NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Summative Assessment
Mathematics Grade 6 Range Achievement Level Descriptors

What are Range Achievement Level Descriptors?

Range Achievement Level Descriptors (ALDs) demonstrate how skills described in the Nebraska College and Career Ready (CCR) Standards likely change and become more sophisticated as ability and performance increases. The ALDs also describe the evidence needed to help infer where a student is along the range. This range is defined by Nebraska using three levels:

- Developing – not yet demonstrating proficiency
- On Track – demonstrating proficiency
- College and Career Benchmark – demonstrating advanced proficiency

The ALDs help show the within-standard reasoning complexity that increases in sophistication as the achievement levels increase. Such skill advancement is often related to increases in content difficulty, increases in reasoning complexity, and a reduction in the supports required for students to demonstrate what they know within a task or item.

The Range ALDs provide a way to communicate a progression that is visible and usable to all stakeholders, while also providing a foundation for a robust bank of assessment items that meets the needs of all Nebraska students.

How were Nebraska's Mathematics ALDs created?

The ALDs were developed in an iterative manner, centered around multiple teacher reviews and evidence of student learning from the NSCAS assessment.

After the 2017 Content/Bias Review of new development to the NE CCR Mathematics Standards, a draft of the ALDs was created based on the feedback from Nebraska educators on the items and standards. NDE reviewed the draft and provided initial feedback which was then incorporated. A committee of Nebraska educators reviewed the ALDs with NDE's feedback implemented. The educator feedback was used to update the ALDs.

The updated ALDs were taken to the 2018 Item Writing Workshop where they were used to help facilitate item writing. Feedback was again gathered from Nebraska educators based on their use of the ALDs for writing items. The ALDs were also used at the 2018 Content/Bias review to help review the items. Additional educator feedback was documented at each grade.

Feedback from both item writing and committee reviews was then used to update the ALDs prior to taking the ALDs to the 2018 Standard Setting meeting and presenting them to the committee, which was comprised of Nebraska educators.

The ALDs were then updated based on the final cut scores from the assessment and a comparison of a representative sample of items in the NSCAS item bank to the ALDs. The updated ALDs were shared with NDE to obtain their final recommendations.

Notes about interpreting the final ALDs can be found at the bottom of each page.

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MA 6.1 NUMBER: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA.6.1.1 Numeric Relationships: Students will demonstrate, represent, and show relationships among fractions, decimals, percents, and integers within the base-ten number system.			
MA 6.1.1.a Determine common factors and common multiples using prime factorization of numbers with and without exponents.	Determines the prime factorization for a whole number less than 100 without exponents. Determines common multiples for a given pair of prime numbers.	Determines the prime factorization for a whole number less than 100 with exponents. Determines the prime factorization for a whole number greater than 100 with or without exponents. Determines either common factors or common multiples for two whole numbers both less than 100 when presented with or without their prime factorization. If provided, the prime factorization can be with or without exponents. At least one of the numbers should be a composite number.	Determines common factors and common multiples for two whole numbers both less than 100 when presented with or without their prime factorization. If provided, the prime factorization can be with or without exponents. At least one of the numbers should be a composite number. Determines the greatest common factor or least common multiple for two whole numbers presented with or without their prime factorization. If provided, the prime factorization can be with or without exponents. Determines common factors or common multiples for two whole numbers with at least one greater than 100 when presented with or without their prime factorization. If provided, the prime factorization can be with or without exponents. At least one of the numbers should be a composite number. Analyzes prime factorization of whole numbers (e.g., The prime factorization of a number is... What is the prime factorization of 4 times that number?).

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MA 6.1.1.b Represent non-negative whole numbers using exponential notation.	Writes equivalent forms of exponential expressions. Does not include representing a single term with a base and exponent. Ex: 2 x 2 x 2 x 3 x 3 = 2^3 x 3^2 (Should not be assessing prime factorization but equivalent forms.) Represents a non-negative whole number less than 100 as a single term in exponential form when --given the base, determines the exponent --given the exponent, determines the base Ex: 81 = 3^4 or 81=3^4 Evaluates a numerical expression with an exponent that represents a non-negative whole number. Must be a number other than a power of 10. Compares values of non-negative whole numbers when presented in exponential form. Should not require evaluating the expression or rules of exponents but may require rewriting it in an equivalent form (e.g., 2^4 is equal to 2x2x2x2 and 4x4 so equal to 4^2). (Refer to *MA 5.1.1.e* for powers of 10.)	Represents a non-negative whole number less than 100 a single term in exponential form (e.g., 81=3^4). Represents a non-negative whole number greater than 100 but not a power of 10 as a single term in exponential form when --given the base, determines the exponent --given the exponent, determines the base Example: 196 = 14^2 or 196=14^2	Represents a non-negative whole number greater than 100 but not a power of 10 as a single term in exponential form (e.g., 196=14^2). Analyzes the exponential form of non-negative whole numbers. Ex: Is there more than one way to write 81 in exponential form? Justify your answer.

