West Virginia math 4 life

Frameworks for Mathematics

Grade 6

West Virginia DEPARTMENT OF EDUCATION

Grade Six

As students enter grade six, they are fluent in addition, subtraction, and multiplication with multi-digit whole numbers and have a solid conceptual understanding of all four operations with positive rational numbers, including fractions. They are beginning to understand measurement concepts and their knowledge of how to represent and interpret data is emerging. To be prepared for grade-seven mathematics, students demonstrate fluency in multi-digit whole-number division and multi-digit decimal operations. These fluencies and the conceptual understandings that support them are foundational for work with fractions and decimals in grade seven. Of particular importance at grade six are skills and understandings of division of fractions by fractions; an understanding of the system of rational numbers; the ability to use ratio concepts and reasoning to solve problems; the extension of arithmetic to algebraic expressions, including how to reason about an solve one-variable equations and inequalities; and the ability to represent and analyze quantitative relationships between dependent and independent variables.

Ratios and Proportional Relationships

Standards	Teacher Understandings	Resources	Student Understandings
Understand ratio concepts and use ratio reasoning to solve problems. **M.6.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (e.g., "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.") **M.6.2** 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. (e.g., "This	A critical area of instruction in grade six is to connect ratio, rate, and percentage to whole-number multiplication and division and use concepts of ratio and rate to solve problems. Students' prior understanding of and skill with multiplication, division and fractions contribute to their study of ratios, proportional relationships, unit rate, and percentage in grade six. In grade seven, these concepts extend to include scale drawings,	**Educators' Guide** Organized by Grade Six domains, this document provides exemplars to explain the content standards, highlight connections to the Mathematical Habits of Mind, and demonstrate the importance of developing conceptual understanding, procedural skill and fluency, and application.	• Through their work with models, students develop an understanding of ratios. • Students 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. • Students use tables to compare ratios and practice using ratio and rate language to deepen their understanding of

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.") Instructional Note: Expectations for unit rates in this grade are limited to non-complex fractions. **M.6.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 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. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. (e.g., 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?) c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity);	slope, and real-world percent problems. **Content by Cluster** Teachers must provide students opportunity to master each grade-level content standard. This document provides a sample content plan for Grade Six. It is important to understand that neglecting grade-level content standards will leave gaps in students' skills and understandings and will leave students unprepared for the challenges they face in later grades. A content plan must demonstrate a means by which students are provided opportunity to address all grade-level content standards and to revisit and practice skills and strengthen understandings throughout the school year.	Math TREE Online Education Resources A curated set of aligned, internet resources for WV middle and high school math teachers. Quantile Teacher Assistant This tool is aligned to WV standards and is designed to help educators locate resources that can support instruction and identify skills most relevant to standards. Open-Up Resources This resource provides opportunities for students to learn math by doing math, solving problems in mathematical and real-world contexts, and constructing arguments using precise language. Tasks spark discussion, perseverance, and enjoyment of	what a ratio describes. In generating equivalent ratios and recording ratios in tables, students notice the role of multiplication and division in how entries are related to each other. • Students understand that equivalent ratios have the same unit rate and that rates always have units associated with them that are reflective of the quantities being divided. • Students create tables of equivalent ratios and represent the resulting data on a coordinate grid. (Eventually students see this additive and multiplicative structure in the graphs of ratios, which will be useful later when studying slopes and linear functions.) • Students apply ratio reasoning to problems involving unit price, constant speed, percent,

solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.		mathematics. High-leverage routines guide students in understanding and making connections between concepts and procedures.	and the conversion of measurement units. • Students understand percent as a special type of rate, and use models and tables to solve percent problems. • Students' understanding of percent is related to their understanding of fractions and decimals. **Common Misconceptions** • Although ratios can be represented as fractions, the connection between ratios and fractions is subtle. Fractions express a part-to-whole comparison, but ratios can express part-to-whole or part-to-part comparisons. Care should be taken if teachers choose to represent ratios as fractions at this grade level. • Proportional situations can have several ratios associated with them. For instance, in a mixture involving 1 part juice to 2 parts water, there is a

			ratio of 1 part juice to 3 total parts (1:3), as well as the more obvious ratio of 1:2. • Students must carefully reason about why they can add ratios. For instance, in a mixture with lemon drink and fizzy water in a ratio of 2:3, mixtures made with ratios 2:3 and 4:6 can be added to give a mixture of ratio 6:9, equivalent to 2:3. This is because the following are true: 2 (parts lemon drink) + 4 (parts lemon drink) = 6 (parts lemon drink) 3 (parts fizzy water) + 6 (parts fizzy water) = 9 (parts fizzy water) However, one would never add fractions by adding numerators and denominators: $\frac{2}{3} + \frac{4}{6} \neq \frac{6}{9}$

The Number System

Standards	Teacher Understandings	Resources	Student Understandings
Apply and extend previous understandings of multiplication and division to divide fractions by fractions. **M.6.4** 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. (e.g., Create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area ½ square mi?) **Compute fluently with multi-digit numbers and find common factors and multiples.** **M.6.5**	In grade six, students complete their understanding of division of fractions and extend the notion of *number* to the system of rational numbers, which includes negative numbers. Students also work toward fluency with multi-digit division and multi-digit decimal operations. In grade three, division is introduced conceptually as the inverse of multiplication. In grade four, students continue using place-value strategies, properties of operations, the relationship between multiplication and division, area models, and rectangular arrays to solve problems with one-digit divisors and develop and explain written methods. This work extends in grade five to include two-digit	**Educators' Guide** Organized by Grade Six domains, this document provides exemplars to explain the content standards, highlight connections to the Mathematical Habits of Mind, and demonstrate the importance of developing conceptual understanding, procedural skill and fluency, and application. Math TREE Online Education Resources A curated set of aligned, internet resources for WV middle and high school math teachers. Quantile Teacher Assistant This tool is aligned to WV standards and is designed to help	• Students continue to develop division by using visual models and equations to divide fractions by fractions to solve word problems. • Student understanding of the meaning of operations with fractions builds upon their understanding of meanings with whole numbers • Student understandings of the meaning of operations with fractions can be supported with visual representations. • Students recognize division in two different situations: measurement division, which requires finding how many groups (e.g., how many groups can you make?); and fair-share division, which requires equal sharing

Fluently divide multi-digit numbers using the standard algorithm. **M.6.6** Fluently add, subtract, multiply and divide multi-digit decimals using the standard algorithm for each operation. **M.6.7** 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 (e.g., express 36 + 8 as 4 (9 + 2)). **Apply and extend previous understandings of numbers to the system of rational numbers.** **M.6.8** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0	divisors and all operations with decimals to hundredths. In grade six, fluency with the algorithms for division is reached **Content by Cluster** Teachers must provide students opportunity to master each grade-level content standard. This document provides a sample content plan for Grade Six. It is important to understand that neglecting grade-level content standards will leave gaps in students' skills and understandings and will leave students unprepared for the challenges they face in later grades. A content plan must demonstrate a means by which students can be provided opportunity to address all grade-level content standards and to revisit and practice skills and strengthen understandings throughout the school year.	educators locate resources that can support instruction and identify skills most relevant to standards. Open-Up Resources This resource provides opportunities for students to learn math by doing math, solving problems in mathematical and real-world contexts, and constructing arguments using precise language. Tasks spark discussion, perseverance, and enjoyment of mathematics. High-leverage routines guide students in understanding and making connections between concepts and procedures.	(e.g., finding how many are in each group). • Student understanding of the place-value system across all places to the left and right of the ones place allows them to recognize why addition and subtraction of decimals can be accomplished with the same algorithms as for whole numbers; like values or units (such as tens or thousandths) are combined. • Students should understand how addition and subtraction of all quantities have the same basis: adding or subtracting like place-value units (whole numbers and decimal numbers), adding or subtracting like unit fractions, or adding or subtracting like measures. Thus, addition and subtraction are consistent concepts

