NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Summative Assessment
Mathematics Grade 4 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 4.1 NUMBER: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA.4.1.1 Numeric Relationships: Students will demonstrate, represent, and show relationships among fractions and decimals within the base-ten number system.			
MA 4.1.1.a Read, write, and demonstrate multiple equivalent representations for whole numbers up to one million and decimals to the hundredths, using objects, visual representations, standard form, word form, and expanded notation.	Determines another form/representation (standard, word, visual) for a whole number from 100,000 up to 1,000,000 given the standard form, word form, or a visual representation (includes objects) of the number. Determines the expanded form/notation for a whole number from 100,000 up to 1,000,000 given the standard form or a visual representation (includes objects) of the number. Determines another form/representation (standard, word, visual) for numbers containing decimals to the tenths (0.1 to 99,999.9) given the standard form or a visual representation (includes objects) of the number. Determines the standard form for numbers containing decimals to the tenths (0.1 to 99,999.9) given the word form of the number. (Refer to *MA 3.1.1.a* for numbers within the range of 1,000 - 100,000.)	Determines the expanded form/notation or a visual representation (includes objects) for a whole number from 100,000 up to 1,000,000 given the word form of the number. Determines another form/representation (standard, word, visual) for numbers containing decimals to the hundredths (0.01 to 99,999.99) given the standard form or a visual representation (includes objects) of the number. Determines the standard form for numbers containing decimals to the hundredths (0.01 to 99,999.99) given the word form of the number. Determines another form/representation (standard, word, visual, objects) for numbers containing decimals to the tenths or hundredths (0.01 to 99,999.99) given the expanded form/notation of the number.	Determines the expanded form/notation or a visual representation (includes objects) of numbers containing decimals to the tenths or hundredths (0.01 to 99,999.99) given the word form of the number. Analyzes representations of whole numbers between 100,000 and 1,000,000 and numbers containing decimals to the tenths or hundredths (0.01 to 99,999.99). Ex: Explain whether (9 x100) + (2 x 1/10) represents 900.2.
MA 4.1.1.b Recognize a digit in one place represents ten times what it represents in the place to its right and 1/10 what it represents in the place to its left.	Assessed at the local level		
MA 4.1.1.c Classify a number up to 100 as prime or composite.	Identifies the meaning of prime and composite. Determines prime numbers from 2 through 10. Determines composite numbers from 2 through 20.	Determines prime numbers from 11 through 32. Determines composite numbers from 22 through 100.	Determines prime numbers from 33 through 100. Analyzes the classification of prime/composite numbers from 2 through 100 (e.g., explain why even numbers greater than 2 are composite numbers).

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  Ex: For "Determines an equation that represents the situation when given a simple math process or context." the student may be given the situation and asked to identify the equation or be given the equation and asked to identify the corresponding situation. In some cases, the converse is called out for clarity based on teacher feedback. In other cases, the converse may fall at a different level within a progression or a different indicator.

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MA 4.1.1.d Determine whether a given whole number up to 100 is a multiple of a given one-digit number.	Determines whether a whole number up to 100 is a multiple of a single number from 2 - 10.	Determines whether a whole number up to 100 is a multiple of more than one, different, one-digit number from 2 - 5 and 10. Must include at least one from 3 or 4 (e.g., Which number is a multiple of both 2 and 3?).	Determines whether a whole number up to 100 is a multiple of more than one different one-digit number from 6 - 9 and 2 - 5 or 10. Must include at least one from 6 - 9 (e.g., Which number is a multiple of both 2 and 7?). Analyzes statements about multiples of one-digit whole numbers. Ex: John says that 20 is a multiple of 2 and 5. Jane says that 20 is a multiple of 4 and 5. Explain why each statement about the number 20 is correct or incorrect.
MA 4.1.1.e Determine factors of any whole number up to 100.	Determines one-digit factors for composite numbers 4 - 20. Determines list of all factors for composite numbers 4 - 10.	Determines one-digit factors for composite numbers 21 - 100. Determines whether two-digit numbers other than multiples of 10 are factors of other whole numbers up to 30 (e.g., 15 is a factor of 30). Determines list of all factors for composite numbers 12 - 30.	Determines whether two-digit numbers other than multiples of 10 are factors of other whole numbers from 31 to 100 (e.g., 25 is a factor of 75). Analyzes statements about factors of whole numbers up to 100. Ex: When 2 is a factor of a number, does that mean 4 must also be a factor? Justify your answer.

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MA 4.1.1.f Compare whole numbers up to one million and decimals through the hundredths place using >, <, and = symbols, and visual representations.	Uses symbols or visual representations to represent comparisons between two whole numbers with at least one between 100,000 and 1,000,000. Orders three or more whole numbers with at least one value being between 100,000 and 1,000,000 (may or may not use symbols). Uses symbols or visual representations to represent comparisons of two numbers when one value is a whole number up to 1,000,000 and the other value is a decimal to the tenths or hundredths. Uses symbols or visual representations to represent comparisons of two decimals between 0.01 and 999,999.99 when only comparing whole number portions and/or tenths is necessary (e.g., compare 1.8 and 2.7 or compare 1.32 and 1.41). Orders three decimals between 0.01 and 999,999.99 when each number has the same place values (e.g., orders 23.04, 10.99, 30.66 from least to greatest or orders 0.1, 0.9, 0.4 from greatest to least). (Refer to *MA 3.1.1.b* for numbers between 1,000 and 1,000,000.)	Uses symbols or visual representations to represent comparisons of two decimals between 0.01 and 999,999.99 when comparing hundredths is necessary (e.g., compare 1.54 and 1.52). Orders three decimals between 0.01 and 999,999.99 when the numbers have different place values (e.g., orders 0.06, 1.5, 1.06, 0.5 from least to greatest or orders 7.0, 7.5, 7.15, 7.05 from greatest to least).	Analyzes comparisons between two numbers up to 1,000,000 where at least one value is a decimal to the tenths or hundredths (e.g., explain why 1.6 equals 1.60).
MA 4.1.1.g Round a multi-digit whole number to any given place.	Rounds whole numbers from 100,000 to 1,000,000 to the tens or hundreds place. (Refer to *MA 3.1.1.c* for two and three-digit numbers.)	Rounds whole numbers from 1,000 to 1,000,000 to the thousands or ten thousands place.	Analyzes the rounding of a whole number 100,000 to 1,000,000 to the tens, hundreds, thousands, or ten thousands place (e.g., explain why 40,000 is equal to 39,712 rounded to the nearest thousand).

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MA 4.1.1.h Use decimal notation for fractions with denominators of 10 or 100.	Determines the decimal notation for a fraction with a denominator of 10, when the numerator is between 0 and 10 (e.g., determine the decimal notation for 4/10). Determines the decimal notation for a fraction with a denominator of 100, when the numerator is between 0 and 100.	Determines the decimal notation for mixed numbers where the fractional component is a fraction with a denominator of 10, when the numerator is between 0 and 10, or with a denominator of 100, when the numerator is between 0 and 100 (e.g., determine the decimal notation for 2 1/10).	Determines the decimal notation for a fraction with a denominator of 10, when the numerator is between 10 and 100 but not a multiple of 10. When given a decimal, determines the fraction with a denominator of 10 and a numerator between 10 and 100 but not a multiple of 10. Determines the decimal notation for a fraction with a denominator of 100, when the numerator is between 100 and 1,000 but not a multiple of 100. Determines the fraction with a denominator of 100 and a numerator between 100 and 1,000 but not a multiple of 100 for a given decimal. Analyzes conversions between decimals and fractions with denominators of 10 or 100. Ex: Are 0.5 and 50/100 equivalent? Explain your reasoning.
MA 4.1.1.i Generate and explain equivalent fractions by multiplying by an equivalent fraction of 1.	Assessed at the local level		
MA 4.1.1.j Explain how to change a mixed number to a fraction and how to change a fraction to a mixed number.	Assessed at the local level		

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MA 4.1.1.k Compare and order fractions having unlike numerators and unlike denominators using visual representations (number line), comparison symbols and verbal reasoning (e.g., using benchmarks or common numerators or common denominators).	Compares two fractions of the same whole with unlike numerators and denominators when shown on a number line and records the comparison with symbols. Orders three or more fractions with unlike numerators and denominators given a visual representation of the fractions.	Uses symbols to record comparisons between two fractions of the same whole with unlike numerators and denominators. Orders three or more fractions with unlike numerators and denominators, with at least one fraction being a benchmark fraction (e.g., 1/2) or one fraction that has the same numerator or denominator as one of the other fractions (e.g., 2/5, 1/2, 4/6 or 2/5, 4/6, 4/5). Orders three or more fractions of the same whole with at least two having the same numerator but different denominators and at least two having the same denominator but different numerators (e.g., 2/3, 2/4, 3/4) given a visual representation of the fractions. Determines the fraction with the least or greatest value from a set of fractions when the set can be divided based on comparisons with a benchmark fraction (e.g., 1/2) or one fraction that has the same numerator or denominator as one of the other fractions (e.g., 2/5, 1/2, 4/6 or 2/5, 4/6, 4/5).	Analyzes comparisons of two fractions with unlike numerators and denominators using visual representations or verbal reasoning (e.g., explains why 1/2 is less than 2/3). Analyzes ordered sequences of three or more fractions with unlike numerators and denominators using verbal reasoning and/or visual representations (e.g., explains ordering 3/7, 6/12, and 8/9 from least to greatest based on comparisons with 1/2).
MA 4.1.1.l Decompose a fraction into a sum of fractions with the same denominator in more than one way and record each decomposition with an equation and a visual representation.	Assessed at the local level		
MA 4.1.2 Operations: Students will demonstrate the meaning of addition and subtraction of whole numbers and fractions and compute accurately.			
MA 4.1.2.a Add and subtract multi-digit numbers using the standard algorithm.	Assessed at the local level		

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MA 4.1.2.b Multiply a four-digit whole number by a one-digit whole number.	Multiplies a two-, three-, or four- digit whole number by a one-digit whole number.	Analyzes multiplication of two, three, or four-digit whole number by a one-digit number. Can include the role of place value. Ex: When shown the steps for calculating the product using the standard algorithm, determine the step where an error occurred in multiplying two whole numbers and calculate the correct product.	Compares the product of two different four-digit whole numbers and the same one-digit whole number (e.g., the product of 1,234 x 5 is less than the product of 2,345 x 5). Compares the product of a four-digit whole number and two different one-digit whole numbers (e.g., the product of 1,234 x 4 is twice the product of 1,234 x 2).
MA 4.1.2.c Multiply a two-digit whole number by a two-digit whole number using the standard algorithm.	Multiplies a two-digit whole number by a two-digit whole number using the standard algorithm.	Analyzes multiplication of a pair of two-digit numbers using the standard algorithm. Can include the role of place value. Ex: When shown the steps for calculating the product using the standard algorithm, determine the step where an error occurred in multiplying two two-digit whole numbers and calculate the correct product.	Compares the product of 2 two-digit whole numbers when one factor is the same (e.g., 30 x 24 is twice the product of 15 x 24 or 46 x 15 is less than the product of 46 x 11).
MA 4.1.2.d Divide up to a four-digit whole number by a one-digit divisor with and without a remainder.	Divides a two-, three-, or four-digit whole number by a one-digit divisor, without a remainder.	Divides a two-, three-, or four-digit whole number by a one-digit divisor, with a remainder. Analyzes division of two-, three-, or four-digit whole numbers by a one-digit whole number. Can include explaining the meaning of a remainder in division and how it relates to multiplication (not within a context). Ex: When shown the steps for calculating the quotient using the standard algorithm, determine the step where an error occurred in dividing two whole numbers and calculate the correct quotient.	Compares the quotient of two different two-, three-, or four-digit whole numbers and the same one-digit whole number (e.g., the quotient of 175 divided by 5 is less than the quotient of 225 divided by 5). Compares the quotient of a two-, three-, or four-digit whole number and two different one-digit whole numbers (e.g., the quotient of 120 divided by 4 is greater than the quotient of 120 divided by 8).
MA 4.1.2.e Use drawings, words, and symbols to explain the meaning of addition and subtraction of fractions with like denominators.	Assessed at the local level		

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MA 4.1.2.f Add and subtract fractions and mixed numbers with like denominators.	Adds and subtracts fractions with like denominators, without regrouping. May include visual models. Adds and subtracts mixed numbers with like denominators without regrouping. May include visual models. Items may include improper fractions.	Adds and subtracts fractions with like denominators with regrouping. May include visual models. Adds mixed numbers with like denominators with regrouping. May include visual models. Adds one fraction and one mixed number with like denominators with and without regrouping. Items may include improper fractions.	Subtracts mixed numbers with like denominators with regrouping required. May include visual models. Subtracts one fraction and one mixed number with like denominators with and without regrouping. Includes subtracting a fraction from a mixed number where the numerator of the fraction is greater than the numerator of the fractional portion of the mixed number. May include visual models. Items may include improper fractions.
MA 4.1.2.g Multiply a fraction by a whole number.	Multiplies a unit fraction by a whole number. Multiplies a non-unit fraction by a whole number resulting in a product less than one or a product equivalent to a whole number.	Multiplies a non-unit fraction by a whole number resulting in a product greater than one represented as a mixed number.	Analyzes multiplication of a fraction by a whole number (e.g., explain why the product of 2 and 3/4 will be less than 2).
MA 4.1.2.h Determine the reasonableness of whole number products and quotients in real-world problems using estimation, compatible numbers, mental computations, or other strategies.	Assessed at the local level		
MA 4.2 ALGEBRA: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA 4.2.1 Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations.			
MA 4.2.1.a Create a simple algebraic expression or equation using a variable for an unknown number to represent a math process (e.g., 3 + n = 15, 81 ÷ n = 9).	Determines an equation that represents the situation when given a simple math process or context. Determines a one-step algebraic expression with a variable for an unknown to represent a math process or context when the numbers and variables are presented in the same order as the expression.	Determines a one-step algebraic expression with a variable for an unknown to represent a math process or context when the numbers and variables are presented in a different order than the expression.	Determines multiple one-step algebraic expressions or equations that represent the same relationship between an unknown and two quantities (e.g., 6 - n = 2 and n + 2 = 6).
MA 4.2.1.b Generate and analyze a number or shape pattern to follow a given rule, such as y = 3x + 5 is a rule to describe a relationship between two s and can be used to find a second number when a first number is given.	Assessed at the local level		
MA 4.2.2 Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving equations.			

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MA 4.2.2.a Solve one- and two-step problems which use any or all of the four basic operations and include the use of a letter to represent the unknown quantity.	Solves one-step problems which use any of the four basic operations and include the use of a letter to represent the unknown quantity.	Determines the step necessary to solve a one-step problem which uses any of the four basic operations and includes the use of a letter to represent the unknown quantity. Determines the steps necessary to solve a two-step problem that uses any or all of the four basic operations and includes the use of a letter to represent the unknown quantity. Solves two-step whole number equations that use any or all of the four basic operations and include the use of a letter to represent the unknown quantity. If division is used, the unknown quantity should not be the divisor.	Solves two-step whole number equations that include the use of a letter to represent the unknown quantity and use division with the unknown quantity as the divisor (e.g., a/x = b + c where a, b, and c are whole numbers). Determines two or more two-step whole number equations that have the same value for the unknown. Explains or justifies solutions to two-step whole number equations.
MA 4.2.3 Applications: Students will solve real-world problems involving equations with fractions.			
MA 4.2.3.a Solve real-world problems involving multi-step equations comprised of whole numbers using the four operations, including interpreting remainders.	Solves one-step real-world problems that use division that may or may not involve interpreting remainders.	Determines the step necessary to solve a one-step real-world problem using whole numbers involving multiplication or division that may or may not involve interpreting remainders. Determines the steps necessary to solve a two-step real-world problem using whole numbers involving the four operations with at least one operation being multiplication or division that may or may not involve interpreting remainders. Solves two-step real-world problems that use addition and/or subtraction (without multiplication or division) and include the use of a letter to represent an unknown quantity. Solves two-step real-world problems that use multiplication and/or division as at least one of the operations and that can be solved with whole number equations with or without interpreting remainders. Solves three-step real-world problems with equations using whole numbers involving the four operations including division that may include interpreting remainders.	Solve four-step real-world problems with equations using whole numbers involving the four operations with division that may or may not involve interpreting remainders. Ex: Joe has only 2 bags of oranges. There are 4 oranges in each bag. Joe is given 3 more oranges and eats 1 of them. Joe divides the rest of his oranges among 2 of his friends. How many oranges does each friend get? Identifies details of a real-world problem, including identifying details of the problem situation that are not relevant to the solution. Explains the steps for solving multi-step real-world problems that involve whole number equations when using the four operations when the equation is three or more steps and/or involves multiplication or division. Analyzes solutions to multi-step real-world problems that can be solved with whole number equations when at least one of the operations is multiplication or division (e.g., identifies why a solution does or does not match the real-world problem).

