OFFICE OF CURRICULUM, INSTRUCTION & PROFESSIONAL DEVELOPMENT

ACADEMIC COURSE OUTLINE

Department	Mathematics		**Course Title**	Algebra 1		**Course Code**			2986
Grade Level	8 - 12		**Short Title**	ALGEBRA 1		**Grad Requirement Subject**			Math
Course Length	2 semesters	**Credits per Semester**	5	**Approved for Honors**	No	**Required**	Yes	**Elective**	No
Prerequisites	None								
Co-requisites	None								
Articulated with LBCC	No			**Articulated with CSULB**					No
Meets UC "a-g" Requirement	Yes (c)			**Meets NCAA Requirement**					Yes
Teaching Credential(s)	Teachers with any of these credentials are authorized to teach this course: • Single Subject Credential in Mathematics (SS) • Single Subject Credential in Foundational Mathematics (SSFM) • Multiple Subject Credential or Single Subject Credential in content other than math, with a Single Subject Authorization in Introductory Mathematics (SMA)								

COURSE OVERVIEW:

The fundamental purpose of the Algebra 1 course is to formalize and extend the mathematics that students learned in the middle grades. This course includes standards from the conceptual categories of Number and Quantity, Algebra, Functions, and Statistics and Probability. Some standards are repeated in multiple higher mathematics courses; therefore instructional notes, which appear in brackets, indicate what is appropriate for study in this particular course. For example, the scope of Algebra 1 is limited to linear, quadratic, and exponential expressions and functions as well as some work with absolute value, step, and functions that are piecewise-defined. Therefore, although a standard may include references to logarithms or trigonometry, those functions are not to be included in course work for Algebra 1; they will be addressed later in Algebra 2. Successful completion of Algebra 1, or an equivalent sequence, is a graduation requirement.

For the Algebra 1 course, instructional time should focus on four critical areas: (1) deepen and extend understanding of linear and exponential relationships; (2) contrast linear and exponential relationships with each other and engage in methods for analyzing, solving, and using quadratic functions; (3) extend the laws of exponents to square and cube roots; and (4) apply linear models to data that exhibit a linear trend.

EXPECTED OUTCOMES

Students are expected to perform at a proficient level on a variety of tasks and assessments addressing the Common Core Standards for Mathematical Practice and the Common Core State Standards addressed in Algebra 1. Levels of proficiency are defined near the end of this course outline under Performance Criteria.

Common Core State Standards for Mathematical Practice (SMP)

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.

5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Common Core State Standards for Mathematical Content (CCSS-M)

Number and Quantity

The Real Number System **N-RN**

N-RN.A **Extend the properties of exponents to rational exponents.**

N-RN.1 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. *For example, we define* $5^{1/3}$ *to be the cube root of 5 because we want* $(5^{1/3})^3 = 5^{(1/3)3}$ *to hold, so* $(5^{1/3})^3$ *must equal 5*.

N-RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Algebra

Seeing Structure in Expressions **A-SSE**

A-SSE.A **Interpret the structure of expressions.** [Linear, exponential, quadratic.]

A-SSE.1 Interpret expressions that represent a quantity in terms of its context.★

a. Interpret parts of an expression, such as terms, factors, and coefficients.★
b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret* $P(1+r)^n$ *as the product of P and a factor not depending on P.*★

A-SSE.2 Use the structure of an expression to identify ways to rewrite it.

A-SSE.B **Write expressions in equivalent forms to solve problems.** [Quadratic and exponential.]

A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★

a. Factor a quadratic expression to reveal the zeros of the function it defines.★
b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.★
c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*★

Arithmetic with Polynomials and Rational Expressions **A-APR**

A-APR.A **Perform arithmetic operations on polynomials.** [Linear and quadratic.]

A-APR.1 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.

Creating Equations **A-CED**

A-CED.A **Create equations that describe numbers or relationships.** [Linear, quadratic, and exponential (integer inputs only); for A.CED.3 linear only.]

A-CED.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*.★

A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.★

A-CED.3 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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.★

A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*⋆

Reasoning with Equations and Inequalities **A-REI**

A-REI.A **Understand solving equations as a process of reasoning and explain the reasoning.** [Master linear; learn as general principle.]