in each situation. **M.6.9** Understand a rational number as a point on the number line. 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. a. 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. 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. **M.6.10** Understand ordering and absolute			across grade levels and number systems. • Students extend the number line to represent all rational numbers, focusing on the relationship between a number and its opposite—namely, that they are equidistant from 0 on a number line. • Students recognize that a number and its opposite are the same distance from 0 on the number line. • Students identify the four quadrants and the appropriate quadrant for an ordered pair based on the signs of the coordinates **Common Misconceptions** • Students may confuse dividing a quantity **by** $\frac{1}{2}$ with dividing a quantity **in half.** Dividing **by** $\frac{1}{2}$ is finding how many $\frac{1}{2}$-sized portions there are, as in "dividing 7 **by** $\frac{1}{2}$," which

value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. (e.g., interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.) b. Write, interpret, and explain statements of order for rational numbers in real-world contexts (e.g., write –3° C > –7° C to express the fact that –3° C is warmer than –7° C). 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. (e.g., for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars). d. Distinguish comparisons of absolute value from statements about order. (e.g., recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.) **M.6.11**			is $7 \div \frac{1}{2} = 14$. On the other hand, to divide a quantity **in half** is to divide the quantity into two parts equally, as in "dividing 7 **in half**" yields $\frac{7}{2} = 3.5$ Students should understand that dividing **in half** is the same as dividing by 2. • With positive numbers, the absolute value (distance from zero) of the number and the value of the number are the same. However, students might be confused when they work with the absolute values of negative numbers. For negative numbers, as the value of the number decreases, the absolute value increases. For example, –24 is less than –14 because –24 is located to the left of –14 on the number line. However, the absolute value of –24 is greater than the absolute value

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.			of –14 because it is farther from zero. Students may also erroneously think that taking the absolute value means to "change the sign of a number," which is true for negative numbers but not for positive numbers or 0.

Expressions and Equations

Standards	Teacher Understandings	Resources	Student Understandings
Apply and extend previous understandings of arithmetic to algebraic expressions. **M.6.12** Write and evaluate numerical expressions involving whole-number exponents. **M.6.13** Write, read and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. (e.g., Express the calculation, "Subtract y from 5" as 5 – y.) b. Identify parts of an expression using mathematical terms (sum,	A critical area of instruction at grade six is writing, interpreting, and using expressions and equations. In previous grades, students wrote numerical equations and simple equations involving one operation with a variable. In grade six, students start the systematic study of equations and inequalities and methods to solve them. Students understand that mathematical expressions represent calculations with numbers. Some numbers,	**Educators' Guide** Organized by Grade Six domains, this document provides exemplars to explain the content standards, highlight connections to the Mathematical Habits of Mind, and demonstrate the importance of developing conceptual understanding, procedural skill and fluency, and application.	• Students demonstrate understanding of the meaning of exponents by writing and evaluating numerical expressions with whole-number exponents. • Students identify the parts of an algebraic expression using mathematical vocabulary such as *variable*, *coefficient*, *constant*, *term*, *factor*, *sum*, *difference*, *product*, and *quotient*.

term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. (e.g., 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.) c. 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 the conventional order when there are no parentheses to specify a particular order: Order of Operations (e.g., use the formulas V = s^3 and A = 6 s^2 to find the volume and surface area of a cube with sides of length s = 1/2). **M.6.14** Apply the properties of operations to generate equivalent expressions (e.g., apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y). **M.6.15** Identify when two expressions are	such as 2 or $\frac{3}{4}$, might be given explicitly. Other numbers are represented by letters, such as $x, y, P, or\ n$. The calculation represented by an expression might use a single operation, as in $4 + 3$ or $3x$, or a series of nested or parallel operations, as in $3(a + 9) - \frac{b}{9}$. An expression may consist of a single number, even 0. Students understand an equation as a statement that two expressions are equal. An important aspect of equations is that the two expressions on either side of the equal sign may not always be equal; that is, the equation might be a true statement for some values of the variable(s) and a false statement for others (adapted from UA Progressions Documents 2011d).	Math TREE Online Education Resources A curated set of aligned, internet resources for WV middle and high school math teachers. Quantile Teacher Assistant This tool is aligned to WV standards and is designed to help educators locate resources that can support instruction and identify skills most relevant to standards. Open-Up Resources This resource provides opportunities for students to learn math by doing math, solving problems in mathematical and real-world contexts, and constructing arguments using precise language. Tasks spark discussion, perseverance, and enjoyment of mathematics. High-	• In developing this common mathematical vocabulary, students can better understand the structure of expressions and explain their process for evaluating expressions. • Students use the distributive property flexibly—for example, to see that $3(2x + 5)$ is the same as $(3 \cdot 2x) + (3 \cdot 5)$ • Students generate equivalent expressions using the associative, commutative, and distributive properties and can prove the expressions are equivalent. • When writing equations, students use precision in defining variables. • Students recognize the relationship between two variables, beginning with the distinction between dependent and independent variables.

