Math - Grade 6

Course Description:

The Indian Community School cultivates an enduring cultural identity and critical thinking by weaving indigenous teachings with a distinguished learning environment. The curriculum for this course is developed from the Common Core State Standards for Mathematics and the framework of the ICS Our Ways Cultural Calendar. In this course, students will 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 number; (3) writing, interpreting and using expressions and equations; and (4) developing understanding of statistical thinking.

Enduring Understandings:

● The order of operations is used to evaluate numerical expressions.

● The concept of a variable is used in mathematical expressions to read, write and solve expressions and equations.

● Knowledge of ratios will be applied to determine rate, solve proportions and convert measurements.

● Previous understandings of numbers are applied and extended in order to work with systems of rational numbers

● Properties of operations and the idea of maintaining the equality of both sides of an equation are used to solve simple one and two-step problems.

● Expressions are evaluated by using formulas to solve problems such as area, volume and surface area.

● A set of data is organized and summarized in various ways in order to interpret and make conclusions about the data.

● The outcomes of an event are used to determine probability which will be represented as a fraction or decimal to determine the likelihood of its occurrence.

RATIOS AND PROPORTIONAL RELATIONSHIPS

● I can define the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (6.RP.A.1)

● I can demonstrate the concept of a unit rate a/b associated with a ratio a:b and use rate language in the context of a ratio relationship. (6.RP.A.2)

● I can use ratio and rate reasoning to solve real-world and mathematical problems. (6.RP.A.3)

● I can find missing values in a ratio table. (6.RP.A.3.A)

● I can plot pairs of values on the coordinate plane. (6.RP.A.3.A)

● I can use tables to compare ratios. (6.RP.A.3.A)

● I can solve unit rate problems including those involving unit pricing and constant speed. (6.RP.A.3.B)

● I can solve problems in involving finding the whole, given a part and the percent as a rate per 100. (6.RP.A.3.C)

● I can use ratio reasoning to convert measurement units. (6.RP.A.3.D)

● I can manipulate and transform units appropriately when multiplying or dividing quantities. (6.RP.A.3.D)

THE NUMBER SYSTEM

- I can interpret and compute quotients of fractions. (6.NS.A.1)

- I can solve word problems involving division of fractions by fractions using visual models. (6.NS.A.1)

- I can fluently divide multi-digit numbers using the standard algorithm. (6.NS.B.2)

- I can fluently add multi-digit decimals using the standard algorithm. (6.NS.B.3)

- I can fluently subtract multi-digit decimals using the standard algorithm. (6.NS.B.3)

- I can fluently multiply multi-digit decimals using the standard algorithm. (6.NS.B.3)

- I can fluently divide multi-digit decimals using the standard algorithm. (6.NS.B.3)

- I can find the greatest common factor of two whole numbers less than or equal to 100. (6.NS.B.4)

- I can find the least common multiple of two whole numbers less than or equal to 12. (6.NS.B.4)

- I can 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. (6.NS.B.4)

- I can use positive and negative numbers to represent quantities in real-world contexts, explaining of 0 in each situation. (6.NS.C.5)

- I can 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. (6.NS.C.6)

- I can recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line. (6.NS.C.6.A)

- I can recognize the opposite of the opposite of a number is the number itself and that 0 is its own opposite. (6.NS.C.6.A)

- I can demonstrate understanding of signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. (6.NS.C.6.B)

- I can recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. (6.NS.C.6.B)

- I can find and position pairs of integers and other rational numbers on a coordinate plane. (6.NS.C.6.C)

- I can demonstrate understanding of ordering and absolute value of rational numbers. (6.NS.C.7)

- I can interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. (6.NS.C.7.A)

- I can write, interpret, and explain statements of order for rational numbers in real-world contexts. (6.NS.C.7.B)

- I can distinguish comparisons of absolute value from statements about order in real-world situations. (6.NS.C.7.C)

- I can distinguish comparisons of absolute value from statements about order. (6.NS.C.7.D)

- I can solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. (6.NS.C.8)

- I can include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. (6.NS.C.8)

EXPRESSIONS AND EQUATIONS

- I can write and evaluate numerical expressions involving whole-number exponents. (6.EE.A.1)

- I can write, read and evaluate expressions in which letters stand for numbers. (6.EE.A.2)

- I can identify parts of an expression using mathematical terms. (6.EE.A.2.B)

- I can view one or more parts of an expression as a single entity. (6.EE.A.2.B)

- I can include expressions that arise from formulas used in real-world problems. (6.EE.A.2.C)

- I can apply properties to generate equivalent expressions. (6.EE.A.3)

- I can identify when two expressions are equivalent. (6.EE.A.4)

- I can demonstrate understanding of solving an equation or inequality as a process of answering a question. (6.EE.B.5)

- I can use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5)

- I can use variables to represent numbers and write expressions when solving a real-world or mathematical problem. (6.EE.B.6)

- I can 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.B.7)

- I can write an inequality of the form $x>c$ or $x<c$ to represent a constraint or condition in a real-world or mathematical problem. (6.EE.B.8)

- I can recognize that inequalities of the form $x>c$ or $x<c$ have infinitely many solutions as identified on a number line. (6.EE.B.8)

- I can use variables to represent two quantities in a real-world problem that change in relationship to one another. (6.EE.C.9)

- I can write an equation to express one quantity using dependent and independent variables. (6.EE.C.9)

- I can analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. (6.EE.C.9)

GEOMETRY

- I can find the area of triangles. (6.G.A.1)

- I can find the area of special quadrilaterals and polygons. (6.G.A.1)

- I can apply techniques of finding area in the context of solving mathematical problems in real-world situations. (6.G.A.1)

- I can find the volume of a right rectangular prism with fractional edge lengths. (6.G.A.2)

- I can apply the formulas $v = lwh$ and $v=bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (6.G.A.2)

GEOMETRY (continued)

- I can use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. (6.G.A.3)

- I can apply techniques with drawing polygons in the coordinate plane to solve real-world and mathematical problems. (6.G.A.3)

- I can represent three-dimensional figures using nets made up of rectangles and triangles. (6.G.A.4)

- I can use nets to find the surface area of figures in real-world and mathematical problems. (6.G.A.4)

STATISTICS AND PROBABILITY

- I can 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.1)

- I can demonstrate understanding 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.2)

- I can 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.A.3)

- I can display numerical data in plots on a number line. (6.SP.B.4)

- I can display numerical data on a dot plot. (6.SP.B.4)

- I can display numerical data on a histogram. (6.SP.B.4)

- I can display numerical data on a box plot. (6.SP.B.4)

- I can summarize numerical data sets in relation to their context such as by reporting the number of observations. (6.SP.B.5.A)

- I can summarize numerical data sets in relation to their context such as by describing the nature of the attribute under investigation. (6.SP.B.5.B)

- I can summarize numerical data sets in relation to their context including how it was measured in its units of measurement. (6.SP.B.5.B)

- I can summarize numerical data sets in relation to their context by giving quantitative measures of variability (interquartile range and/or mean absolute deviation). (6.SP.B.5.C)

- I can describe the overall pattern of numerical data sets with reference to the context of how data was gathered. (6.SP.B.5.C)

- I can relate the choice of measures of center and variability to the shape of the data distribution. (6.SP.B.5.D)