A-REI.1 Explain each step in solving a simple equation as following from 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.

A-REI.B **Solve equations and inequalities in one variable.** [Linear inequalities; literal equations that are linear in the variables being solved for; quadratics with real solutions.]

A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

A-REI.4 Solve quadratic equations in one variable.

a. Use the 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.
b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, 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.

A-REI.C **Solve systems of equations.** [Linear-linear and linear-quadratic.]

A-REI.5 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.

A-REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A-REI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line* $y = –3x$ and the circle $x^2 + y^2 = 3$.

A-REI.D **Represent and solve equations and inequalities graphically.** [Linear and exponential; learn as general principle.]

A-REI.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).

A-REI.11 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.⋆

A-REI.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.

Functions

Interpreting Functions **F-IF**

F-IF.A **Understand the concept of a function and use function notation.** [Learn as general principle; focus on linear and exponential and on arithmetic and geometric sequences.]

F-IF.1 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 $y = f(x)$.

F-IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

F-IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by* $f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1)$ *for* $n \geq 1$.

F-IF.B Interpret functions that arise in applications in terms of the context. [Linear, exponential, and quadratic.]

F-IF.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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.★

F-IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*★

F-IF.6 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.★

F-IF.C Analyze functions using different representations. [Linear, exponential, quadratic, absolute value, step, piecewise-defined.]

F-IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★

a. Graph linear and quadratic functions and show intercepts, maxima, and minima.★
b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.★
e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.★

F-IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

a. 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.
b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay*.

F-IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

Building Functions F-BF

F-BF.A Build a function that models a relationship between two quantities. [For F.BF.1, 2, linear, exponential, and quadratic.]

F-BF.1 Write a function that describes a relationship between two quantities.★

a. Determine an explicit expression, a recursive process, or steps for calculation from a context.★
b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*★

F-BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★

F-BF.B Build new functions from existing functions. [Linear, exponential, quadratic, and absolute value; for F.BF.4a, linear only.]

F-BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, 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.*

F-BF.4 Find inverse functions.

a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*

Linear, Quadratic, and Exponential Models★ **F-LE**

F-LE.A **Construct and compare linear, quadratic, and exponential models and solve problems.**

F-LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.★
   a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.★
   b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.★
   c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.★

F-LE.2 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).★

F-LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.★

F-LE.B **Interpret expressions for functions in terms of the situation they model.**

F-LE.5 Interpret the parameters in a linear or exponential function in terms of a context.★ [Linear and exponential of form $f(x)b^x + k$.]

Statistics and Probability

Interpreting Categorical and Quantitative Data **S-ID**

S-ID.A **Summarize, represent, and interpret data on a single count or measurement variable.**

S-ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).★

S-ID.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.★

S-ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).★

S-ID.B **Summarize, represent, and interpret data on two categorical and quantitative variables.** [Linear focus, discuss general principle.]

S-ID.5 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.★

S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.★
   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*.★
   b. Informally assess the fit of a function by plotting and analyzing residuals.★
   c. Fit a linear function for a scatter plot that suggests a linear association.★

S-ID.C **Interpret linear models.**

S-ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.★

S-ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.★

S-ID.9 Distinguish between correlation and causation.★

EXPECTED INTEGRATED OUTCOMES

(From the California Career Technical Education Model Curriculum Standards, adopted by the California State Board of Education in January, 2013)

Students are also expected to proficiently apply common skills that are relevant across curriculum areas and career pathways.

Standards for Career Ready Practice (CR)

1. Apply appropriate technical skills and academic knowledge.
Career-ready individuals readily access and use the knowledge and skills acquired through experience and education. They make connections between abstract concepts with real-world applications and recognize the value of academic preparation for solving problems, communicating with others, calculating measures, and performing other work-related practices.

2. Communicate clearly, effectively, and with reason.
Career-ready individuals communicate thoughts, ideas, and action plans with clarity, using written, verbal, electronic, and/or visual methods. They are skilled at interacting with others: they are active listeners who speak clearly and with purpose, and they are comfortable with terminology that is common to workplace environments. Career-ready individuals consider the audience for their communication and prepare accordingly to ensure the desired outcome.

3. Develop an education and career plan aligned with personal goals.
Career-ready individuals take personal ownership of their educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process, and they understand that nearly all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever-changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.

4. Apply technology to enhance productivity.
Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology. They understand the inherent risks - personal and organizational - of technology applications, and they take actions to prevent or mitigate these risks.

5. Utilize critical thinking to make sense of problems and persevere in solving them.
Career-ready individuals recognize problems in the workplace, understand the nature of the problems, and devise effective plans to solve the problems. They thoughtfully investigate the root cause of a problem prior to introducing solutions. They carefully consider options to solve a problem and, once agreed upon, follow through to ensure the problem is resolved.

6. Practice personal health and understand financial literacy.
Career-ready individuals understand the relationship between personal health and workplace performance. They contribute to their personal well-being through a healthy diet, regular exercise, and mental health activities. Career-ready individuals also understand that financial literacy leads to a secure future that enables career success.

7. Act as a responsible citizen in the workplace and the community.
Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are aware of the impacts of their decisions on others and the environment around them, and they think about the short-term and long-term consequences of their actions. They are reliable and consistent in going beyond minimum expectations and in participating in activities that serve the greater good.

8. Model integrity, ethical leadership, and effective management.
Career-ready individuals consistently act in ways that align with personal and community-held ideals and principles. They employ ethical behaviors and actions that positively influence others. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they recognize the short-term and long-term effects that management’s actions and attitudes can have on productivity, morale, and organizational culture.

9. Work productively in teams while integrating cultural and global competence.
Career-ready individuals contribute positively to every team, as both team leaders and team members. To avoid barriers to productive and positive interaction, they apply an awareness of cultural differences. They interact effectively and sensitively with all members of the team and find ways to increase the engagement and contribution of other members.

10. Demonstrate creativity and innovation.
Career-ready individuals recommend ideas that solve problems in new and different ways and contribute to the improvement of the organization. They consider unconventional ideas and suggestions by others as solutions to issues, tasks, or problems. They discern which ideas and suggestions may have the greatest value. They seek new methods, practices, and ideas from a variety of sources and apply those ideas to their own workplace practices.

11. Employ valid and reliable research strategies.
Career-ready individuals employ research practices to plan and carry out investigations, create solutions, and keep abreast of the most current findings related to workplace environments and practices. They use a reliable research process to search for new information and confirm the validity of sources when considering the use and adoption of external information or practices.

12. Understand the environmental, social, and economic impacts of decisions.
Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact other people, organizations, the workplace, and the environment. They are aware of and utilize new technologies, understandings, procedures, and materials and adhere to regulations affecting the nature of their work. They are cognizant of impacts on the social condition, environment, workplace, and profitability of the organization.

COURSE CONTENT AND SUGGESTED TIME ALLOTMENT:
Content sequencing, activities, and time allocations are only suggestions and may be adjusted to suit school site curriculum plans, available materials, and student needs.

Unit 1: Equations and Inequalities

Duration: 24 days

Description:
Students analyze and explain precisely the process of solving an equation. Students, through reasoning, develop fluency writing, interpreting, and translating between various forms of linear equations and inequalities.

Required Assignment:
Building and Solving Complex Equations
http://map.mathshell.org/lessons.php?unit=9215&collection=8
This lesson assesses how well students are able to create and solve linear and non-linear equations. . Students work individually on an assessment task that is designed to reveal current levels of understanding and difficulties. Then they work collaboratively building and solving equations in which the unknown appears more than once in the equation. In particular, the lesson will help identify and help students who have the difficulty solving equations where the unknown appears more than once, and solving equations in more than one way.

Suggested Activities: See the Unit 1 Guide for Algebra 1.

Materials: Big Ideas Algebra 1 text: Chapters 1 and 2

Standards Addressed: CCSS-M Clusters A-REI.A, A-REI. B, A-CED.A

Unit 2: Linear Functions and Systems

Duration: 44 days

Description:
Unit 2 builds upon students' prior knowledge of linear models. Students learn function notation and develop the concepts of domain and range. Recognizing a linear function as having a constant rate of change, students will interpret the slope in the context of a situation. Arithmetic sequences will be referenced as a special type of linear function. Students expand their experience with functions to include more specialized functions – absolute value, step, and those that are piecewise-defined. Scatter plots and trend lines are also explored. Students then use linear functions to explore systems of equations and inequalities.

Required Assignment:
Representing Inequalities Graphically
http://map.mathshell.org/lessons.php?unit=9265&collection=8
This lesson assesses how well students are able to use linear inequalities to create a set of solutions. . Students work individually on an assessment task that is designed to reveal current levels of understanding and difficulties. Then they work collaboratively, in pairs, on a game. One student decides on the position of a "target point" on a coordinate grid and gives clues in the form of algebraic inequalities (e.g., $3y + 2x < 12$). The other student uses these clues to find the location o the target point. In a whole-class discussion, students review the main math concepts of the math lesson. In particular, the lesson will help identify and help students who have the difficulty representing a constraint by shading the correct side of the inequality line, and understanding how combining inequalities affects a solution space.

Suggested Activities: See the Unit 2 Guide for Algebra 1.

Materials: Big Ideas Algebra 1 text: Chapters 3, 4, and 5, and Section 10.4

Standards Addressed: CCSS-M Clusters A-CED.A, A-REI. C, A-REI.D, F-IF.A, F-IF.B, F-IF.C, F-BF.A, F-BF.B, S-ID.B, S-ID.C

Unit 3: Exponential Functions

Duration: 32 days

Description:
In Unit 3, students build on their understanding of integer exponents to consider exponential functions with integer domains. They compare and contrast linear and exponential functions, looking for structure in each and distinguishing between additive and multiplicative change. They expand their understanding of arithmetic sequences as linear functions to interpret geometric sequences as exponential functions.

Required Assignment:
Modeling Population Growth: Having Kittens
http://map.mathshell.org/lessons.php?unit=9100&collection=8
This lesson assesses how well students are able to interpret a situation and represent the constraints and variables mathematically, select appropriate mathematical methods to use, make sensible estimates and assumptions, investigate an exponentially increasing sequence, and communicate their reasoning clearly. Students work individually on an assessment task that is designed to reveal current levels of understanding and difficulties. At the start of the lesson, students work individually answering questions about the same problem. In small groups, students then work collaboratively on the task. In the same small groups, students evaluate sample solutions. In a whole-class discussion, students explain and compare the alternative solution

strategies they have seen and used.

Suggested Activities: See the Unit 3 Guide for Algebra 1.

Materials: Big Ideas Algebra 1 text: Chapter 6

Standards Addressed: CCSS-M Clusters N-RN.A, A-SSE.A, A-SSE.B, A-CED.A, A-REI.D, F-IF.A, F-IF.B, F-IF.C, F-BF.A, F-BF.B, F-LE.A, F-LE.B

Unit 4: Polynomials and Quadratic Functions

Duration: 49 days

Description:
Students learn that polynomials form a system analogous to the integers upon which the students will learn to perform basic operations in Unit 4. Students will consider quadratic functions, comparing the key characteristics of quadratic functions to those of linear and exponential functions. Students learn through repeated reasoning to anticipate the graph of a quadratic function by interpreting the structure of various forms of quadratic expressions. In particular, they identify the real solutions of a quadratic equation as the zeros of a related quadratic function.

Required Assignment:
Representing Quadratic Functions Graphically
http://map.mathshell.org/lessons.php?unit=9245&collection=8
This lesson assesses how well students are able to understand what the different algebraic forms of a quadratic function reveal about the properties of its graphical representation.. Students work individually on an assessment task that is designed to reveal current levels of understanding and difficulties. Then they work collaboratively in small groups to match diagrammatic and algebraic representations of polynomials. They display their work on posters. Students share their finished posters, comparing reasoning, and checking that explanations are clear and complete. Students review their own solutions and complete a second task to measure their learning. In particular, the lesson will identify and help students who have difficulty understanding how the factored form of the function can identify a graph's roots, understanding how the completed square form of the function can identify a graph's maximum or minimum point, and understanding how the standard form of the function can identify a graph's intercept.