equivalent; i.e., when the two expressions name the same number regardless of which value is substituted into them. (e.g., The expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.) **Reason about and solve one-variable equations and inequalities.** **M.6.16** 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. **M.6.17** 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. **M.6.18** 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	**Content by Cluster** Teachers must provide students opportunity to master each grade-level content standard. This document provides a sample content plan for Grade Six. It is important to understand that neglecting grade-level content standards will leave gaps in students' skills and understandings and will leave students unprepared for the challenges they face in later grades. A content plan must demonstrate a means by which students can be provided opportunity to address all grade-level content standards and to revisit and practice skills and strengthen understandings throughout the school year.	leverage routines guide students in understanding and making connections between concepts and procedures.	• Students show relationships between quantities with multiple representations, using language, a table, an equation, or a graph. **Common Misconceptions** • Students in grade six may not understand how to read the operations referenced with notations (e.g., $x^3, 4x, 3(x+2y), a+3a$). Students are learning the following: ○ x^3 means $x \cdot x \cdot x$, not $3x$ or 3 times x. ○ $4x$ means $4\ times\ x\ or\ x+x+x+x$, not forty-something. ○ When $4x$ is evaluated where $x=7$, substitution does not result in the expression meaning 47. ○ For expressions like $a+3a$, students need to understand a as $1a$ to know that $a+3a=4a$ not $3a^2$.

nonnegative rational numbers. **M.6.19** 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. **Represent and analyze quantitative relationships between dependent and independent variables.** **M.6.20** 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. (e.g., In a problem involving motion at 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.)			• The use of the "x" notation as both the variable and the operation of multiplication may also be a source of confusion for students. In addition, students may need an explanation for why $x^0 = 1$ for all non-zero numbers x. Full explanations of this and other rules of working with exponents appear in the chapter on grade eight.

Geometry

Standards	Teacher Understandings	Resources	Student Understandings
Solve real-world and mathematical problems involving area, surface area, and volume. **M.6.21** 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. **M.6.22** 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. **M.6.23** 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	In grade six, students extend their understanding of length, area, and volume as they solve problems by applying formulas for the area of triangles and parallelograms and volume of rectangular prisms. Standards in the cluster "Solve real-world and mathematical problems involving area, surface area, and volume" regarding areas of triangles and volumes of right rectangular prisms connect to major work in the Expressions and Equations domain. In addition, students draw polygons in the coordinate plane, supporting their work with the coordinate plane in the Number System domain. **Content by Cluster** Teachers must provide students opportunity to	**Educators' Guide** Organized by Grade Six domains, this document provides exemplars to explain the content standards, highlight connections to the Mathematical Habits of Mind, and demonstrate the importance of developing conceptual understanding, procedural skill and fluency, and application. Math TREE Online Education Resources A curated set of aligned, internet resources for WV middle and high school math teachers. Quantile Teacher Assistant This tool is aligned to WV standards and is designed to help	• Students build on their work with area from previous grade levels by reasoning about relationships among shapes to determine area, surface area, and volume. • Students continue to understand area as the number of squares needed to cover a plane figure. • Students find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. • Students understand that area is conserved when composing or decomposing shapes. For example, students will decompose trapezoids

