

# Adair County Middle School

2019-2020

## 6th Grade MATH STANDARDS / PACING GUIDE

### 5 Key Skills

#### Ratios and Proportional Relationships

#### Cluster: Understanding ratio concepts and use ratio reasoning to solve problems

Standard	Learning Target We are learning to.....	Window of Instruction (weeks)	Essential Vocabulary
<b>KY.6.RP.1</b> (MP.2, MP.6) Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	<b>Today we are learning to identify, write, describe, simplify, and compare ratios using words, numbers, and models.</b>  <b>Today we are learning to identify, write, and solve proportions as equivalent ratios.</b>	Weeks 1-4	Ratio Proportion Rate Unit Rate Percent Ordered Pair Ratio Table Unit Price Constant Speed Measurement Percent Formula Equivalent Proportional relationship Measurement units
<b>KY.6.RP.2</b> (MP.2, MP.6) 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.	<b>Today we are learning to use and apply concepts of ratios as a division problem to solve unit rates in real-world situations.</b>		
<b>KY.6.RP.3</b> Use ratio and rate reasoning to solve real-world and mathematical problems. (MP.1, MP.4, MP.7)			
<b>a.</b> Make tables of equivalent ratios relating quantities and 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>Today we are learning to use and apply concepts of ratios to ratio tables, diagrams, and models in real-world situations.</b>  <b>Today we are learning to create and use ratio tables to graph equivalent ratios on a coordinate plane.</b>		
<b>b.</b> Solve rate problems including those involving unit pricing and constant speed.	<b>Today we are learning to use and apply concepts of ratios as a division problem to solve unit rates in real-world situations.</b>		
<b>c.</b> Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	<b>Today we are learning to convert, transform, manipulate measurement units.</b>		

	Today we are learning to convert, order, and compare using inequality symbols of fractions, decimals, and percents.		
<b>OLD STANDARD</b> <b>6.RP.3c</b> Find the percent of a quantity as a rate per 100. Solve problems involving finding the whole given a part and percent.	Today we are learning to find percent of a number in real-world situations.  Today we are learning to find the number given the percent and find the percent given the number.		

### The Number System

#### Cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions

<b>Standard</b>	<b>Learning Target</b> <b>We are learning to.....</b>	<b>Window of Instruction</b> <b>(weeks)</b>	<b>Essential Vocabulary</b>
<b>KY.6.NS.1</b> (MP.1, MP.2, MP.3) Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.	Today we are learning to show and convert fractions in various forms: simplest, proper, improper, and mixed.  Today we are learning to multiply fractions in all forms.  Today we are learning to divide fractions in all forms.  Today we are learning to use and apply concepts of multiplying and dividing fractions in real-world situations.	Weeks 5-6	Proper Fraction Improper Fraction Mixed Number Simplest Form Reduced Form Numerator Denominator Quotient Product Equivalent Convert Simplify
<b>OLD STANDARD</b> <b>6.NS.1</b> Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions by using visual fraction models and equations to represent the problem.	Today we are learning to compare, order, and show equivalent fractions using numbers and models.  Today we are learning to use and apply concepts of multiplying and dividing fractions in models and in real-world situations.		

### The Number System

#### Cluster: Compute fluently with multi-digit numbers and find common factors and multiples

Standard	Learning Target We are learning to.....	Window of Instruction (weeks)	Essential Vocabulary
<b>KY.6.NS.2</b> Fluently divide multi-digit numbers using an algorithm (MP.7, MP.8)			
a. Convert a rational number to a decimal using long division.	<b>Today we are learning to convert fractions to decimals.</b>	<b>Weeks 7-9</b>	<b>Terminating decimals</b> <b>Repeating decimals</b> <b>Rational Number</b> <b>Distributive Property</b> <b>Factors</b> <b>Multiples</b> <b>Greatest Common Factor</b> <b>Least Common Multiple</b> <b>Sum</b> <b>Difference</b> <b>Thousandths</b> <b>Hundredths</b> <b>Tenths</b> <b>Add</b> <b>Subtract</b> <b>Multiply</b> <b>Divide</b> <b>Dividend</b> <b>Divisor</b> <b>Place holder</b>
b. Know that the decimal form of a rational number terminates in 0s or eventually repeats.	<b>Today we are learning to use long division in order to determine if a rational number terminates or repeats.</b>  <b>Today we are learning to compare, order, model, and show equivalent decimals with place-value knowledge.</b>		
<b>KY.6.NS.3</b> (MP.2, MP.6) Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation.	<b>Today we are learning to fluently add and subtract decimals.</b>  <b>Today we are learning to use and apply concepts to add and subtract decimals in real-world situations.</b>  <b>Today we are learning to fluently multiply decimals.</b>  <b>Today we are learning to fluently divide decimals.</b>  <b>Today we are learning to use and apply concepts of multiplying and dividing decimals in real-world situations.</b>		
<b>KY.6.NS.4</b> (MP.8) 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.	<b>Today we are learning to use the distributive property to express equivalent expressions.</b>	<b>Week 10</b>	
<b>OLD STANDARD</b> <b>6.NS.4</b> Find the Greatest Common Factor (GCF) of two whole numbers less than or equal to 100 and the Least Common Multiple (LCM) of two whole numbers less than or equal to 12.	<b>Today we are learning to use rules of divisibility.</b>  <b>Today we are learning to find the GCF and LCM of two whole numbers.</b>  <b>Today we are learning to identify, use, and apply</b>		

knowledge of factors, multiples, GCF, and LCM in real-world situations.

## The Number System

### Cluster: Apply and extend previous understanding of numbers to the system of rational numbers

Standard	Learning Target We are learning to.....	Window of Instruction (weeks)	Essential Vocabulary
<p><b>KY.6.NS.5</b> (MP.1, MP.2, MP.4) 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.</p>	<p><b>Today we are learning to read, write, order, and use inequality symbols to compare positive and negative numbers.</b></p>	<p><b>Weeks 11-14</b></p>	<p><b>Coordinate Plane Coordinate Positive Negative Ordered Pair Inequality Absolute Value Opposite X-Axis Y-Axis Axes Integer Point of Origin Quadrant Number Line Horizontal Vertical Integers Opposites Rational numbers</b></p>
<p><b>KY.6.NS.6</b> 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. (MP.2, MP.4)</p>			
<p><b>a.</b> 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, and the opposite of a positive number is a negative, such as <math>-(-3) = 3</math>.</p>	<p><b>Today we are learning to apply knowledge of rational numbers to find absolute value, opposite values, and position of integers on a number line.</b></p>		
<p><b>b.</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.</p>	<p><b>Today we are learning to use and apply concepts of integers and rational numbers to plot numbers on a horizontal or vertical number line.</b></p> <p><b>Today we are learning to use and apply concepts of ordered pairs to plot on the coordinate plane.</b></p>		

<p>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.</p>	<p><b>Today we are learning to use signs of numbers in ordered pairs to identify which quadrant the ordered pair belongs to.</b></p> <p><b>Today we are learning to plot whole numbers and their negative opposites on a number line.</b></p> <p><b>Today we are learning to plot whole number ordered pairs and their reflections across one or both axes.</b></p>		
<p><b>KY.6.NS.7</b> Understand ordering and absolute value of rational numbers. (MP.1, MP.2, MP.4)</p>			
<p>a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.</p>	<p><b>Today we are learning to read, write, order, and use inequality symbols to compare positive and negative numbers.</b></p>		
<p>b. Write, interpret and explain statements of order for rational numbers in real-world contexts.</p>	<p><b>Today we are learning to read, write, order, and use inequality symbols to compare positive and negative numbers.</b></p>		
<p>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.</p>	<p><b>Today we are learning to interpret absolute value as a magnitude for a positive or negative quantity in real-world situations.</b></p>		
<p>d. Distinguish comparisons of absolute value from statements about order.</p>	<p><b>Today we are learning to use inequalities to compare and order absolute values.</b></p>		
<p><b>KY.6.NS.8</b> (MP.5, MP.7) 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.</p>	<p><b>Today we are learning to use the coordinates to find the distance between two points.</b></p>		

### Expression and Equations

#### Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions

Standard	Learning Target We are learning to.....	Windows of Instruction (weeks)	Essential Vocabulary
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<p><b>KY.6.EE.1</b> (MP.2, MP.6) Write and evaluate numerical expressions involving whole-number exponents.</p>	<p><b>Today we are learning to write and evaluate numerical expressions using order of operations with exponents in real-world situations.</b></p>	<p><b>Weeks - 15-23</b></p>	<p><b>Expression Equation Variable Term Constant Coefficient Product Quotient Sum Difference Order of Operations Factor Exponent Base Substitution Combine Like Terms Like Terms Associate property Commutative property Distributive property Equivalent Inverse Operation Inequality Solution Dependent Variable Independent Variable</b></p>
<p><b>KY.6.EE.2</b> Write, read and evaluate expressions in which letters stand for numbers (MP.1, MP.3, MP.4)</p>			
<p><b>a.</b> Write expressions that record operations with numbers and with letters standing for numbers.</p>	<p><b>Today we are learning to read, write, translate, and solve a numerical expression using variables.</b></p>		
<p><b>b.</b> Identify parts of an expression using mathematical terms (sums, term, product, factor, quotient, coefficient); view one or more parts of an expression in a single entity.</p>	<p><b>Today we are learning to identify and describe parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient).</b></p>		
<p><b>c.</b> 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).</p>	<p><b>Today we are learning to use the substitution method and the order of operations to solve expressions (including formulas) in real-world situations.</b></p>		
<p><b>KY.6.EE.3</b> (MP.7, MP.8) Apply the properties of operations to generate equivalent expressions.</p>	<p><b>Today we are learning to identify and apply number properties (commutative, associative, and distributive) to generate equivalent</b></p>		

	expressions.		
<b>KY.6.EE.4</b> (MP.2, MP.3, MP.7) Identify when two expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.	<b>Today we are learning to identify and use terms: constant, terms, like terms, and coefficient to simplify or combine like terms into equivalent expressions.</b>		

## Expressions and Equations

### Cluster: Reason about and solve one-variable equation and inequalities

<b>Standard</b>	<b>Learning Target We are learning to.....</b>	<b>Windows of instruction (weeks)</b>	<b>Essential Vocabulary</b>
<b>KY.6.EE.5</b> (MP.1, MP.2, MP.7) 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.	<b>Today we are learning to solve addition, subtraction, multiplication, and division equations and inequalities through substitution and inverse operations.</b>		
<b>KY.6.EE.6</b> (MP.2, MP.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.	<b>Today we are learning to use, represent, and apply the concepts of inequalities to solve real-world situations.</b>		
<b>KY.6.EE.7</b> (MP.1, MP.2, MP.3, MP.4) 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.	<b>Today we are learning to solve one-step equations using addition, subtraction, multiplication, and division in real-world situations.</b>  <b>Today we are learning to identify and write an algebraic equation to represent a real-world situation.</b>		
<b>KY.6.EE.8</b> (MP.3, MP.7) Write an inequality of the form $x > c$ , $x < c$ , $x \geq c$ , or $x \leq c$ 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.	<b>Today we are learning to solve one-step inequalities using addition, subtraction, multiplication, and division in real-world situations.</b>  <b>Today we are learning to identify and write an algebraic inequality to represent a real-world</b>		

	<p>situation.</p> <p>Today we are learning to represent solutions of inequalities on a vertical and horizontal number line.</p>		
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### Expressions and Equations

#### Cluster: Represent and analyze quantitative relationships between dependent and independent variables

Standard	Learning Target We are learning to.....	Windows of Instruction (weeks)	Essential Vocabulary
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)			
a. Appropriately recognize one quantity as the dependent variable and the other as the independent variable.	Today we are learning to recognize dependent and independent variables.		
b. 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.	Today we are learning to recognize the dependent and independent variables and write an equation using them.		
c. Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the question.	Today we are learning to analyze the relationship between dependent and independent variables using graphs and tables.		

### Geometry

#### Cluster: Solve real-world and mathematical problems involving area, surface area and volume

Standard	Learning Target We are learning to.....	Windows of Instruction (weeks)	Essential Vocabulary
<p><b>KY.6.G.1</b> (MP.1, MP.6, MP.8) Find the area of 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.</p>	<p>Today we are learning to use formulas to find the area of quadrilaterals such as squares, rectangles, rhombuses, and parallelograms in real-world situations.</p> <p>Today we are learning to use formulas to find the area of right triangles and other triangles in real-world situations.</p> <p>Today we are learning to find</p>	Weeks 24-29	<p>Area</p> <p>Perimeter</p> <p>Volume</p> <p>Surface Area</p> <p>Quadrilateral</p> <p>Parallelogram</p> <p>Rhombus</p> <p>Square</p> <p>Rectangle</p> <p>Trapezoid</p> <p>Triangle</p> <p>Composite Shape</p> <p>decomposing</p> <p>Three-Dimensional Figure</p> <p>Prism</p>



	<b>the area of complex figures made of triangles and quadrilaterals.</b>		<b>Pyramid Cone Sphere Cube Vertices Polygon Net Cubic</b>
<b>KY.6.G.2</b> (MP.2, MP.5, MP.6) Find the volume of a right rectangular prism with rational number edge lengths. Apply the formula $V=lwh$ 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.	<b>Today we are learning to find the volume of right rectangular prisms using rational numbers.</b>		
<b>KY.6.G.3</b> (MP.4, MP.5, MP.6) 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.	<b>Today we are learning to plot and use the vertices of a polygon to find the side lengths and area.</b>		
<b>KY.6.G.4</b> (MP.2, MP.3) Classify three-dimensional figures including cubes, prisms, pyramids, cones and spheres.	<b>Today we are learning to classify three-dimensional figures.</b>		
<b>OLD STANDARD</b> <b>6.G.4</b> Represent three-dimensional figures using nets made up of triangles and rectangles and use the nets to find the surface area of these figures. Apply these techniques in context of solving real-world and mathematical problems.	<b>Today we are learning to find the surface area using nets made up of rectangles and triangles in real-world situations.</b>		

## Statistics and Probability

### Cluster: Develop understanding of the process of statistical reasoning

<b>Standard</b>	<b>Learning Target We are learning to.....</b>	<b>Window of Instruction (weeks)</b>	<b>Essential Vocabulary</b>
<b>KY.6.SP.0</b> Apply the four-step investigative process for statistical reasoning (MP.1, MP.4)			
<b>a.</b> Formulate Questions: Formulate a statistical question as one that anticipates variability and can be answered with data.	<b>Today we are learning to recognize and create a statistical question.</b>	<b>Weeks 30-34</b>	<b>Mean Median Mode Range Interquartile Range Measure of Center Measure of Variation Statistical Question Data Dot Plot Histogram Box-and-Whisker Plot Skew Symmetrical</b>
<b>b.</b> Collect Data: Design and use a plan to collect appropriate data to answer a statistical question.	<b>Today we are learning to design a plan and collect data to a statistical question.</b>		
<b>c.</b> 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.	<b>Today we are learning to select the appropriate graph for the data collected or given.</b>		

d. Interpret Results: Draw logical conclusions and make generalizations from the data based on the original question.	<b>Today we are learning to interpret data collected or given.</b>		<b>Gap</b> <b>Cluster</b> <b>Outlier</b> <b>Maximum</b> <b>Minimum</b> <b>Upper Quartile</b> <b>Lower Quartile</b> <b>Tails</b> <b>Probability</b> <b>Experimental probability</b>
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### Statistics and Probability

#### Cluster: Develop understanding of statistical variability

<b>Standard</b>	<b>Learning Target We are learning to.....</b>	<b>Window of Instruction (weeks)</b>	<b>Essential Vocabulary</b>
<b>KY.6.SP.1</b> (MP.1, MP.3, MP.6) Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	<b>Today we are learning to recognize and create a statistical question.</b>		
<b>KY.6.SP.2</b> (MP.2, MP.6, MP.7) 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.	<b>Today we are learning to describe data and its shape using terms such as skewed, symmetrical, gap, outlier, and measures of center.</b>		
<b>KY.6.SP.3</b> (MP.2, MP.5, MP.6) 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.	<b>Today we are learning to find the mean, median, mode (measures of center) of a set of data.</b>  <b>Today we are learning to find the range and interquartile range (measures of variation) of a set of data.</b>		

### Statistics and Probability

#### Cluster: Summarize and describe distributions

<b>Standard</b>	<b>Learning Target We are learning to.....</b>	<b>Window of Instruction (weeks)</b>	<b>Essential Vocabulary</b>
<b>KY.6.SP.4</b> (MP.6, MP.7) Display the distribution of numerical data in plots on a number line, including dot plots, histograms and box plots.	<b>Today we are learning to use dot plots, histograms, and box plots to represent data.</b>		
<b>KY.6.SP.5</b> Summarize numerical data sets in relation to their context, such as by: (MP.3, MP.7)			
a. Reporting the number of observations.	<b>Today we are learning to</b>		

	<p><b>understand that the more experimental data collected, the more accurate our data becomes.</b></p>		
<p><b>b.</b> Describing the nature of the attribute under investigation, including how it was measured and its unit of measurement.</p>	<p><b>Today we are learning to explain how our data is measured.</b></p>		
<p><b>c.</b> Determining quantitative measures of center (median and/or mean) to describe distribution of numerical data.</p>	<p><b>Today we are learning to find the mean, median, mode (measures of center) of a set of data.</b></p>		
<p><b>d.</b> Describing distributions of numerical data qualitatively relating 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).</p>	<p><b>Today we are learning to describe data and its shape using terms such as skewed, symmetrical, gap, outlier, and measures of center.</b></p> <p><b>Today we are learning to describe data using measures of variability (range and interquartile range).</b></p>		
<p><b>e.</b> Relating the choice of measures of center and variability to the shape of the data distribution</p>	<p><b>Today we are learning to recognize mean and range are used to measure symmetrical data.</b></p> <p><b>Today we are learning to recognize median and interquartile range are used to measure skewed data.</b></p>		