Suggested Activities: See the Unit 4 Guide for Algebra 1.

Materials: Big Ideas Algebra 1 text: Chapters 7, 8 and 9

Standards Addressed: CCSS-M Clusters A-SSE.A, A-SSE.B, A-APR.A, A-CED.A, A-REI.B, A-REI.C , A-REI.D, F-IF.B, F-IF.C, F-BF.B, F-LE.B

Unit 5: Data Analysis

Duration: 19 days

Description:
Previously in this course, students worked with quantitative data. In Unit 5, they will continue to do so as they learn to calculate measures of central tendency and spread. Students will branch into categorical data where

most will be displayed as relative frequencies in two-way frequency tables.

Required Assignment:
Representing Data with Box Plots
http://map.mathshell.org/lessons.php?unit=9420&collection=8
This lesson assesses how well students are able to interpret data using frequency and box plots. A whole-class introduction provides students with guidance on how to work through the task. Students work in pairs or threes on a collaborative discussion task, matching frequency graphs to box plots. Towards the end of the lesson there is a whole-class discussion. In a follow-up lesson, students work alone on a similar task to the assessment task. In particular this lesson aims to identify and help students who have difficulty figuring out the data points and spread of data from frequency graphs and box plots.

Suggested Activities: See the Unit 5 Guide for Algebra 1.

Materials: Big Ideas Algebra 1 text: Chapter 11

Standards Addressed: CCSS-M Clusters S-ID.A, S-ID.B

INSTRUCTIONAL METHOD AND/OR STRATEGIES:

A variety of instructional strategies will be utilized to accommodate all learning styles. See the "Using Formative Assessment to Address the Specific Learning Needs of Low Achieving Students, High Achieving Students, Students with Disabilities and English Language Learners in K-12 MATHEMATICS" document.

COURSE MATERIALS:

Core Text:	Algebra 1, Larson & Boswell, Big Ideas Learning, © 2015
Supplemental Materials:	In addition to the basic text, a variety of instructional tools will be used to meet the needs of all students.

RESOURCES:

Documents

- LBUSD Scope and Sequence ..... LBUSD Mathematics Webpage
- LBUSD Unit Guides ..... LBUSD Mathematics Webpage
- LBUSD Instructional Tools ..... LBUSD Mathematics Curriculum Intranet
- Using Formative Assessment for Differentiation ..... LBUSD Math/ELA Curriculum Documents
- CTE Standards ..... http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp
- Work-Based Learning Continuum ..... LBUSD Work-Based Learning Webpage
- ELD Standards ..... http://www.cde.ca.gov/sp/el/er/eldstandards.asp

District Offices

- Math Curriculum Office ..... (562) 997-8000, ext. 2962
- Research Office ..... (562) 997-8143

PERFORMANCE CRITERIA:

Defines how good is good enough on which measures to demonstrate achievement of content standards.

Classroom Performance Standards

The objective of instruction is to help all students achieve at or above the Proficient Level and receive a C or better in the course.

	F	**D**	**C**	**B**	**A**
Assessments Unit Tests Chapter Tests Quizzes	0 – 59%	60 – 69%	70 – 79%	80 – 89%	90 – 100%
Classwork	0 – 59%	60 – 69%	70 – 79%	80 – 89%	90 – 100%
Homework	0 – 59%	60 – 69%	70 – 79%	80 – 89%	90 – 100%

Standard Grading Scale:

A	90 – 100%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	0 – 59%

Suggested Grade Weighting:

1. Assessment 60 – 80%

Graded work assessing a student's mastery of mathematics such as any of the following:
- Tests (district exams and classroom tests)
- Quizzes
- Project work that assesses a student's understanding

2. Classwork/Activities 10 – 25%

Graded work completed in class such as any of the following:
- In class assignments
- Project work completed in class
- Notes
- Warm-ups
- Graded participation

3. Homework 5 – 15%

Graded work completed outside of class such as any of the following:
- Assignments
- Project work completed outside of class

Submitted by: Becky Afghani
Submission Date: August 24, 2015
School/Office: Math Curriculum Office

Original Board Approval Date: November 3, 2015
Revised Board Approval Date: