Velocity Chemical Titration	
Unit 3: Solving Inequalities		
ALCOS 17 (A-REI3) Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Ch. 3.1, Ch. 3.2, Ch. 3.3, Ch. 3.4, Ch. 3.6	Unit 3 Pacing: 9 days
ALCOS 12 (A-CED1) Create equations and inequalities in one variable, and use them to solve problems. Include equations rising from linear and quadratic functions, and simple rational and exponential functions.	Ch. 3.7	
	LTF Lessons: None Dan Meyer: Circle-Square World Record Airbag Falling Glowsticks Falling Rocks SMALLabs: Constant Velocity	
Unit 4: An Introduction to Functions Preparation: Ch. 4.1 preparation for F-IF4		
ALCOS 22 (A-REI10) 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).	Ch. 4.2, Ch. 4.3 FAL: Representing Functions of Everyday Situations	Unit 4a Pacing: 5 days

8.12 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). [8-F2] *8.13 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. [8-F3]*	Ch. 4.2, Ch. 4.3	
ALCOS 25 (F-IF1) Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x.* The graph of *f* is the graph of the equation *y = f(x).*	Ch. 4.2, Ch. 4.3	
	LTF Lessons: Introduction to Function Notation Connecting a Verbal Description to Table and Graph Using Tables and Graphs to Determine the Better Deal Connecting Table Graph and Function Notation Discrete and Continuous Data Dan Meyer: Taco Cart SMALLabs: Chemistry Titration Gear Ratio Game Constant Acceleration	

Second Nine Weeks

Standard	Resources	Approximate Pacing Number of Days
ALCOS 29 (F-IF5) Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Ch. 4.4	Unit 4b Pacing: 10 days
ALCOS 5 (N-Q2): Define appropriate quantities for the purpose of descriptive modeling.	Ch. 4.5 FAL: Modeling Population Growth: Having Kittens	
ALCOS 25 (F-IF1) Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x.* The graph of *f* is the graph of the equation *y = f(x).* *8.11 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.) [8-F1]*	Ch. 4.6	
ALCOS 27 (F-IF3) Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. ALCOS 35 (F-BF2) Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Ch. 4.7 FAL: Generalizing Patterns: Table Tiles	
ALCOS 26 (F-IF2) Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Ch. 4.7	
	LTF Lessons: Introduction to Function Notation Connecting a Verbal Description to Table and Graph Using Tables and Graphs to Determine the Better Deal	

	Connecting Table Graph and Function Notation Discrete and Continuous Data Arithmetic Sequences (MG) Dan Meyer: Taco Cart SMALLabs: Chemistry Titration Gear Ratio Game Constant Acceleration	
Unit 5: Linear Functions Helpful Notes/Resources for Ch. 5: 1.Ch. 5.6 is covered in Geometry 2. Step Functions and Piece Wise functions should be covered after 5.8		
ALCOS 37b (F-LE1b) Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. ALCOS 30 (F-IF6) Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Ch. 5.1	Unit 5 Pacing: 17 days
ALCOS 13 (A-CED2) Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Ch. 5.2	
ALCOS 36 (F-BF3) Identify the effect on the graph of replacing f(x) by f(x) + k, kf(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. ALCOS 31a (F-IF7a) Graph linear and quadratic functions, and show intercepts, maxima, and minima.	Ch. 5.3 FAL: Representing Linear and Exponential Growth	
ALCOS 38 (F-LE2) Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Ch. 5.4	

ALCOS 34a (F-BF1) Write a function that describes a relationship between two quantities	Ch. 5.5 **Note: Concept Byte- Inverse of a Linear Function (Immediately following Ch. 5.5) FAL: Interpreting Data: Muddying the Water	
ALCOS 45c (S-ID6c) Fit a linear function for a scatter plot that suggests a linear association. ALCOS 45 (S-ID-6) Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. ALCOS 45a (S-ID6a) Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given function or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. ALCOS 46 (S-ID7) Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. ALCOS 40 (F-LE5) Interpret the parameters in a linear or exponential function in terms of a context.	Ch. 5.7 **Note: Concept Byte- Using Residuals (Immediately following Ch. 5.7) FAL: Interpreting Data: Muddying the Water	
ALCOS 45b (S-ID6b) Informally assess the fit of a function by plotting and analyzing residuals. ALCOS 31b (F-IF7b) Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Ch. 5.8 **Please note there are two days for this standard so that you can cover on Piecewise and step functions.	
	LTF Lessons: Walk the Line (MG) Average Rate of Change (MG) Calculating Average Rate of Change Slope Investigation Analysis of Functions Translations of Linear Functions	

	Write the equation of the Line Review Piecewise functions Dan Meyer: Taco Cart Penny Circle	
Unit 6: Systems of Equations and Inequalities		
8.10 Analyze and solve pairs of simultaneous linear equations. [8-EE8] *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. [8-EE8a]* *b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. [8-EE8b]* c. *Solve real-world and mathematical problems leading to two linear equations in two variables. [8-EE8c]* ALCOS 20 (A-REI6) Solve systems of linear equations exactly and approximately (e.g. with graphs), focusing on pairs of linear equations in two variables. ALCOS 23 (A-REI11) Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) – g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	Ch. 6.1-6.3	Unit 6a Pacing: 9 days (first half)
ALCOS 19 (A-REI5) Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.		
	LTF Lessons: Literal equations- Reviewing and Foreshadowing Linear Functions (MG)	

	Painting the House Solving systems of Linear Equations Dan Meyer: Circle-Square SMALLabs: Constant Velocity	

Third Nine Weeks

Standard	Resources	Approximate Pacing Number of Days
ALCOS 20 (A-REI6) Solve systems of linear equations exactly and approximately (e.g. with graphs), focusing on pairs of linear equations in two variables.	CH. 6.4 FAL: Maximizing Profit: Selling Boomerangs	Unit 6b Pacing: 8 days (second half)
ALCOS 24 (A-REI12) 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 inequalities in two variables as the intersection of the corresponding half-planes.	Ch. 6.5 and Ch. 6.6 **Note: Immediately following Ch. 6.6 Concept Byte using Graphing Calculators	
	LTF Lessons: Maximizing Profit Dan Meyer: Circle-Square SMALLabs: Constant Velocity	
Unit 7: Exponents and Exponential Functions		
ALCOS 1 (N-RN1) Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	Ch. 7.1, Ch. 7.2, Ch. 7.3, Ch. 7.4	Unit 7 Pacing: 17 days
ALCOS 2 (N-RN2) Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Ch. 7.5	
ALCOS 33 (F-IF9) Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). ALCOS 32b (F-IF8b) Use the properties of exponents to interpret expressions for exponential functions.	Ch. 7.6 and CH. 7.7 FAL: Generating Polynomials from Patterns FAL: Representing Trigonometric Functions	

ALCOS 34 (F-BF1) Write a function that describes a relationship between two quantities. ALCOS 7b [A-SSE1b] Interpret complicated expressions by viewing one or more of their parts as a single entity. Example: Interpret P(1+r)n as the product of P and a factor not depending on P		
ALCOS 35 (F-BF2) Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Ch. 7.8	
	LTF Lessons: Exponential Function Exploration Exponential Growth (Found under Mathematical Foundations) How do you start and how do you change? (Non LTF Lesson available on apluscollegeready.com) Writing Equations Using Sequences Limits- A Physical Approach (MG) Dan Meyer: Super Stairs Taco Cart	
Unit 8: Polynomials and Factoring		
ALCOS 10 (A-APR1) Understand that polynomials form a system analogous to the integers; namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract and multiply polynomials.	Ch. 8.1, Ch. 8.2, Ch. 8.3, Ch. 8.4 FAL: Representing Polynomials Graphically	Unit 8 Pacing: 17 days
ALCOS 7a (A-SSE1a) Interpret parts of an expression such as terms, factors, and coefficients. ALCOS 8 (A-SSE2): Use the structure of an expression to identify ways to rewrite it. Example: See $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	Ch. 8.5, Ch. 8.6, Ch. 8.7, Ch. 8.8	

	LTF Lessons: None Dan Meyer: None SMALLabs: None	

Fourth Nine Weeks

Standard	Resources	Approximate Pacing Number of Days
Unit 9: Quadratic Functions and Equations		
ALCOS 31a (F-IF7a) Graph linear and quadratic functions, and show intercepts, maxima, and minima. ALCOS 33 (F-IF9) Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). ALCOS 34 (F-BF1) Write a function that describes a relationship between two quantities. ALCOS 39 (F-LE3) Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Ch. 9.1 and Ch. 9.2	Unit 9 Pacing: 17 days
ALCOS 18b (A-REI4b) Solve quadratic equations by inspection (e.g. for x2 = 49), taking square roots, completing the square and the quadratic formula, and factoring as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions, and write them as $a \pm bi$ for real numbers a and b. ALCOS 9a (A-SSE3a): Factor a quadratic expression to reveal the zeros of the function it defines. ALCOS 9b (A-SSE3b): Factor a quadratic expression to reveal the zeros of the function it defines. ALCOS 9c (AL standard): Determine a quadratic equation when given its graph or roots	Ch. 9.3 and Ch. 9.4 FAL: Solving Quadratic Equations FAL: Representing Quadratic Functions Graphically	

