# Grade 6 Math

Priority Standards and Instructional Units

Sixth grade math is the story of variability. Students extend their understanding of algebraic representation from 5th grade to the concept of variability in order to understand the properties of variables in expressions and equations and how to represent change algebraically. Then, they apply these skills to understand how a relationship defined by a rate or ratio can vary in cases, but maintain the same structure. In Geometry, students apply their algebraic skills to apply general formulas to varying three dimensional figures. Finally, students consider variation in data to develop a process for asking and answering statistical questions.

Grade 6 Math
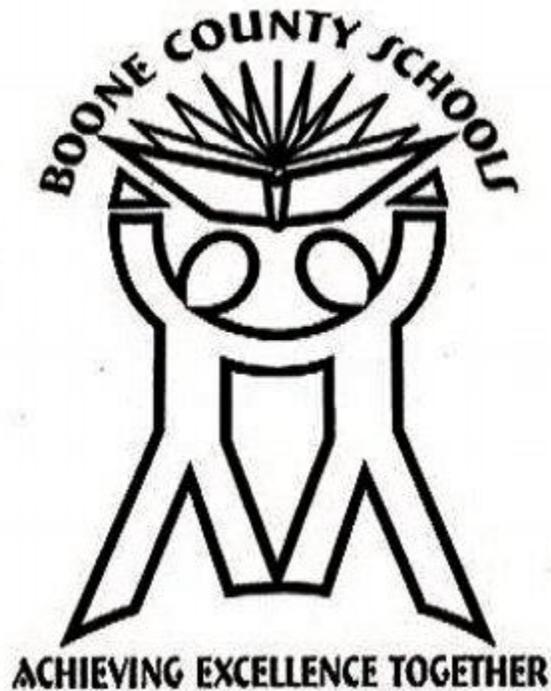
Priority Standards and Instructional Unit 1

6th Grade Math
Unit 1 (12 weeks)

No change to this unit from 2019-2020 BCS alignment was recommended.	
KY.6.NS.3 Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation. MP.2, MP.6	**Supporting Standard**
KY6.NS.2 Fluently divide multi-digit numbers using an algorithm. MP.7, MP.8	**Supporting Standard**
KY.6.NS.2b Know that the decimal form of a rational number terminates in 0s or eventually repeats. MP.7, MP.8	**Supporting Standard**
KY.6.NS.2a Convert a rational number to a decimal using long division. MP.7, MP.8	**Supporting Standard**
KY.6.EE.2 Write, read and evaluate expressions in which letters stand for numbers. MP.1, MP.3, MP.4	**Priority Standard**
KY.6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. MP.1, MP.3, MP.4	**Priority Standard**
KY.6.EE.1 Write and evaluate numerical expressions involving whole-number exponents. MP.2, MP.6	**Supporting Standard**
KY.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. MP.2, MP.6	**Supporting Standard**
KY.6.EE.2c Evaluate expressions for specific values of their variables, including values that are non-negative rational numbers. INclude expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). MP.1, MP.3, MP.4	**Priority Standard**
KY.6.EE.2b Identify parts of an expression using mathematical terms (sums, term, product, factor, quotient, coefficient); view one of more parts of an expression in a single entity. MP.1, MP.3, MP.4	**Supporting Standard**
KY.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ for cases in which p, q, and x are all nonnegative rational numbers. MP.1, MP.2, MP.3, MP.4	**Priority Standard**
KY.6.EE.9 Use variables to represent two quantities in a real world problem that changes in relationship to one another. MP.3, MP.4, MP.7	**Priority Standard**
KY.6.EE.9b Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, through of as the independent variable. MP.3, MP4., MP7	**Priority Standard**
KY.6.EE.3 Apply the properties of operations to generate equivalent expressions. MP.7, MP.8	**Priority Standard**

KY.6.NS.4 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. MP.8	**Supporting Standard**
KY.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. MP.1, MP.2, MP.7	**Supporting Standard**
KY.6.EE.4 Identify when two expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them. MP.2, MP.3, MP.7	**Supporting Standard**
KY.6.EE.8 Write an inequality of the form $x > c$, $x < c$, $x \geq c$, $x \leq c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on vertical and horizontal number lines. MP.3, MP.7	**Priority Standard**
KY.6.NS.1 Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions. MP.1, MP.2, MP3	**Supporting Standard**

Benchmark #1 (Unit 1)