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MA 6.1.1.c Compare and order rational numbers both on the number line and not on the number line.	Records comparisons of positive numbers (whole numbers, mixed numbers, fractions, and/or decimals to the tenths, hundredths, or thousandths) using symbols (e.g., < or >). May include a number line. Orders three or more positive numbers (whole numbers, mixed numbers, fractions, and/or decimals to the thousandths). May include a number line. (Refer to *MA 5.1.1.b* for comparing whole numbers and simpler comparisons with fractions, mixed numbers, and decimals.)	Uses symbols (e.g., < or >) to represent comparisons between two rational numbers where at least one value is a decimal to the ten-thousandths or more. Ex: ½ __?__ 0.5001 Orders three or more positive numbers (whole numbers, mixed numbers, fractions, and/or decimals) with at least one number being a decimal to the ten-thousandths or a percent. Uses symbols (e.g., < or >) to represent comparisons of two rational numbers when at least one value is a negative rational number and both values are plotted on a number line. Orders three rational numbers on a number line when at least one value is a negative rational number.	Uses symbols (e.g., < or >) to represent comparisons between two rational numbers where at least one value is a negative rational number. Orders three or more numbers when at least one value is a negative rational number.
MA 6.1.1.d Convert among fractions, decimals, and percents using multiple representations.	Converts among fractions, decimals, and percents for fractions with denominators of 7 or 9 (e.g., 3/7 ≈ 0.429, 0.11111111 ≈ 1/9). (Refer to *MA 5.1.1.d* for fractions with denominators of 2, 3, 4, 5, 6, or 8, and Refer to MA 4.1.1.h for fractions with denominator of 10 or 100.)	Generates equivalent values for given fractions, decimals, and percents for fractions with denominator greater than 10 (other than 100) or percents that include decimals (e.g., 5.5% = 0.055 = 55/1,000).	Explains and justifies a conversion between fractions, decimals, and percents, using symbols, visual models, or other representations. Ex: Do 3/5 and 60% represent the same quantity? Justify your answer.
MA 6.1.1.e Determine ratios from drawings, words, and manipulatives.	Assessed at the local level		
MA 6.1.1.f Explain and determine unit rates.	Assessed at the local level		

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MA 6.1.1.g Model integers using drawings, words, manipulatives, number lines, and symbols.	Determines the opposite of a number in numeral form or on a number line. Identifies integers as including values that are less than zero (e.g., identifying which list of given values includes integers vs whole numbers). Models an integer greater than zero on a number line. Determines the integer representing a given situation or description when directional or increase/decrease language is used (e.g., above 0, loses money).	Models an integer less than zero on a number line. Represents an integer greater than 0 using a description or a drawing other than a number line (e.g., describe a scenario that can be modeled by the value +5).	Represents an integer less than zero using a description or as a drawing other than a number line (e.g., describe a scenario that can be modeled by the value -5).
MA 6.1.1.h Compare and order integers and absolute value both on the number line and not on the number line.	Represents the absolute value of an integer on a number line. Uses symbols to represent comparisons between two negative integers or one negative and one positive integer, both with or without a number line. Orders positive and negative numbers where at least one value is a negative integer and no absolute values are used when provided a number line. Orders three or more positive and negative integers without a number line where at least one value is a negative integer and no absolute values are used.	Uses symbols to represent comparisons between an integer and the absolute value of an integer. May or may not be the same integer. Orders positive and negative integers where at least one value is an absolute value of a positive or negative integer, when provided a number line.	Orders three or more positive and negative integers not on a number line, where at least one value is a negative integer and one value is the absolute value of a negative integer. Analyzes comparisons between two integers where at least one value is a negative integer or the absolute value of a negative integer (e.g., explains why -4 is less than -3).
MA 6.1.1.i Determine absolute value of rational numbers.	Determines the absolute value of an integer.	Determines the absolute values of positive and negative fractions, mixed numbers, or decimals.	Determines multiple numbers that have the same given absolute value. Analyzes the evaluation of the absolute value of a rational number. Ex: Do -6 and 6 have the same absolute value? Justify your answer using the definition of absolute value.
MA 6.1.2 Operations: Students will compute with fractions and decimals accurately.			

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MA 6.1.2.a Multiply and divide non-negative fractions and mixed numbers	Multiplies a unit fraction by a unit fraction. Divides a unit fraction by another unit fraction.	Multiplies fractions and mixed numbers. Multiplies mixed numbers and whole numbers or other mixed numbers. Divides non-unit fractions and whole numbers or mixed numbers. Divides mixed numbers and whole numbers or other mixed numbers.	Analyzes multiplication or division of non-negative fractions and mixed numbers. Ex: Is 6/2 multiplied by 1/2 equal to 6/2 times 2? Justify your answer.
MA 6.1.2.b Evaluate expressions with positive exponents.	Assessed at the local level		
MA 6.1.2.c Divide multi-digit whole numbers using the standard algorithm.	Divides a whole number with 5 or more digits by a one- or two-digit number with or without remainders. (Refer to *MA 5.1.2.b* for dividing a two-, three-, or four-digit whole number by a two-digit whole number.)	Divides a whole number with 5 or more digits by a number with three or more digits with or without remainders. Explains the meaning of a remainder in division when dividing by a number with three or more digits and how the remainder relates to multiplication (not within a context). Ex: A number is divided by 125 and the answer is 12 with a remainder of 8. Explain how to find the number (multiply 125 by 12 and add 8 to the answer).	Analyzes division of a whole numbers with 5 or more digits by another whole number (e.g., explain why the quotient of 15,562 divided by 31 is greater than the quotient of 15,562 divided by 62).
MA 6.1.2.d Add, subtract, multiply, and divide decimals using the standard algorithms.	Adds and subtracts decimals to the thousandths where at least one value is a decimal. Multiplies decimals to the hundredths where at least one factor is a decimal to the tenths or hundredths.	Multiplies decimals to the thousandths where at least one factor is a decimal in the thousandths. Divides decimals to the thousandths where at least one value is a decimal. Adds, subtracts, multiplies, and divides decimals to the thousandths where two operations are required and at least one value is a decimal.	Adds, subtracts, multiplies, and divides decimals beyond the thousandths place where at least one value is a decimal. Analyzes addition, subtraction, multiplication, or division of decimals to the thousandths (e.g., explains how to change the process to arrive at a certain answer).

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MA 6.1.2.e Estimate and check reasonableness of answers using appropriate strategies and tools.	Determines whether proposed whole number estimates or proposed processes for estimating addition, subtraction, multiplication, and division of non-negative whole numbers or decimals from Grade 6 are reasonable using appropriate strategies and tools (may include context). Provides the best estimate using appropriate strategies and tools for a given problem involving the four operations on non-negative whole numbers or decimals from Grade 6. (may include context) Ex: Which value is the best estimate for…?	Determines whether proposed whole number estimates or proposed process for estimating addition, subtraction, multiplication, and division of non-negative fractions from Grade 6 are reasonable using appropriate strategies and tools. Must include at least one fraction (may include context). Provides the best estimate using appropriate strategies and tools for a given problem involving the four operations on non-negative rational numbers from Grade 6. (may include context) Ex: Which value is the best estimate for…?	Explains whether proposed whole number estimates for addition, subtraction, multiplication, and division of non-negative decimals and/or fractions from Grade 6 are reasonable using appropriate strategies and tools (may include context). Ex: Why is… the best estimate for…?
MA 6.2 ALGEBRA: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA 6.2.1 Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions, equations, and inequalities.			
MA 6.2.1.a Create algebraic expressions (e.g., one operation, one variable as well as multiple operations, one variable) from word phrases.	Determines one-variable, one-operation algebraic expressions that correspond to word phrases. Determines multiple-operation numerical expressions that correspond to word phrases (may include basic context).	Determines one-variable, multiple-operation algebraic expressions that correspond to word phrases (may include basic context). Creates one-variable, one-operation or one-variable, multiple-operation algebraic expressions from word phrases (may include basic context).	Determines one-variable algebraic expressions from word phrases for more complex contexts. Explains or justifies a given algebraic expression does or does not match a word phrase (may include basic or complex context).
MA 6.2.1.b Recognize and generate equivalent algebraic expressions involving distributive property and combining like terms.	Assessed at the local level		
MA 6.2.1.c Represent and analyze the relationship between two variables using graphs, tables, and one-step equations.	Assessed at the local level		
MA 6.2.2 Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving expressions, equations, and inequalities.			
MA 6.2.2.a Simplify expressions using the distributive property and combining like terms.	Simplifies an expression with a single variable by combining like terms excluding the use of the distributive property. Determines the term that needs to be distributed when simplifying an expression using the distributive property.	Simplifies an expression with a single variable by applying the distributive property. Simplifies an expression with a single variable by applying the distributive property and combining like terms. Simplifies an expression with two or more variables by combining like terms with and/or applying the distributive property.	Analyzes the distributive property and combining like terms to simplify an expression (e.g., explains why using the distributive property and combining like terms does or does not result in a given simplified expression).

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MA 6.2.2.b Use substitution to determine if a given value for a variable makes an equation or inequality true.	Uses substitution of a whole number to determine if a given value for a variable makes a one- or two-step equation involving whole numbers true (e.g., Which value of x makes the equation x + 6 = 9 - 2 true?).	Uses substitution of a non-negative rational numbers to determine if a given value for a variable makes an equation involving non-negative rational numbers with one or more steps true (e.g., Which value of x makes the equation 1/3x +6 = 9 + 12 true?). Uses substitution with non-negative rational numbers to determine if a given value for a variable makes a one-step inequality true (e.g., Which value of x makes the inequality x + 6 > 9 true?).	Uses substitution with non-negative rational numbers to determine if a given value for a variable makes a two-step inequality true (e.g., Which value of x makes the inequality 1/3x + 6 > 9 true?). Justifies a conclusion about solutions to an equation or inequality with non-negative rational numbers based on the results of substitution. For two-step inequalities, limit substitution to whole numbers.
MA 6.2.2.c Evaluate numerical expressions, including absolute value and exponents, with respect to order of operations.	Determines the first step in evaluating a numerical expression involving the order of operations with whole number exponents and/or absolute value. Evaluates multi-step numerical expressions involving the order of operations that include exponents of 2 and no absolute value. (Refer to *MA 5.2.2.a* for evaluating numerical expressions involving the order of operations with whole numbers without exponents.)	Evaluates multi-step numerical expressions involving the order of operations with absolute value and/or whole number exponents greater than or equal to 3.	Analyzes the evaluation of numerical or algebraic expressions using order of operations with whole number exponents and/or absolute value (e.g., explains why a value is or is not equal to a numerical expression based on the order of operations). Determines the operation or placement of grouping symbols needed to make a numerical expression involving the order of operations with whole number exponents and/or absolute value equal a given value.
MA 6.2.2.d Given the value of the variable, evaluate algebraic expressions (which may include absolute value) with respect to order of operations (non-negative rational numbers).	Evaluates one- or two-step algebraic expressions involving the order of operations, excluding exponents and/or absolute value, with non-negative rational numbers when given the value of the variable.	Evaluates multi-step algebraic expressions involving the order of operations, including exponents and/or absolute value, with non-negative rational numbers when given the value of the variable.	Analyzes the use of a given value of the variable to evaluate algebraic expressions involving the order of operations, which may include exponents and/or absolute value, with non-negative rational numbers (e.g., explains why a given value for the variable does or does not result in a specific evaluation for the algebraic expression).
MA 6.2.2.e Solve one-step equations with non-negative rational numbers using addition, subtraction, multiplication and division.	Solves one-step equations with non-negative rational numbers, including at least one fraction or decimal, using any of the four basic operations (e.g., What value of x makes the equation 7 - x = 5 2/3 true?).	Determines the step necessary to solve a one-step equation with non-negative rational numbers, including at least one fraction or decimal, using any of the four basic operations (e.g., Which operation can be used to solve x + 1 1/3 = 5 2/3 for x in one step?).	Explains or justifies solutions to one-step equations with non-negative rational numbers, including at least one fraction or decimal, using the four basic operations. Determines two or more one-step equations with non-negative rational numbers, including at least one fraction or decimal, that have the same value for the unknown (e.g., Which equation has the same solution for x as x + 1 1/3 = 5 2/3?).

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MA 6.2.2.f Use equivalent ratios relating quantities with whole numbers to create a table. Find missing values in the table.	Determines the missing table value(s) when given a ratio and partial table with consecutive multiples.	Determines the missing value(s) in a table when given a proportional relationship shown in the table. Determines or creates a proportional table when given a ratio.	Explains or justifies a method for determining relationships from tables and using that information to extend the table. Determines or creates a ratio to describe the relationship in a proportional table. Determines or creates a ratio that converts the part:part from the table to part:whole or converts the part:whole from the table to part:part when given a proportional relationship (e.g., The table shows the amount of yellow and blue paint in a mixture used to make green paint, and the ratio shows the amount of yellow to green paint from the mixture.). Uses given a:b and b:c ratios to determine or complete a table that uses a:c. Determines the proportional relationship in a table and uses the relationship to extend the table. Explains or justifies the use of a given ratio to complete a table.
MA 6.2.2.g Represent inequalities on a number line (e.g., graph x > 3).	Determines the graph of an inequality on a number line when interpreting the meaning of only closed or only open endpoints and the inequality is already simplified.	Determines the graph of an inequality on a number line when interpreting the meaning of both closed and open endpoints and the inequality is already simplified. Creates a graph of an inequality on a number line when the inequality is already simplified.	Explains or justifies the creation of a graph on a number line from an inequality when the inequalities are already simplified.
MA 6.2.3 Applications: Students will solve real-world problems involving ratios, unit rates, and percents.			
MA 6.2.3.a Write equations (e.g., one operation, one variable) to represent real-world problems involving nonnegative rational numbers.	Assessed at the local level		

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MA 6.2.3.b Solve real-world problems involving non-negative rational numbers.	Solves one-step real-world problems using non-negative rational numbers, including at least one decimal or multiplying or dividing by a fraction or mixed number. Ex: The number of girls in a class is 1 1/2 times the number of boys in the class. There are 10 boys in the class. How many girls are in the class? (Refer to *MA 5.2.3* .a for adding and subtracting with fractions, and refer to *MA 4.2.3.a* for the four operations with whole numbers).	Solves real-world problems with two or more steps using non-negative rational numbers, including at least one decimal or multiplying or dividing by a fraction or mixed number. Ex: A store is having a special price on soup at 3 cans of soup for a total of $3.75. Each can of soup normally costs $1.40. A customer needs to buy 3 cans of soup. How much money can a customer save with the special price?	Explains or justifies solutions to real-world problems involving non-negative rational numbers.
MA 6.2.3.c Solve real-world problems involving percents of numbers.	Solves one-step real-world problems involving calculating the percent of a given whole or calculating a percent from a given part and whole.	Solves two- or more -step real-world problems involving percents of numbers, excluding percent change. Ex: A school has 300 students. If 70% of the student at the school go to the zoo, how many students at the school do not go to the zoo?	Justifies, compares, and/or analyzes solutions to real-world problems involving percents of numbers, excluding percent change (e.g., percentages of groups, compare 60% of two groups which have different totals).
MA 6.2.3.d Solve real-world problems using ratios and unit rates.	Determines the unit rate for a given context.	Solves real-world problems with one or more steps that involve ratios and unit rates with non-negative rational numbers.	Determines, compares, and analyzes solutions to real-world problems involving more than one ratio or unit rate with non-negative rational numbers (e.g., better buy of two or more items, comparison of speeds), including identifying details of the problem that are not relevant. Uses given a:b and b:c ratios to solve multi-step real-world problems involving a:c.
MA 6.3 GEOMETRY: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA 6.3.1 Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes.			
MA 6.3.1.a Identify and create nets to represent two-dimensional drawings of prisms, pyramids, cylinders, and cones.	Determines the name of the three-dimensional solid when given a net of a rectangular prism (including cubes) or cylinder.	Determines the name of the three-dimensional solid when given a net of a pyramid, cone, or non-rectangular prism. Creates nets based on two-dimensional drawings of rectangular prisms and cylinders (e.g., given the shape(s) for the faces, put them together to form the net).	Creates nets based on two-dimensional drawings of pyramids, cones, or non-rectangular prisms. Justifies why a specific net does or does not represent a given prism, pyramid, cylinder, or cone (e.g., explain why the net represents the pyramid shown or explain how to change the net so it represents the pyramid).
MA 6.3.2 Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane.			

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MA 6.3.2.a Identify the ordered pair of a given point in the coordinate plane.	Determines the ordered pair for a given point within the first quadrant or for a point on the positive x- or positive y- axis when the point is not on a grid line intersection (e.g., point shown is at (2.5, 7) when the scale for both axes is 1). Determines the ordered pair for a given point within quadrants 2, 3, or 4 or for a point on the negative x- or negative y-axis when the point is on a grid line intersection (e.g., point shown is at (-5, - 3) when the scale for both axes is 1). (Refer to *MA 5.3.2.b* for ordered pairs of whole numbers in the first quadrant.)	Determines the ordered pair for a point within quadrants 2, 3, or 4 or on the negative x- or negative y-axis when the point is not on a grid line intersection (e.g., point shown is at (-5.5, -3) or (0, -3.5) when the scale for both axes is 1).	Determines how the values in the ordered pairs for two or more points are related based on the coordinate plane. Ex: Given a coordinate plane with points R and S, determines that the x-value for point S is greater than the x-value for point R since point S is to the right of point R.
MA 6.3.2.b Plot the location of an ordered pair in the coordinate plane.	Assessed at the local level		
MA 6.3.2.c Identify the quadrant of a given point in the coordinate plane.	Determines the quadrant of a given point in the coordinate plane when the ordered pair only contains positive numbers, with or without a visual.	Determines the quadrant of a given point in the coordinate plane when the ordered pair contains at least one negative number, with or without a visual. Determines which axis (or the origin) a given point belongs on when the ordered pair contains at least one zero, with or without a visual.	Explains or justifies the general properties of a coordinate based upon which quadrant it is graphed in.
MA 6.3.2.d Draw polygons in the coordinate plane given coordinates for the vertices.	Determines the name of the polygon drawn in the coordinate plane when provided the coordinates and a visual. Determines the missing coordinates for one vertex to complete the drawing of a polygon in the coordinate plane when provided the visual and points are on grid line intersections.	Determines the name of the polygon in the coordinate plane when provided coordinates but no visual. Determines the missing coordinates for one vertex to complete the drawing of a polygon in the coordinate plane without a visual and coordinates are integers. Determines the missing coordinates for one vertex to complete the drawing of a polygon in the coordinate plane when provided the visual and at least one point is not on a grid line intersection. Points not on grid line intersections are limited to the first quadrant.	Determines the missing coordinates for one vertex to complete the drawing of a polygon in the coordinate plane without a visual when at least one point is not on a grid line intersection. At least one point not on grid intersections is in the 2nd, 3rd, or 4th quadrant. Determines the missing coordinates for two or more vertices to complete the drawing of a polygon in the coordinate plane, with or without a visual.
MA 6.3.2.e Calculate vertical and horizontal distances in the coordinate plane to find perimeter and area.	Assessed at the local level		
MA 6.3.3 Measurement: Students will perform and compare measurements and apply formulas.			

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MA 6.3.3.a Determine the area of quadrilaterals, including parallelograms, trapezoids, and triangles by composition and decomposition of polygons as well as application of formulas.	Determines the areas of parallelograms (other than squares and rectangles) and triangles when given necessary dimensions and no extraneous dimensions (may include context). (Refer to *MA 4.3.3.a* for areas of squares and rectangles.)	Determines the areas of parallelograms (other than squares and rectangles) and triangles when given necessary dimensions and extraneous dimensions (may include context). Determines the areas of trapezoids when given the necessary dimensions with no extraneous dimensions (may include context). Determines the area of quadrilaterals (including parallelograms and trapezoids) and triangles by composition of polygons with or without extraneous dimensions (may include context). Determines an unknown height or base of parallelograms (other than squares and rectangles) and triangles when given the area and one necessary dimension (may include context).	Determines an unknown height or base of trapezoids when given the area and one necessary dimension (may include context). Explains how changing one or more dimensions will affect the area of a quadrilateral or triangle (may include context). Determines the area of quadrilaterals (including parallelograms and trapezoids) and triangles by decomposition of polygons with or without extraneous dimensions (may include context).
MA 6.3.3.b Determine the surface area of rectangular prisms and triangular prisms using nets.	Determines the surface area of rectangular and triangular prisms from the net of the prisms, where at least one of each unique face has the required measurements labeled (may include context).	Determines the surface area of rectangular and triangular prims from the net of the prisms, where at least one unique face has one or more measurements that must be inferred from other labeled measurements (may include context).	Determines the value of an unknown dimension when given a net of a rectangular or triangular prism with an unknown dimension and the surface area of the prism (may include context). Analyzes how changing one or more dimensions on the net of a rectangular or triangular prism will affect the surface area of the prism (may include context). Ex: Determines that adding 2 to the length of a rectangular prism makes the surface area greater but does not make it two times greater.

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MA 6.3.3.c Apply volume formulas for rectangular prisms.	Determines the volume of rectangular prisms when given length, width, and height (may include image and may include context).	Determines an unknown dimension when given the volume and two dimensions of a rectangular prism (may include context). Determines which dimensions (length, width, and height) result in the desired volume when given the volume of a rectangular prism (may include context). Determines if rectangular prisms have the same volume when given rectangular prisms of different dimensions (may include context). Compares the volumes of rectangular prisms when given the dimensions of the prisms (may include context).	Determines multiple sets of dimensions (length, width, and height) that result in the desired volume when given the volume of a rectangular prism (may include context).
MA 6.4 DATA: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA 6.4.1 Representations: Students will create displays that represent data.			
MA 6.4.1.a Represent data using line plots, dot plots, box plots, and histograms.	Assessed at the local level		
MA 6.4.2 Analysis & Applications: Students will analyze data to address the situation.			
MA 6.4.2.a Solve problems using information presented in line plots, dot plots, box plots, and histograms.	Solves problems not related to measures of central tendency using information presented in line plots, dot plots, box plots, or histograms.	Solves problems related to measures of central tendency using information presented in line plots, dot plots, box plots, or histograms. Measures of central tendency should be easily read from the graph.	Compares different representations of the same set of data and draw conclusions about the data based on those representations (one data set, two representations).
MA 6.4.2.b Compare and interpret data sets based upon their graphical representations (e.g., center, spread, and shape).	Makes a general statement about the central tendency of data (mean, median or mode) presented in a line plot, dot plot, or bar graph.	Solves problems not related to measures of central tendency using information presented in stem-and-leaf plots. Makes a general statement about the measures of central tendency (mean, median or mode), spread, and/or shape of data presented in a box plot, stem-and-leaf plot, or histogram. Makes a general statement about the spread and/or shape of data presented in a line plot or bar graph (e.g., the data is skewed to the left).	Compares measures of central tendency, spread, and/or shape of two data sets presented in graphs. Comparisons that use central tendency should be general comparisons that avoid the need to calculate the measures of central tendency. Justifies reasonableness of interpretations about data based on a comparison of the graph of two data sets. Ex: Compare the graphs of two data sets and explain whether the mean or median is the best measure used to compare them.

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MA 6.4.2.c Find and interpret the mean, median, mode, and range for a set of data.	Determines the mode for a set of data presented in a list, table, or visual representation. Determines the range a set of data presented in a list or table.	Determines the range for a set of data presented in a visual representation. Determines the mean and/or median for a given set of data in a list or table or a visual representation where some calculation or interpretation is still required. Interprets the mode and/or range of a set of data based on the context. Ex: The range of students attending an after school art class is 11. The fewest number of students to attend is 25. How many students attended on the day with the greatest attendance?	Determines the missing value(s) in an incomplete list of data when given a measure of central tendency (mean, median, or mode). Interprets the meaning of the mean and/or median of a set of data based on the context. Ex: Given a list of costs. A store wants to make $1 profit on the sale of each item. The store uses the average cost to determine the sale price of the item. What is the sale price of the item?
MA 6.4.2.d Compare the mean, median, mode, and range from two sets of data.	Makes comparison statements about the mean, median, mode, and/or range between two sets of data where both sets include numbers less than 10.	Makes comparison statements about the mean, median, mode, and/or range between two sets of data where at least one set of data includes numbers greater than or equal to 10. May include how changing the data set affects the measure of central tendency.	Evaluates and critiques a comparison of two sets of data regarding mean, median, mode, and/or range. Must include mean and/or median. Ex: Given two data sets and a statement comparing the means of the data sets, justify whether or not the comparison is true.
MA 6.4.3 Probability: Students will interpret and apply concepts of probability.			
No additional indicator(s) at this level.			

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