ALCOS 9d (A-SSE3c): Use the properties of exponents to transform expressions for exponential functions. Example: The expression 1.15^t can be rewritten as $(1.15^{1/12})12^t = 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.		
ALCOS 31a (F-IF8a) Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	Ch. 9.5	
ALCOS 18a (A-RE14a) Use a method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	Ch. 9.6	
ALCOS 37a (F-LE1a) Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. ALCOS 37 (F-LE1) Distinguish between situations that can be modeled with linear functions and with exponential functions. ALCOS 37c (F-LE1c) Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. ALCOS 45a (S-ID6a) Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given function or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. ALCOS 45b (S-ID6b) Informally assess the fit of a function by plotting and analyzing residuals.	Ch. 9.7 FAL: Representing Linear and Exponential Growth	
ALCOS 21 (A-REI7) Solve a simple system of linear equation and quadratic equations in two variables algebraically and graphically. ALCOS 14 (A-CED3): Represent constraints by equations or inequalities, and by systems of equations and/or inequalities and interpret solutions as viable or non-viable options in a modeling context.	Ch. 9.8 FAL: Sorting Equations of Circles 1	

Example: represent inequalities describing nutritional and cost constraints on combinations of different foods.		
	LTF Lessons: Investigation- Graphing Quadratic Functions Graphing Quadratics Functions (Example 1) Analyzing Quadratic Functions(MG) Quadratic Optimization Another Way to Look at Factoring Graphing Quadratic Functions (Example 2 and problems 1,2)	
Unit 10: Radical Expressions and Equations		
8.21. Explain a proof of the Pythagorean Theorem and its converse. [8-G6] *8.22. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. [8-G7]* *8.23. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. [8-G8]* ALCOS 31b (F-IF7b) Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Ch. 10. 1, 10.2, 10.3 and 10.5 (10.4 is helpful, but optional) **Please note 1. Section 10.1 is not required for high school. 2. Section 10.5 can be taught after the End Of Course Exam 3.Graphing Calculators are a great resource for section 10.5 FAL: Proving the Pythagorean Theorem FAL: Classifying Rational and Irrational Numbers	Unit 10 Pacing: 7 days
	LTF Lessons: Pythagorean Theorem Applications Brenna Rescues Andrew	
Unit 11: Rational Expressions and Functions		
ALCOS 11 (A-APR7) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Ch. 11.1, 11.2, 11.3 and Ch. 11.4 **Please Note: 11.1 is not a standard but prepares for 11.2.	Unit 11 Pacing: 17 days
ALCOS 12 (A-CED1) Create equations and inequalities in one variable, and use them to solve problems. Include equations rising	Ch. 11.5 FAL: Representing Inequalities Graphically	

from linear and quadratic functions, and simple rational and exponential functions.		
ALCOS 29 (F-IF5) Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	Ch. 11.6	
8.14 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. [8-F4] *8.15 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. [8-F5]* ALCOS 28 (F-IF4) 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. Key features include intercepts; relative maximums and minimums; symmetries; end behavior; and periodicity.	Ch. 11.7	
	LTF Lessons: Analysis of Functions Quadratic Optimization Characteristics of Functions Transformations of Functions Explorations Even/Odd Functions Dan Meyer: Circle-Square	
Unit 12: Data Analysis		
ALCOS 41 (S-ID1) Represent data with plots on the real number line (dot plots, histograms, and box plots).	Ch. 12.2	Unit 12 Pacing: 10 days

ALCOS 42 (S-ID2) 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.	Ch. 12.3 and Ch. 12.4 FAL: Representing Data with Frequency Graphs	
8.25 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. [8-SP1] *8.26 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. [8-SP2]* *8.27 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. [8-SP3]* *8.28 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. [8-SP4]* ALCOS 43 (S-ID3) Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). ALCOS 44 (S-ID5) Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Ch. 12.5 FAL: Representing Data with Box Plots FAL: Devising a Measure: Correlation	
ALCOS 47 (S-CP2) Understand that two events A and B are independent if the probability of A and B occurring together is the	Ch. 12.8	

product of their probabilities, and use this characterization to determine if they are independent.	FAL: Representing Conditional Probabilities 1 FAL: Representing Conditional Probability: Medical Testing FAL: Representing Conditional Probability 2	
	LTF Lessons: Fitting a Line to Data Use Dotplots (Line Plots) to Determine Mean, Median, Mode, and Range Analyzing Mean, Median, Mode and Range Describing Distributions: Standard Deviation Movie Probability (MG) Does Gender Make a Difference? Dan Meyer: Penny Circle	

Listed below are the technology standards for grades six through twelve. You are to make every effort to incorporate the applicable standards into your daily classroom lessons. These standards should be noted in your lesson plans.

Alabama Technology Standards 6th – 8th Grades

Technology Operations and Concepts

Students will:

1. Appraise technology systems to determine software and hardware compatibility.

2. Publish digital products that communicate curriculum concepts.
   Examples: Web pages, videos, podcasts, multimedia presentations

3. Explain how network systems are connected and used.
   Examples: file sharing, collaborating, wireless networking

4. Determine basic troubleshooting strategies to correct common hardware and software problems.
   Examples: checking connections, restarting equipment, creating a backup copy of digital data
   Describing the importance of antivirus and security software

5. Use basic features of word processing, spreadsheets, databases, and presentation software.
   Examples: word processing—reports, letters, brochures
   spreadsheets—discovering patterns, tracking spending, creating budgets
   databases—contact list of addresses and telephone numbers
   presentation software—slideshow

6. Select specific digital tools for completing curriculum-related tasks.
   Examples: spreadsheet for budgets, word processing software for essays, probes for data collection

7. Demonstrate correct keyboarding techniques.

Digital Citizenship

8. Identify safe uses of social networking and electronic communication.
   Recognizing dangers of online predators
   Protecting personal information online

9. Practice responsible and legal use of technology systems and digital content.
   Examples: avoiding plagiarism; complying with acceptable-use policies, copyright laws, and fair use standards; recognizing secure Web sites
   Identifying examples of computer crime and related penalties
   Examples: computer crime—phishing, spoofing, virus and worm dissemination, cyberbullying penalties—fines, incarceration
   Citing sources of digital content

10. Describe advances in technology and effects of each on the workplace and society.
    Examples: agriculture, manufacturing, medicine, warfare, transportation, communication, education

Research and Information Fluency

11. Use digital tools and strategies to locate, collect, organize, evaluate, and synthesize information.
    Examples: locating—Boolean searches, graphic organizers, spreadsheets, databases collecting—probeware, graphing calculators organizing—graphic organizers, spreadsheets evaluating—reviewing publication dates, determining credibility synthesizing—word processing software, concept-mapping software

Communication and Collaboration

12. Use digital tools to communicate and collaborate at all levels from interpersonal to global.
    Examples: instant messages, e-mail, blogs, wikis, collaborative authoring tools, online learning communities
    Demonstrating digital file transfer
    Examples: attaching, uploading, downloading

Critical Thinking, Problem Solving, and Decision Making

13. Use digital tools to formulate solutions to authentic problems.
    Examples: electronic graphing tools, probes, spreadsheets

Creativity and Innovation

14. Use digital tools to generate new ideas, products, or processes.
    Examples: ideas—predictions, trends products—animation, video processes—models, simulations

Alabama Technology Standards 9th – 12th Grade

Operations and Concepts

Students will:

2. Diagnose hardware and software problems.
   Examples: viruses, error messages
   Applying strategies to correct malfunctioning hardware and software
   Performing routine hardware maintenance
   Describing the importance of antivirus and security software

3. Demonstrate advanced technology skills, including compressing, converting, importing, exporting, and backing up files.
   Transferring data among applications
   Demonstrating digital file transfer
   Examples: attaching, uploading, downloading

4. Utilize advanced features of word processing software, including outlining, tracking changes, hyperlinking, and mail merging.

5. Utilize advanced features of spreadsheet software, including creating charts and graphs, sorting and filtering data, creating formulas, and applying functions.

6. Utilize advanced features of multimedia software, including image, video, and audio editing.

Digital Citizenship

9. Practice ethical and legal use of technology systems and digital content.
   Explaining consequences of illegal and unethical use of technology systems and digital content
   Examples: cyberbullying, plagiarism
   Interpreting copyright laws and policies with regard to ownership and use of digital content

Citing sources of digital content using a style manual
Examples: Modern Language Association (MLA), American Psychological Association (APA)

Research and Information Fluency

11. Critique digital content for validity, accuracy, bias, currency, and relevance.

Communication and Collaboration

12. Use digital tools to publish curriculum-related content.
    Examples: Web page authoring software, coding software, wikis, blogs, podcasts

13. Demonstrate collaborative skills using curriculum-related content in digital environments.

Examples: completing assignments online; interacting with experts and peers in a structured, online learning environment

Critical Thinking, Problem Solving, and Decision Making

14. Use digital tools to defend solutions to authentic problems.
    Example: disaggregating data electronically

Creativity and Innovation

15. Create a product that integrates information from multiple software applications.
    Example: pasting spreadsheet-generated charts into a presentation