

Obion County 6th Grade Mathematics 2016 – 2017 Syllabus

Mathematical Practices: These mathematical practices are provided by the Tennessee Department of Education that will be applied throughout various lessons in the school year.

1. The students will make sense of problems and persevere in solving them.
2. The students will reason abstractly and quantitatively.
3. The students will construct viable arguments and critique the reasoning of others.
4. The students will model with mathematics.
5. The students will use appropriate tools strategically.
6. The students will attend to precision.
7. The students will look for and make use of structure.
8. The students will look for and express regularity in repeated reasoning.

1st Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Extras:
<p>- I can identify the factors of two whole numbers less than or equal to 100 and determine the Greatest Common Multiple.</p> <p>- I can identify the multiples of two whole numbers less than or equal to 12 and determine the Least Common Multiple.</p> <p>- I can apply the Distributive Property to rewrite addition problems by factoring out the Greatest Common Factor.</p>	<p>Standard 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 $4(9 + 2)$.</p>	<p>*Greatest Common Factors</p> <p>*Least Common Multiple</p> <p>*Distributive Property</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> Students will complete a project that will require the students to plan a holiday meal. The students will be in charge of planning the budget and “buying the items”. This will require the students to use their ability to add, subtract, multiply, and divide decimals.</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can divide multi-digit numbers using the standard algorithm with speed and accuracy, without any math tools (i.e., calculator, multiplication chart).</p>	<p>Standard 6.NS.2: Fluently divide multi-digit numbers using the standard algorithm.</p>	<p>*Divide multi-digit numbers</p>	
<p>-I can fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation with speed and accuracy, without math tools (i.e., calculator).</p>	<p>Standard 6.NS.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p>	<p>*Add, Subtract, Multiply, Divide decimals</p>	

2nd Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Assessment
<p>-I can write ratio notation- $_:_$, $_$ to $_$, $_/_$ - I can explain how order matters when writing a ratio. -I can demonstrate how ratios can be simplified. -I can demonstrate how ratios compare two quantities; the quantities do not have to be the same unit of measure. -I can recognize that ratios appear in a variety of different contexts; part-to-whole, part-to part, and - rates. -I can generalize that all ratios relate two quantities or measures within a given situation in a multiplicative relationship. -I can analyze context to determine which kind of ratio is represented.</p>	<p>Standard 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."</p>	<p>* Writing Ratios *Ratio Language</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> None at this time</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can identify and calculate a unit rate. -I can use appropriate math terminology as related to rate. -I can analyze the relationship between a ratio a:b and a unit rate a/b where b≠0.</p>	<p>Standard 6.RP.2: Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), 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." (Expectations for unit rates in this grade are limited to non-complex fractions.)</p>	<p>*Unit Rate *Rate Relationships *Proportions</p>	

3rd Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Assessment
<p>-I can make a table of equivalent ratios using whole numbers.</p> <p>-I can find the missing values in a table of equivalent ratios.</p> <p>-I can plot pairs of values that represent equivalent ratios on the coordinate plane.</p> <p>-I can use tables to compare proportional quantities.</p>	<p>Standard 6.RP.3a: 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.</p>	<p>*Equivalent Ratios</p> <p>*Ratio Tables</p> <p>*Graphing Ratio Tables/Rates</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> None at this time</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can apply the concept of unit rate to solve real-world problems involving unit pricing.</p> <p>-I can apply the concept of unit rate to solve real-world problems involving constant speed.</p>	<p>Standard 6.RP.3b: 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</p>	<p>*Unit Rate</p>	
<p>-I can apply ratio reasoning to convert measurement units in real-world and mathematical problems.</p> <p>-I can apply ratio reasoning to convert measurement units by multiplying or dividing in real-world and mathematical problems.</p>	<p>Standard 6.RP.3d: Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</p>	<p>*Converting Measurements</p>	

4th Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Assessment
<p>-I can demonstrate how a percent is a ratio of a number to 100.</p> <p>-I can find a percent of a number as a rate per 100.</p> <p>-I can solve real-world problems involving finding the whole, given a part and a percent.</p>	<p>Standard 6.RP.3c: 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</p>	<p>*Converting Fractions, Decimals, Percent</p> <p>*Percentage</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> Students will be given the mission of going on a holiday trip. On this trip they will be required to calculate many percentages of a variety of items.</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can compute quotients of fractions divided by fractions (including mixed numbers).</p> <p>-I can interpret quotients of fractions.</p> <p>-I can figure out how to solve division problems with fractions in a real-world situation.</p> <p>-I can solve word problems involving division of fractions by fractions</p>	<p>Standard 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 $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general, $(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}$.) How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally?</p>	<p>*Multiplying Fractions</p> <p>*Dividing Decimals</p>	
<p>-I can identify a rational number as a point in the number line.</p>	<p>Standard 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</p>	<p>*Rational Numbers</p>	

	represent points on the line and in the plane with negative number coordinates.		
<p>-I can identify the location of zero on a number line in relation to positive and negative numbers.</p> <p>-I can recognize opposite signs of numbers as locations on opposite sides of 0 on the number line.</p> <p>-I can reason that a double negative, e.g., $-(-2)$ is the opposite of that number itself.</p> <p>-I can recognize the signs of both numbers in an ordered pair indicate which quadrant of the coordinate plane the ordered pair will be located.</p> <p>- I can find the absolute value of rational numbers.</p> <p>-I can calculate the distances between two points with the same first coordinate or the same second coordinate using absolute value, given only coordinates.</p>	<p>Standard 6.NS.6a: 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.</p> <p>Standard 6.NS.6b: 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.</p> <p>Standard 6.NS.6b: 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.</p> <p>Standard 6.NS.6c: 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>Standard 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</p> <p>Standard 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.</p>	<p>*Integers on a number line</p> <p>*Plotting in Coordinate Plane</p> <p>*Reflections</p> <p>*Distances between points</p>	
<p>-I can interpret statements of inequality as statements about relative position of two numbers on a number line diagram</p>	<p>Standard 6.NS.7: Understand ordering and absolute value of rational numbers</p>	<p>*Comparing Integers</p>	

5th Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Assessment
<p>-I can write numerical expressions involving whole number exponents. Ex. $34 = 3 \times 3 \times 3 \times 3$</p> <p>-I can solve order of operation problems that contain exponents. Ex. $3 + 2^2 - (2 + 3) = 2$</p>	<p>Standard 6.EE.1: Write and evaluate numerical expressions involving whole-number exponents.</p>	<p>*Exponents (Being covered in bell ringers. Should not need a lesson)</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> None at this time</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can use numbers and variables to evaluate expressions.</p> <p>-I can translate written phrases into algebraic expressions.</p> <p>-I can translate algebraic expressions into written phrases.</p>	<p>Standard 6.EE.2a: Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.</p>	<p>*Writing expressions (Being covered in bell ringers. Should not need a lesson)</p>	
<p>-I can identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient).</p> <p>-I can identify parts of an expression as a single entity, even if not a monomial.</p>	<p>Standard 6.EE.2b: 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.</p>	<p>*Identify parts of expression (Being covered in bell ringers. Should not need a lesson)</p>	
<p>-I can recognize when two expressions are equivalent.</p> <p>-I can prove (using various strategies) that two expressions are equivalent</p>	<p>Standard 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 $y + y + y$</p>	<p>*Equivalent Expressions</p>	

no matter what number is substituted.	and $3y$ are equivalent because they name the same number regardless of which number y stands for.		
-I can recognize solving an equation or inequality as a process of answering "which values from a specified set, if any, make the equation or inequality true?".	Standard 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.	*Substitution	
-I can recognize that a variable can represent an unknown number, or, depending on the scenario/situation, any number in a specific set.	Standard 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	*Variables in expressions	
-I can define an inverse operation. -I can use inverse operations to solve one step variable equations.	Standard 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.	*Solve equations	
-I can identify the constraint or condition in a real-world or mathematical problem in order to set up an inequality. -I can recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions.	Standard 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.	*Inequalities	
-I can define independent and dependent variables . -I can use variables to represent two quantities in a real-world problem that change in relationship to one another.	Standard 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	*Independent and Dependent Variables	

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.		
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6th Grading Period

Specific Objectives/Learning Targets:	Tennessee Academic State Standards:	Content:	Assessment
<p>-I can recognize and know how to compose and decompose polygons into triangles and rectangles. -I can compare the area of a triangle to the area of the composed rectangle.</p>	<p>Standard 6.G.1: Find 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.</p>	<p>*Area</p>	<p><u>Major Assignments:</u> Interactive Journal Notebook Check</p> <p><u>Projects:</u> STEM Engineering Challenge- Students will be required to create a variety of items and calculate the surface area of each.</p> <p><u>Field Trips:</u> None at this time</p> <p><u>Assessments:</u> -Bell Ringers -Unit Test -Weekly Quizzes -Daily Assignments</p>
<p>-I can combine the areas for rectangles and triangles in the net to find the surface area of a 3-dimensional figure. -I can solve real-world and mathematical problems involving surface area using nets.</p>	<p>Standard 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.</p>	<p>*Surface Area</p>	
<p>-I can apply volume formulas for right rectangular prisms to solve real-world and mathematical problems involving rectangular prisms with fractional edge lengths</p>	<p>Standard 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.</p>	<p>*Volume</p>	
<p>-I can recognize that data has variability.</p>	<p>Standard 6.SP.1: Recognize a statistical question as one that anticipates variability in the data related to the question and accounts</p>	<p>*Statistical Questioning</p>	

<p>-I can recognize a statistical question (examples versus non-examples)</p>	<p>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.</p>		
<p>-I can identify that a set of data has distribution. -I can describe a set of data by its center, e.g., mean and median.</p>	<p>Standard 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.</p>	<p>*Mean, Median, and Mode</p>	
<p>-I can recognize there are measures of central tendency for a data set, e.g., mean, median, mode. -I can recognize there are measures of variances for a data set , e.g., range, interquartile range, mean absolute deviation.</p>	<p>Standard 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.</p>	<p>*Quartile Ranges</p>	
<p>-I can analyze a set of data to determine its variance. -I can create a dot plot to display a set of numerical data. -I can create a histogram to display a set of numerical data. -I can create a box plot to display a set of numerical data.</p>	<p>Standard 6.SP.4: Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p>	<p>*Box Plots, Number lines, Histograms</p>	
<p>-I can organize and display data in tables and graphs. -I can describe the data being collected, including how it was measured and its units of measurement.</p>	<p>Standard 6.SP.5a: Summarize numerical data sets in relation to their context by reporting the number of observations. Standard 6.SP.5b: Summarize numerical data sets in relation to their context describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</p>	<p>*Data</p>	

Tennessee Academic State Standard

6th Grade Mathematics

http://www.tn.gov/assets/entities/education/attachments/std_math_gr_6.pdf: