6th Grade Syllabus

2017-2018

**Power Words**: analyze, compare, compute, determine, different/difference, estimate/estimation, evaluate, solve

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| **Critical Area**: Statistics and Probability (Critical Area 4) |
| **Time Frame**: August 24 – September 29 |
| **Content Focus (Big Idea)**: *Develop understanding of statistical variability; Summarize and describe distributions.*   * Display numerical data in plots on a number line, including dot plots, histograms, and box plots * Measures of center (median/mode), Measures of variability (inter-quartile range/mean deviation) |
| **Unit Learning Targets (I Can…):**   * I can explain what makes a good statistical question and develop a question to collect statistical information * I can find the mean of a data set * I can find the mode of a data set * I can find the median of a data set * I can find the range of a data set, including the inter-quartile range * I can describe the center and spread of a set of data * I can organize and display data on a line plot * I can organize and display data on a dot plot * I can organize and display data on a histogram * I can organize and display data on a box plot * I can explain which type of chart is the best depending on what I want to communicate about my data * I can describe overall patterns, deviations from the patterns, and how they relate to the context of the problem * I can use measures of center and measures of variability to draw inferences about the shape of the data |
| **Vocabulary**:  Common Core: Attribute, box plot, Data displays/graphs, dot plot, histogram, interquartile range, mean, mean absolute deviation, measure of variation, measures of central tendency, median, plot, probability, spread, statistical, statistical variability, statistics, variation  Additional: average, first quartile, third quartile, line plot, mode, outlier, range, systematic list |
| **Standards**  **6.SP.A.2** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.  **6.SP.A.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.A.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.  *Summarize and describe distributions.*  **6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots  **6.SP.B.5** Summarizes numerical data sets in relation to their context such as by:  Reporting the number of observations, describing the nature of the attribute, giving quantitative measures of center (Median/Mean) and variability (interquartile range/mean deviation), as well as describing any overall pattern, and relating the choice of measures of center and variability to the shape of the data distribution |
| **Example With Faith Infusion:**  1. Using statistics, compare the student population of your school with other student-aged parishioners from your church  2. Analyze and compare the number of chapters in each of the four gospels using mean, median, and mode |
| **Resources**:   * Chapter 2 sections 1-5 and 7th grade book * Chapter 2 sections 6-9 |

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| **Critical Area**: The Number System (Critical Area 2) |
| **Time Frame**: October 2 – October 20 |
| **Content Focus (Big Idea)**: *Compute fluently with multi-digit numbers and find common factors and multiples.*   * Fluently divide multi-digit numbers using the standard algorithm * Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation * Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of 2 whole numbers less than or equal to 12 |
| **Unit Learning Targets (I Can…):**   * I can divide multi-digit whole numbers * I can add multi-digit decimals * I can subtract multi-digit decimals * I can multiply multi-digit decimals * I can divide multi-digit decimals * I can find the greatest common factor of two whole numbers * I can find the least common multiple of two whole numbers |
| **Vocabulary**:  Common Core: algorithm, common factor, common multiple, decimal (number), digit, distributive property, divide/division, dividend, divisor, equation, factor, fraction, greatest common factor (GCF), Least common multiple (LCM), multiples, operation, quotient, standard algorithm, whole numbers |
| **Standards**  **6.NS.B2** Fluently divide multi-digit numbers using the standard algorithm  **6.NS.B3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation  **6.NS.B4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of 2 whole numbers less than or equal to 12 |
| **Example With Faith Infusion:**  1. If ¾ of the congregation takes communion, and ¼ of those take the Blood of Christ, what fraction of the total congregation takes the Blood of Christ?  2. Find the common factors of the “lamenting” and/or “petition” Psalms numbers 51, 78, and 105 |
| **Resources**:   * Chapter 3 Sections 5-9 * Chapter 4 Section 1 and 5 |

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| **Critical Area**: The Number System (Critical Area 2) |
| **Time Frame**: October 23 – November 17 |
| **Content Focus (Big Idea):** *Apply and extend previous understandings of multiplication and division to divide fractions by fractions; Apply and extend previous understandings of numbers to the system of rational numbers*   * Dividing fractions * Understand that positive and negative numbers are used together to describe quantities having opposite directions or values * Graphing negative numbers on the coordinate plane * Solve real world and mathematical problems by graphing points in all four quadrants of the coordinate plane * Ordering and absolute value of rational numbers |
| **Unit Learning Targets (I Can…):**   * I can divide a fraction by a fraction * I can visually represent the division of fractions * I can solve real world problems involving fraction division and interpret the quotient in the context of the problem * I can use positive and negative numbers along with zero to represent and compare opposite values and directions in real world situations * I can use the signs of the numbers in an ordered pair to name the location of a point on the coordinate plane and its corresponding quadrant * I can determine if two points are a reflection across one or both axes by using the ordered pairs * I can define absolute value as it applies to a number line * I can compare the position of two numbers on a number line and represent it with an inequality * I can plot points on the coordinate plane to solve real world problems * I can draw figures on the coordinate plane to solve real world problems * I can find lengths on the coordinate plane to solve real world problems |
| **Vocabulary**:  Common Core: absolute value, axis, coordinate, coordinate axes, coordinate plane, elevation, horizontal, integers, negative numbers, number line, ordered pair, positive, quadrant, rational number, reflection, vertical, y-coordinate  Additional: additive inverses, coordinate system, origin, perpendicular line, simplify, remainder, x-coordinate, y-coordinate |
| **Standards**  **6.NS.B1** Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions  **6.NS.C5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation  **6.NS.C6** understand a rational number 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 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.C8** Solve real world and mathematical problems by graphing points in all four quadrants of the coordinate plane  **6.NS.C7** 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.  b) Write, interpret and explain statements of order for rational numbers in real-world contexts  c) Understand the absolute value of a rational number  d) Distinguish comparisons of absolute value from statements about order |
| **Example With Faith Infusion:**  1. Your church collects on average of $47,000/week in collections, and its monthly expenses amount to $180,000/month. Find the annual debit/credit amount of your church’s bank account |
| **Resources**:   * Chapter 5 sections 9-10 * Chapter 11 section 1 and section 7 |

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| **Critical Area**: Writing, interpreting, and using expressions and equations (Critical Area 3) |
| **Time Frame**: November 20 – December 20 |
| **Content Focus (Big Idea)**:   * Write and evaluate numerical expressions involving whole-number exponents * Write, read, and evaluate expressions in which letters stand for numbers * Identify the terms sum, product, factor, quotient, and coefficient * Solve expressions with variables when the value of variable is given * Order of operations * Equivalent expressions * Solving inequalities * Solve real world and mathematical problems by writing and solving equations * Write an inequality of the form x > c or x < c to represent a constraint or condition in a real world or mathematical problem |
| **Unit Learning Targets (I Can…):**   * I can use the distributive property to rewrite a simple addition problem when the addends have a common factor * I can write expressions with whole number exponents and determine their values * I can translate words into algebraic expression and identify the parts using mathematical terms * I can evaluate an algebraic expression for given values using the order of operations * I can apply the properties of operations to generate and justify that two expressions are equivalent * I can find the answer to the equation by determining which values can be substituted to make it true * I can find the answer to the inequality by determining which values can be substituted to make it true * I can explain and give examples of what a variable can represent * I can write algebraic equations that represent real-world problems * I can solve algebraic equations that represent real-world problems * I can write a simple inequality to represent a real-world or mathematical problem * I can graph a simple inequality on a number line * I can create a graph and analyze the relationship between the dependent and independent variables by comparing the table, graph, and equation |
| **Vocabulary**:  Common Core**:** algebraic expression, Associative Property of Addition, Associative Property of Multiplication, coefficient, Commutative Property of Addition, Commutative Property of Multiplication, dependent variable, distributive property, equation, exponent, expression, formula, independent variable, inequality, infinite, number line, numerical expression, operation, Order of Operations, product, solution, substitution, variable  Additional: additive Identity Property of 0, addend, inverse operation, multiplicative identity property of 1, multiplicative inverses, square |
| **Standards**  **6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents  **6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers  2a 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  2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient  2c 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 conventional order when there are no parentheses to specify a particular order (OOO)  **6.EE.A3** Apply the properties of operations to generate equivalent expressions  **6.EE.A4** Identify when 2 expressions are equivalent for example y + y + y = 3y  **6.EE.B5** Understand solving an equation or inequality as a process of answering a question. Use substitution to determine whether a given number in a specified set makes equation true  **6.EE.B6** use variables to represent numbers and write expressions when solving real-world or mathematical problems  **6.EE.B7** Solve real world and mathematical problems by writing and solving equations  **6.EE.B8** Write an inequality of the form x > c or x < c to represent a constraint or condition in a real world or mathematical problem |
| **Example With Faith Infusion:**  1. A new diocesan church is formed, and every year for the first three years doubles in the number of registered parishioners. Explain and use the formula 2cubedx (where x – number of registered parishioners when the church formed), will be the number of parishioners after three years  2. In the formula x + y = z, where x = number of Books from the Old Testament and z = number of total Books from the bible; if x = 46, and z = 72, then 46 + y = 72 shows that y is the number of Books from the New Testament  3. We need 25 Bibles in every classroom, explain and use how the formula T=25C can be used to determine how Bibles are needed if C = number of classrooms |
| **Resources**:   * Chapter 1 – Powers and Exponents, Order of Operations, Variables and Expressions, Equations, Writing Formulas * Chapter 1 section 8: Equations, 7th grade book – writing equations * 7th grade book – writing equations * Chapter 1, Chapter 12 * Chapter 12 * Chapter 1 * 7th grade book * Chapter 3 Comparing and ordering |

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| **Critical Area**: Ratios and Proportional Relationships (Critical Area 1) |
| **Time Frame**: January 4 – February 2 |
| **Content Focus (Big Idea)**: *Understand ratio concepts and use ratio reasoning to solve problems*   * Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities * Solving unit rates * Use ratio and rate reasoning to solve real world and mathematical problems   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  b)Solve unit rate problems including those involving unit pricing and constant speed  c) Find a percent of a quantity as a rate per 100  d) Use ratio reasoning to convert measurement units |
| **Unit Learning Targets (I Can…):**   * I can write a ratio * I can explain the relationship between the two quantities named in a ratio * I can determine the unit rate for a given ratio * I can create table of equivalent ratios and plot pairs of values to show their relationship * I can solve real-world problems, including percent and measurement conversion, using unit rate and ratio |
| **Vocabulary**:  Common Core: convert, double number line diagram, equivalent ratio, percent, proportional relationship, rate, ratio, tape diagram, transformation, unit rate  Additional: proportion |
| **Standards**  **6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities  **6.RP.A.2** Understand the concept of a unit rate  **6.RP.A.3** Use ratio and rate reasoning to solve real world and mathematical problems  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  b)Solve unit rate problems including those involving unit pricing and constant speed  c) Find a percent of a quantity as a rate per 100  d) Use ratio reasoning to convert measurement units |
| **Example With Faith Infusion:**  1. For every rosary, find the ration of the number of Hail Marys to Our Fathers |
| **Resources**:   * Chapter 6 section 1 * Chapter 6 * Chapter 6 and Chapter 7 |

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| **Critical Area**: Geometry (Critical Area 5) |
| **Time Frame**: February 5 – March 9 |
| **Content Focus (Big Idea)**: *Solve real world and mathematical problems involving area, surface area, and volume*   * 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 * 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 * Represent 3D figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures |
| **Unit Learning Targets (I Can…):**   * I can explain the relationship between the formulas for the area of rectangles * I can explain the relationship between the formulas for the area of parallelograms * I can explain the relationship between the formulas for the area of triangles * I can explain the relationship between the formulas for the area of trapezoids * I can solve real-world problems that involve finding the area of polygons that decompose into rectangles and triangles * I can find the volume of a right rectangular prism and use the formula V=lwh or V=Bh to solve real-world problems * I can use a net to find the surface area of three dimensional figures, such as rectangular prisms or right triangular prisms |
| **Vocabulary**:  Common Core: 3-dimensional, Polygon (area of), Quadrilateral (area of), triangle (area of), cube, formula, net, prism, rectangular prism, right rectangular prism, right triangle, surface area, unit cube, unit fraction, vertex/vertices, volume  Additional: acute triangle, angle, base (of a solid figure), congruent, decompose, diameter, equilateral triangle, isosceles triangle, obtuse triangle, protractor, pyramid, radius, ray, right angle, right square pyramid, scalene triangle, square-based pyramid, straight angle, trapezoid, triangular prism, triangular pyramid, vertical angle |
| **Standards**  **6.G.A1** 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.A2** 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  **6.G.A3** 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  **6.G.A4** Represent three D figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures |
| **Example With Faith Infusion:**  1. Find the volume and surface area of a classroom crucifix |
| **Resources**:   * Chapter 10 sections 1-6 * Chapter 10 sections 6 and 7 |