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MA 4.2.3.b Solve real-world problems involving addition and subtraction of fractions and mixed numbers with like denominators.	Solves real-world problems involving addition and/or subtraction of fractions with like denominators, with no regrouping the fraction into whole numbers required.	Solves real-world problems involving the addition of fractions with like denominators, with regrouping the sum into mixed numbers required. Solves real-world problems involving the addition of mixed numbers with like denominators or the addition of fractions and mixed numbers with like denominators with and without regrouping the sum into mixed numbers required. Solves real world problems involving subtraction of mixed numbers with like denominators or the subtraction of fractions and mixed numbers with like denominators with or without regrouping required (e.g., 5 1/8 - 2 7/8 or 6 4/5 - 4 2/5). Solves real-world problems involving both addition and subtraction with a mix of fractions and/or mixed numbers with like denominators and with or without regrouping required for the subtraction (e.g., 1/4 + 3 1/4 - 1 3/4 or 1 7/10 + 4 9/10 - 2 3/10).	Analyzes the details of a problem situation, including identifying details of the problem situation that are not relevant to the solution (e.g., determine how parts of the problem situation translate to mathematical steps). Explains or justifies solutions to real-world addition and/or subtraction problems with fractions and mixed numbers with like denominators.
MA 4.3 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 4.3.1 Characteristics: Students will identify and describe geometric characteristics and create two and three-dimensional shapes.			
MA 4.3.1.a Recognize angles as geometric shapes that are formed where two rays share a common endpoint.	Assessed at the local level		
MA 4.3.1.b Classify an angle as acute, obtuse, or right.	Classifies a single angle as acute, obtuse, or right. Classifies angles within an image containing multiple angles (e.g., a polygon) as acute, obtuse, or right.	Compares angle sizes based on the angle classifications (e.g., determine that an angle classified as acute is smaller than an angle that measures 95 degrees).	Analyzes similarities or differences between acute, obtuse, and right angles (e.g., explains that there is only one measure for a right angle, but acute and obtuse angles may be drawn with different measurements).
MA 4.3.1.c Identify and draw points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines, and recognize them in two-dimensional figures.	Classifies one or more images as a point, line, line segment, ray, angle, or parallel lines.	Classifies one or more images as perpendicular lines or intersecting lines. Recognizes points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines in two-dimensional figures. Draws points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines as stand-alone images.	Describes similarities or differences between points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines. Draws points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines in two-dimensional figures.

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MA 4.3.1.d Classify two-dimensional shapes based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles.	Classifies the images of two-dimensional shapes based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles.	Classifies two-dimensional shapes, based on the names of the shapes, in terms of whether they must or can possess parallel or perpendicular sides. Classifies two-dimensional shapes, based on the names of the shapes, in terms of specific angles present in the shape. Describes the presence or absence of parallel and perpendicular lines and/or the presence or absence of specific angles given the classification of two-dimensional shapes.	Describes similarities or differences among types of two-dimensional shapes based upon the presence or absence of parallel or perpendicular lines and/or the presence or absence of specific angles.
MA 4.3.1.e Identify right triangles.	Classifies a single right triangle.	Classifies multiple triangles as right triangles.	Creates right triangles. Describes properties of right triangles.
MA 4.3.1.f Measure angles in whole number degrees using a protractor	Measures an angle to the nearest whole degree when the protractor is placed in the diagram.	Uses a protractor to measure an angle to the nearest whole degree when the protractor is not placed in the diagram.	Uses a protractor to measure an angle to the nearest whole degree when the angle is part of a figure and the protractor is not placed in the diagram.
MA 4.3.1.g Sketch angles of a specified measure.	Sketches an angle of a specified measure using a protractor and straightedge or using technology when one ray of the angle is horizontal.	Sketches an angle of a specified measure using a protractor and straightedge or using technology when neither rays of the angle are horizontal. Approximates the angle measure of a given angle within 5 or 10 degrees.	Sketches a combination of angles.
MA 4.3.1.h Recognize and draw lines of symmetry in two-dimensional shapes.	Determines a line of symmetry for a two-dimensional shape.	Determines all lines of symmetry for a two-dimensional shape with multiple lines of symmetry. Creates one or more lines of symmetry for a two-dimensional shape. Determines two-dimensional shapes that do not have lines of symmetry.	Analyzes properties of lines of symmetry (e.g., makes a connection between the number of sides of a regular figure and the number of lines of symmetry, or explains why a line is or is not a line of symmetry). Compares the lines of symmetry in two or more two-dimensional shapes.
MA 4.3.2 Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane.	Assessed at the local level		
No additional indicator(s) at this level. Mastery is expected at previous grade levels.			
MA 4.3.3 Measurement: Students will perform and compare measurements and apply formulas.			

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MA 4.3.3.a Apply perimeter and area formulas for rectangles.	Applies the area formula to determine the area of a rectangle when the length and width are given and are 1-digit whole numbers (may include context). Applies the perimeter formula to determine the perimeter of a rectangle when the length and width are given (may include context).	Applies the area formula to determine the area of a rectangle when the length and width are given and at least one dimension is a 2-digit whole number (may include context). Applies both the area and perimeter formulas to determine the area and the perimeter of a rectangle when the length and width are given (may include context). Applies the perimeter and/or area formula to determine the perimeter and/or area of a square when given the one side of the square (may include context). Determines the missing side lengths of a rectangle when given the perimeter or area and an image of the rectangle with one or more missing dimensions (may include context).	Determines the missing side lengths of a rectangle when given the perimeter or area and a description of the rectangle with one or more missing dimensions (may include context). Analyzes how changing one or more dimensions affects the perimeter and/or area of a rectangle (e.g. increasing the length by 3 inches increases the perimeter by 6 inches) - may include context. Compares the perimeters and/or areas of rectangles (e.g. the area of the second rectangle is 4 times the area of the first rectangle) - may include context.
MA 4.3.3.b Identify and use the appropriate tools, operations, and units of measurement, both customary and metric, to solve real-world problems involving time, length, weight, mass, capacity, and volume.	Assessed at the local level		
MA 4.3.3.c Generate simple conversions from a larger unit to a smaller unit within the customary and metric systems of measurement.	Determines equivalent measurements from a larger to smaller unit within a system of measurement using one step or one degrees of change (e.g., yards to feet or centimeters to millimeters) - may include context.	Determines equivalent measurements from a larger to smaller unit within a system of measurement using two or more steps or two or more degrees of change (e.g., yards to inches or meters to millimeters) - may include context. Uses one or two step conversions from a larger unit to a smaller unit within a system of measurement to compare measurements within the same system (may include context).	Explains how to determine equivalent measurements from a larger to smaller unit within a system of measurement using two or more steps or two or more degrees of change (e.g., yards to inches or meters to millimeters) - may include context.
MA 4.4 DATA: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.			
MA 4.4.1 Representations: Students will create displays that represent data.			
MA 4.4.1.a Represent data using line plots where the horizontal scale is marked off in appropriate units (e.g., whole numbers, halves, quarters, or eighths).	Determines a line plot that represents the data given data consisting of whole numbers, halves, and quarters. Includes answering questions about steps in creating the line plot.	Determines a line plot that represents the data given data that includes whole numbers and eighths. Includes answering questions about steps in creating the line plot.	Determines a line plot that represents the data given data that includes a mix of eighths with halves and/or quarters. Includes answering questions about steps in creating the line plot. Data can include whole numbers. Analyzes line plots with a scale of 1/8 in relation to their corresponding data (e.g., explain why using a scale from 4 - 5 marked in eights on a line plot is a good fit for the data).

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MA 4.4.2 Analysis & Applications: Students will analyze data to address the situation.			
MA 4.4.2.a Solve problems involving addition or subtraction of fractions using information presented in line plots.	Solves problems involving addition or subtraction without regrouping given data containing fractions with like denominators represented in a line plot.	Solves problems involving addition or subtraction with like denominators given data containing fractions or mixed numbers represented in a line plot when understanding least/greatest based on the number of x's is not required (e.g., determine the total length of the ribbon represented in the line plot).	Solves problems involving addition or subtraction with like denominators given data containing fractions or mixed numbers represented in a line plot when understanding least/greatest based on the number of x's is required (e.g., determine the difference between the lightest and heaviest rocks when the lightest rocks do not have the fewest x's and/or the heaviest rocks do not have the most x's) Explains or justifies answers to problems requiring addition and subtraction of fractions and/or mixed numbers in data represented on a line plot. Analysis should be limited to data interpretation or general process of solving the problem and not analysis of addition/subtraction.
MA 4.4.3 Probability: Students will interpret and apply concepts of probability.			
No additional indicator(s) at this level.			

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