coordinate. Apply these techniques in the context of solving real-world and mathematical problems. **M.6.24** 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.	master each grade-level content standard. This document provides a sample content plan for Grade Six. It is important to understand that neglecting grade-level content standards will leave gaps in students' skills and understandings and will leave students unprepared for the challenges they face in later grades. A content plan must demonstrate a means by which students can be provided opportunity to address all grade-level content standards and to revisit and practice skills and strengthen understandings throughout the school year.	educators locate resources that can support instruction and identify skills most relevant to standards. Open-Up Resources This resource provides opportunities for students to learn math by doing math, solving problems in mathematical and real-world contexts, and constructing arguments using precise language. Tasks spark discussion, perseverance, and enjoyment of mathematics. High-leverage routines guide students in understanding and making connections between concepts and procedures.	into triangles and/or rectangles and use this reasoning to find formulas for the area of a trapezoid. • Students know area formulas for triangles and some special quadrilaterals, in the sense of having an understanding of why the formula works and how the formula relates to the measure (area) and the figure. • Students extend their understanding of finding the number of unit cubes within a solid shape to unit cubes with fractional edge lengths. • Students represent shapes in the coordinate plane and find lengths of sides that contain vertices with a common x- or y- coordinate. • Students construct three-dimensional shapes using nets and build on their work with area by

			finding surface areas with nets.

Statistics and Probability

Standards	Teacher Understandings	Resources	Student Understandings
Develop understanding of statistical variability. **M.6.25** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. (e.g., "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.) **M.6.26** Through informal observation, understand that a set of data collected to answer a statistical question has a distribution which can be described by its center (mean/median), spread (range), and overall shape. **M.6.27** Recognize that a measure of center for a numerical data set summarizes all of its values with a single number. **Summarize and describe distributions.**	A critical area of instruction in grade six is developing understanding of statistical thinking. Students build on their knowledge and experiences in data analysis as they work with statistical variability and represent and analyze data distributions. They continue to think statistically, viewing statistical reasoning as a four-step investigative process: • Formulate questions that can be answered with data. • Design and use a plan to collect relevant data. • Analyze the data with appropriate methods. • Interpret results and draw valid conclusions from the data that relate	**Educators' Guide** Organized by Grade Six domains, this document provides exemplars to explain the content standards, highlight connections to the Mathematical Habits of Mind, and demonstrate the importance of developing conceptual understanding, procedural skill and fluency, and application. It highlights some necessary foundational skills from previous grade levels.	• Students analyze the center, spread, and overall shape of a set of data. • Students understand that data sets contain many numerical values that can be summarized by one number, such as a measure of center (mean and median) and range. • Students understand that the interquartile range describes the variability within the middle 50% of a data set. • Students use number lines, dot plots, histograms, and box plot graphs to display data graphically. • Students determine the appropriate graph for displaying data and can

M.6.28 Display numerical data in plots on a number line, including dot plots, histograms and box plots. **M.6.29** 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. c. Giving quantitative measures of center (median and/or mean), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center to the shape of the data distribution and the context in which the data were gathered.	to the questions posed. **Content by Cluster** Teachers must provide students opportunity to master each grade-level content standard. This document provides a sample content plan for Grade Six. It is important to understand that neglecting grade-level content standards will leave gaps in students' skills and understandings and will leave students unprepared for the challenges they face in later grades. A content plan must demonstrate a means by which students can be provided opportunity to address all grade-level content standards and to revisit and practice skills and strengthen understandings throughout the school year.	Math TREE Online Education Resources A curated set of aligned, internet resources for WV middle and high school math teachers. Quantile Teacher Assistant This tool is aligned to WV standards and is designed to help educators locate resources that can support instruction and identify skills most relevant to standards. Open-Up Resources This resource provides opportunities for students to learn math by doing math, solving problems in mathematical and real-world contexts, and constructing arguments using precise language.	read data from graphs generated by others.

		Tasks spark discussion, perseverance, and enjoyment of mathematics. High-leverage routines guide students in understanding and making connections between concepts and procedures.	

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