OFFICE OF CURRICULUM, INSTRUCTION & PROFESSIONAL DEVELOPMENT

ACADEMIC COURSE OUTLINE

Department	Mathematics	**Course Title**	Math 6	**Course Code**	3100
Grade Level	6	**Short Title**	MATH 6	**Course Length**	1 year
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)			**Required**	yes
				Elective	no

COURSE OVERVIEW:

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

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 Math 6. 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)

Ratios and Proportional Relationships **6.RP**

6.RP.A Understand ratio concepts and use ratio reasoning to solve problems.

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

6.RP.2 Understand the concept of a unit rate *a/b* associated with a ratio *a:b* with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*[1]

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

[1] Expectations for unit rates in this grade are limited to non-complex fractions.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System — 6.NS

6.NS.A Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*

6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples.

6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.

6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*

6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.

6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.
b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.7 Understand ordering and absolute value of rational numbers.
a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right*.
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 ℃ > –7 ℃ to express the fact that –3 ℃ is warmer than –7 ℃*.
c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.

d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*

6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Expressions and Equations 6.EE

6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.

6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y.*

b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*

6.EE.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.*

6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for*.

6.EE.B Reason about and solve one-variable equations and inequalities.

6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.

6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*

Geometry **6.G**

6.G.A Solve real-world and mathematical problems involving area, surface area, and volume.

6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Statistics and Probability **6.SP**

6.SP.A Develop understanding of statistical variability.

6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*

6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.B Summarize and describe distributions.

6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.5 Summarize numerical data sets in relation to their context, such as by:

a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

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: Numeric Expressions

Duration: 24 days

Description:
In **Unit 1**, students expand their understanding of the number system and build their fluency in arithmetic operations. Students learned in 5th grade to divide whole numbers by unit fractions and unit fractions by whole numbers. Now, they apply and extend their understanding of multiplication and division to divide fractions by fractions. The meaning of this operation is connected to real-world problems as students are asked to create and solve fraction division word problems. Students continue (from fifth grade) to build fluency with adding, subtracting, multiplying, and dividing multi-digit decimal numbers using the standard algorithms. While students work with just numerical expressions in this unit, students will continue their work with order of operations and expanding it with exponents.

Required Assignment:
Interpreting Multiplication and Division
http://map.mathshell.org/lessons.php?unit=6115&collection=8
This lesson unit is designed to help students to interpret the meaning of multiplication and division. Many students have a very limited understanding of these operations and only recognize them in terms of 'times' and 'share'. They find it hard to give any meaning to calculations that involve non-integers. This is one reason why they have difficulty when choosing the correct operation to perform when solving word problems. Students work individually on an assessment task that is designed to reveal current levels of understanding and difficulties. Students work collaboratively matching cards that contain symbols, descriptions of the structure of the situations and word problems. This is done in two phases. After each phase there is a whole-class discussion reflecting on the structures being learned. In a follow-up lesson, students use their learning and your questions to review their initial answers and to complete another similar task.

Suggested Activities: See the Unit 1 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapters 1 and 2

Standards Addressed: CCSS-M Clusters 6.NS.A, 6.NS.B, 6.EE.A

Unit 2: Algebraic Expressions Applied to Two-Dimensional Geometry

Duration: 24 days

Description:
The main ideas of **Unit 2** are applying algebraic expressions to two-dimensional geometry. Students will evaluate and translate algebraic expressions as well as learn about the properties of arithmetic. (Commutative, Associative, Distributive). Students will apply algebraic expressions to two-dimensional shapes by exploring and finding the area of triangles and quadrilaterals.

Required Assignment:
Representing the Laws of Arithmetic
http://map.mathshell.org/lessons.php?unit=6220&collection=8
This lesson assesses how well students are able to perform arithmetic operations, including those involving whole-number exponents, recognizing and applying the conventional order of operations; write and evaluate numerical expressions from diagrammatic representations and identify equivalent expressions; apply the distributive and commutative properties appropriately; and use the method for finding areas of compound rectangles. Before the lesson, students work individually on an assessment task designed to reveal their current understanding and difficulties. You then review their responses and create questions for students to consider when improving their work. After a whole-class introduction, students work collaboratively on a card matching activity. 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 introductory assessment task.

Suggested Activities: See the Unit 2 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapters 3 and 4

Standards Addressed: CCSS-M Clusters 6.EE.A, 6.EE.B, 6.G.A

Unit 3: Ratios and Rates

Duration: 30 days

Description:
In **Unit 3**, students build on their prior work in measurement and in multiplication and division as they study the concepts and language of ratios and unit rates. They use proportional reasoning to solve problems. In particular, students solve ratio and rate problems using tape diagrams, tables of equivalent ratios, double number line diagrams, and equations. They plot pairs of values generated from a ratio or rate on the first quadrant of the coordinate plane.

Required Assignment:
Maximizing Profit: Selling Soup
http://map.mathshell.org/lessons.php?unit=6100&collection=8
This lesson assesses how well students are able to solve real-life mathematical problems. In particular,

students will develop their abilities in the following areas: 1) Using proportional relationships to solve multistep ratio and percent problems. 2) Drawing inferences about a population from a random sample of data. 3) Making and stating assumptions based on real-life situations. Before the lesson students attempt a task individually. The teacher reviews their solutions and formulates questions that will help students improve their work. Students work individually to respond to a question set, then work in groups to combine their thinking and work together to produce a collaborative solution in the form of a poster. In the same small groups, students evaluate and comment on some sample responses. They evaluate these responses and compare them with their own work. In a whole-class discussion, students explain and compare solution strategies. Finally, students reflect on their work and their learning.

Suggested Activities: See the Unit 3 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapter 5

Standards Addressed: CCSS-M Cluster 6.RP.A

Unit 4: Integers and the Coordinate Plane

Duration: 32 days

Description:
Major themes of **Unit 4** are to understand rational numbers as points on the number line and to extend previous understandings of numbers to the system of rational numbers, which now include negative numbers. Students extend horizontal and vertical number lines to plot negative numbers that can represent quantities in real-world contexts. They use the number line to order numbers and to understand the absolute value of a number. Students also begin to solve real-world and mathematical problems by graphing points in all four quadrants, a concept that continues to be used into high school and beyond. Students will also use variables to represent two quantities in a real-world problem that change in relationship to one another. Also in the coordinate plane, students will draw polygons given coordinates for the vertices. They also find the lengths of sides of figures, joining points with the same first coordinate or the same second coordinate and apply these techniques to solve real-world and mathematical problems.

Required Assignment:
Chocolate Bar Sales
https://www.illustrativemathematics.org/content-standards/tasks/806
In this task students use different representations to analyze the relationship between two quantities and to solve a real world problem. The situation presented provides a good opportunity to make connections between the information provided by tables, graphs and equations. In the later part of the problem, the numbers are big enough so that using the formula is the most efficient way to solve the problem; however, creative use of the table or graph will also work.

Suggested Activities: See the Unit 4 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapter 6

Standards Addressed: CCSS-M Clusters 6.NS.C, 6.G.A

Unit 5: Equations and Inequalities

Duration: 24 days

Description:
In **Unit 5,** students will write, interpret, and use equations as they reason about and solve one-step equations in one variable. They will use variables to represent numbers and write expressions when solving real-world or mathematical problems. Students will know that the solution of an equation is the value of the variable that makes the equation true. They will write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Students will then analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. Students will also learn about inequalities, which are mathematical sentences with an inequality symbol. Students will know that the solution of a one variable inequality consists of all values for the variable that make the inequality a true statement. Students will also graph the solution of a one variable inequality on a number line to represent all the values in the solution.

Required Assignment:
Evaluating Statements about Number Operations
http://map.mathshell.org/lessons.php?unit=6225&collection=8
This lesson assesses how well students are able to understand the properties of number operations, substitute integers, decimals and negative numbers into inequality statements in order to test validity, and represent inequalities algebraically and in words. Before the lesson, students work individually on an assessment task designed to reveal their current understanding and difficulties. The teacher reviews their responses and creates questions for students to consider when improving their work. After a whole-class introduction, students work in small groups on a collaborative task, describing inequalities algebraically and in words. In the same small groups, students match descriptions of when the statements are true to their completed cards. To end the lesson there is a whole-class discussion. In a follow-up lesson, students work alone again on a similar task to the introductory task.

Suggested Activities: See the Unit 5 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapter 7

Standards Addressed: CCSS-M Clusters 6.EE.B, 6.EE.C

Unit 6: Three-Dimensional Geometry

Duration: 19 days

Description:
Unit 6 is an opportunity to practice the material learned in Unit 1 in the context of geometry; students apply their newly acquired capabilities with expressions and equations to solve for unknowns in three-dimensional shapes finding surface area and volume of right rectangular prisms with fractional edge lengths.

Required Assignment:
Using Space Efficiently: Packing a Truck
http://map.mathshell.org/lessons.php?unit=6310&collection=8
The lesson is intended to help students to reason precisely and defend their conclusions, and use mathematics to model a scenario concerning volume. Before the lesson, students attempt the task individually. The teacher reviews their responses and formulates questions that will help them improve their work. In pairs or threes, students work together to develop a better solution, producing a poster to show their conclusions and their reasoning. Then, in the same small groups, students look at some sample student work showing different

approaches to the problem. They evaluate the strategies used and seek to improve the arguments given. In a whole-class discussion, students compare different solution methods. Finally, students reflect individually on their learning.

Suggested Activities: See the Unit 6 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapter 8

Standards Addressed: CCSS-M Cluster 6.G.A

Unit 7: Statistics

Duration: 15 days

Description:
In **Unit 7**, students develop an understanding of statistical variability and apply that understanding as they summarize, describe, and display distributions. In particular, careful attention is given to measures of center and variability.

Required Assignment:
Representing Variability with Mean, Median, Mode and Range
http://map.mathshell.org/lessons.php?unit=6400&collection=8
This lesson assesses how well students are able to calculate the mean, median, mode, and range from a frequency chart, and use a frequency chart to describe a possible data set, given information on the mean, median, mode, and range. Before the lesson, students work individually on an assessment task designed to reveal their current understanding and difficulties. The teacher then reviews their responses and creates questions for students to consider when improving their work. After a whole-class introduction, students work in small groups on a collaborative task, matching bar charts with statistical tables. To end the lesson there is a whole-class discussion. In a follow-up lesson, students again work alone on a task similar to the initial assessment task.

Suggested Activities: See the Unit 7 Guide for Math 6.

Materials: Big Ideas MATH Course 1 text: Chapters 9 and 10

Standards Addressed: CCSS-M Clusters 6.SP.A, 6.SP.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:	Big Ideas MATH Course 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:	