Grade 6 Math

Priority Standards
and
Instructional Unit 2

6th Grade Math - Unit 2 - 8 Weeks

KY.6.EE.9 :Use variables to represent two quantities in a real-world problem that changes in relationship to one another. Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the question. MP.3, MP.4, MP.7	**Priority Standard**
a. 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.	**Supporting Standard**
KY.6.NS.7 Understand ordering and absolute value of rational numbers. Write, interpret and explain statements of order for rational numbers in real-world contexts. MP.2, MP.4	**Priority Standard**
a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.	**Supporting Standard**
b. 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.	**Supporting Standard**
c. Distinguish comparisons of absolute value from statements about order.	**Supporting Standard**
KY.6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes, using appropriate range and intervals, to represent points on the line and in the plane, that include negative numbers and coordinates.	**Priority Standard**
a. **Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize 0 is its own opposite and the opposite of a negative number is a positive, such as -(-3) = 3.**	**Priority Standard**
b. **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.**	**Priority Standard**
C. **Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize the similarity between whole numbers, their negative opposites and their positions on a number line, ordered pairs differ only by signs and their locations on one or both axes.**	**Priority Standard**
KY.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. MP. 5, MP.7	**Priority Standard**
KY.6.NS.5 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. MP. 1, MP.2, MP.4	**Supporting Standard**
KY.6.G.3 Draw polygons in the coordinate plane coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. MP.4, MP.5, MP.6	**Supporting Standard**
Benchmark #2 (Units 1 - 2)	

Grade 6 Math

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Priority Standards and Instructional Unit 3

6th Grade Math Unit : 3   6 weeks

KY.6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. MP.2, MP.6	**Priority Standard**
KY.6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems.	**Priority Standard**
(KY.6.RP.3) a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tabes and plot the pairs of values on the coordinate plane. Use tables to compare ratios. MP.1, MP.4, MP.7	**Priority Standard**
(KY.6.RP.3) b. Solve rate problems including those involving unit pricing and constant speed. MP.1, MP.4, MP.7	**Priority Standard**
(KY.6.RP.3) c. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. MP.1, MP.4, MP.7	**Supporting Standard**
KY.6.RP.2 Understand the concept of a unit rate a/b associated with ratio a:b with B ≠ 0 and use rate language in the context of a ratio relationship. MP.2, MP.6	**Supporting Standard**

Grade 6 Math

Priority Standards
and
Instructional Unit 4

6th Grade Math Unit : 4   3 Weeks

KY.6.G.1 Find the area of the right triangles, other triangles, special quadrilaterals and polygons by composing into rectangles or decomposing into triangles and quadrilaterals; apply these techniques in the context of solving real-world and mathematical problems. MP.1, MP.6, MP.8	**Priority Standard**
KY.6.G.2 Find the volume of a right rectangular prism with rational number edge lengths. Apply the formulas V=lwh and V=Bh to find volumes of right rectangular prisms with rational number edge lengths in the context of solving real-world and mathematical problems. MP.2, MP.5, MP.6	**Priority Standard**
KY.6.G.4 Classify three-dimensional figures including cubes, prisms, pyramids, cones and spheres.	**Supporting Standard**

Benchmark #3 (Units 1 - 4)

Grade 6 Math

Priority Standards
and
Instructional Unit 5

6th Grade Math - Unit 5 - 4 Weeks

KY.6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number to describe a typical value, while a measure of variation describes how the values in the distribution vary. MP.2, MP.5, MP.6	**Priority Standard**
KY.6.SP.0 Apply the four-step investigative process for statistical reasoning.	**Supporting Standard**
a. Formulate Questions: Formulate a statistical question as one that anticipates variability and can be answered with data.	**Supporting Standard**
B. Collect Data: Design and use a plan to collect appropriate data to answer a statistical question.	**Supporting Standard**
C. Analyze Data; Select appropriate graphical methods and numerical measures to analyze data by displaying variability within a group, comparing individual to individual and comparing individual to group.	**Supporting Standard**
D. Interpret Results: Draw logical conclusions and make generalizations from the data based on the original question. MP.1, MP.4	**Supporting Standard**
KY.6.SP.2 Understand that a set of numerical data collected to answer a statistical question has a distribution which can be described by its center, spread and overall shape. MP.2, MP.6, MP.7	**Supporting Standard**
KY.6.SP.4 Display the distribution of numerical data in plots on a number line, including dot plots, histograms and box plots. MP.6, MP.7	**Supporting Standard**
KY.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. MP.1, MP.3, MP.6	**Supporting Standard**
KY.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.	**Supporting Standard**
KY.6.SP.5 c. Determining quantitative measures of center (median and/or mean) to describe distribution of numerical data.	**Priority Standard**
KY.6.SP.5 d. Describing distributions of numerical data qualitatively relatively to shape (using terms such as cluster, mode(s), gap, symmetric, uniform, skewed-left, skewed-right and the presence of outliers) and quantitatively relating to spread/variability (using terms such as range and interquartile range).	**Priority Standard**
E. Relating the choice of measures of center and variability to the shape of the data distribution. MP.3, MP.7	**Supporting Standard**