

| Strands | Performance Standards | Benchmarks |
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| M.I | Number and Operations | |
| M.1.1 | | Understand numbers, ways of representing numbers, relationships among numbers, and number systems. (NCTM) |
| | M.1.1.U.1 | <p>understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals;</p> <ul style="list-style-type: none"> • (3) Read and write whole numbers with 1-6 digits. • (3) Order and compare whole numbers to 100,000. • (4) Read and write whole numbers up to 1,000,000. • (4) Read and write decimals to hundredths. • (4) Order and compare whole numbers using symbols for "less than" (<), "equal to" (=), and "greater than" (>). • (5) Order and compare whole numbers and decimals up to 10 billions and thousandths. |
| | M.1.1.U.2 | <p>recognize equivalent representations for the same number and generate them by decomposing and composing numbers;</p> <ul style="list-style-type: none"> • (3) Use words, models, and expanded form to represent numbers up to 100,000. • (3) Identify value of the digit in a number up to 100,000. • (4) Identify and write whole numbers up to 1,000,000, given a place-value model. <p>• (4) Add and subtract decimals to hundredths using objects or pictures and a standard algorithm. • (4) Identify the place value and the value for any digit in a number up to millions. • (5) Convert between numbers in standard, word and expanded form for numbers up to millions, and decimals to thousandths. • (5) Introduce expanded form with exponents.</p> |
| | M.1.1.U.3 | <p>develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers;</p> <ul style="list-style-type: none"> • (3) Identify and use correct names for numerators and denominators. • (4) Rename and rewrite whole numbers as fractions. • (4) Using objects or pictures, name and write mixed numbers. • (5) Explain different interpretations of fractions: as parts of a whole, parts of a set, and division of whole numbers by whole numbers. • (5) Identify on a number line the relative position of simple positive fractions, positive mixed numbers, and positive decimals. |
| | M.1.1.U.4 | <p>use models, benchmarks, and equivalent forms to judge the size of fractions;</p> <ul style="list-style-type: none"> • (3) Compare a given pair of fractions using objects or pictures and symbols: <, >, = • (3) Show equivalent fractions using parts. • (4) Write mixed numbers as improper fractions, based on objects or pictures. • (4) Write equivalent fractions in simplest form. • (5) Write mixed numbers as improper fractions and vice versa. • (5) Write equivalent fractions in simplest form. |
| | M.1.1.U.5 | <p>recognize and generate equivalent forms of commonly used fractions, decimals, and percents;</p> <ul style="list-style-type: none"> • (3) Given a set of objects or a picture, name and write a decimal to represent tenths and hundredths. • (3) Given a decimal for tenths, show it as a fraction using a place-value model. • (4) Write tenths and hundredths in decimal, and fraction notations. (Halves and fourths) • (5) Write tenths and hundredths in decimal, percent, and fraction notations (halves, fourths, and thirds). |
| M.1.2 | | Understand meanings of operations and how they relate to one another. (NCTM) |
| | M.1.2.U.1 | <p>understand various meanings of multiplication and division;</p> <ul style="list-style-type: none"> • (3) Represent the concept of multiplication as repeated addition. • (3) Represent the concept of division as repeated subtraction. • (4) Represent a situation involving repeated addition as a multiplication equation. • (4) Represent, as division, any situation involving the sharing of objects or the number of groups of shared objects. |
| | M.1.2.U.2 | <p>understand the effects of multiplying and dividing whole numbers;</p> <ul style="list-style-type: none"> • (3) Multiply and divide whole numbers using correct vocabulary: product and quotient. <p>• (4) Use a standard algorithm to multiply numbers using relevant properties of the number system. • (4) Use a standard algorithm to divide numbers, without remainders, using relevant properties of the number system.</p> |
| | M.1.2.U.3 | <p>identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems;</p> <ul style="list-style-type: none"> • (3) Identify the inverse relationship between multiplication and division facts. • (4) Identify fact families as inverse operations in problem solving. • (5) Identify inverse operations as a way to solve equations. |
| | M.1.2.U.4 | <p>understand and use properties of operations, such as the distributivity of multiplication over addition.</p> <ul style="list-style-type: none"> • (3) Identify the 0 property of multiplication and the identity property of multiplication (multiply by 1). • (3) Identify the associative property of multiplication using 3 single digit factors. • (3) Apply division rules. • (4) Use the rules of division. • (4) Using models demonstrate the Distributive Property to multiply two-digit numbers. • (5) Use the distributive property in numerical equations and expressions. |
| M.1.3 | | Compute fluently and make reasonable estimates. (NCTM) |
| | M.1.3.U.2 | <p>develop fluency in adding, subtracting, multiplying, and dividing whole numbers;</p> <ul style="list-style-type: none"> • (3) Regroup using addition. • (3) Add 3 or more two-digit addends. • (3) Subtract across 4-digit numbers. • (3) Subtract across zeros. • (3) Recall multiplication and division facts 0-10. • (4) Recall of the addition, subtraction, multiplication, and division facts for numbers 1 to 10. • (4) Computation with basic multiplication facts using 11's & 12's. • (4) Compute multiplication of larger numbers, up to 3-digit by 2-digit numbers. • (4) Multiply 3-digit numbers by 3-digit numbers. • (4) Divide whole numbers with 1 digit quotients with remainders. • (5) Multiplication with two digits and three digit numbers (larger numbers). • (5) Divide whole numbers with up to 4 digit quotients with remainder. • (5) Divide whole numbers with 2 digit divisors. • (5) Solve problems involving multiplication and division of any whole numbers. |
| | M.1.3.U.3 | <p>develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results;</p> <ul style="list-style-type: none"> • (3) Round numbers to the nearest 10,000. • (3) Use estimation to decide whether answers are reasonable in addition and subtraction problems. |

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| | | <ul style="list-style-type: none"> • (3) Round \$ amount to the nearest dollar and ten dollars. • (4) Apply strategies for estimating results of any whole-number computations. • (4) Use estimation to decide whether answers are reasonable in addition, subtraction, multiplication, and division problems. • (4) Round whole numbers up to 10,000 to the nearest ten, hundred, and thousand place. • (5) Use estimation to decide whether answers are reasonable in addition, subtraction, multiplication, and division problems. • (5) Round whole numbers up to 10,000 to the nearest ten, hundred, and thousands place. develop and use strategies to estimate computations involving fractions and decimals in situations relevant to learners' experiences; |
| | | <p>M.1.3.U.4</p> <ul style="list-style-type: none"> • (3) Use rounding, front-end estimation, or regrouping to estimate addition and subtraction problems with money amounts. • (4) Apply strategies for estimating results of any fraction and decimal computations. • (4) Round decimals to tenths, hundredths, and nearest whole number. • (5) Add and subtract decimals and verify the reasonableness of the results. • (5) Use mental arithmetic to add or subtract simple decimals. • (5) Multiply fractions to solve problems. Cross reduce first. • (5) Divide fractions. • (5) Apply strategies for estimating results of any addition and subtraction of a fraction and decimal computations. • (5) Round whole numbers to ten billions and decimals to the thousandths. use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals |
| | | <p>M.1.3.U.5</p> <ul style="list-style-type: none"> • (3) Add and subtract simple fractions with the same denominator. • (3) Add and subtract money amounts. • (4) Add and subtract simple fractions with different denominators, using objects or pictures. • (4) Add and subtract fractions (including mixed numbers) with same denominators. • (5) Add and subtract simple fractions and decimals using pictures and models. Be able to solve and use simplest forms. • (5) Use models to show an understanding of multiplication of fractions • (5) Divide fractions. • (5) Add and subtract fractions (including mixed numbers) with different denominators. select appropriate methods and tools for computing with whole numbers from among mental computations, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected methods or tools. |
| | | <p>M.1.3.U.6</p> <ul style="list-style-type: none"> • (3) Add and subtract whole numbers up to 1,000 with or without regrouping. • (4) Choose and apply appropriate method to solve problems with whole numbers. • (4) Use mental arithmetic to add or subtract numbers rounded to hundreds or thousands. • (5) Identify, select and use the most appropriate method of computation for all operations. |
| M.2 | Algebra M.2.1 | <p>Understand patterns, relations, and functions. (NCTM)</p> <p>M.2.1.U.1</p> <p>describe, generate, and make generalizations about geometric and numeric patterns;</p> |
| | | <ul style="list-style-type: none"> • (3) Solve basic number patterns using addition, subtraction, or multiplication. (ex. 1,2,4,7,11...) • (4) Identify number patterns using patterns using multiplication and division. represent and analyze patterns and functions, using words, tables, and graphs. • (3) Make a table to solve a problem. • (4) Make and use a multiplication table to find patterns in multiplication and division. • (4) Use function tables for +, -, x, ?. • (5) Use function tables for +, -, x, ?. |
| | | <p>M.2.1.U.2</p> |
| | M.2.2 | <p>Represent and analyze mathematical situations and structures using algebraic symbols. (NCTM)</p> <p>M.2.2.U.1</p> <p>identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers;</p> <ul style="list-style-type: none"> • (3) Identify and use the commutative, associative, and zero properties of addition. • (3) Identify and use the commutative, associative, identity, zero, and distributive properties of multiplication. • (4) Identify and use the commutative, associative, identity, zero, and distributive properties of multiplication. • (5) Use the commutative, associative, identity, zero, and distributive properties in numerical equations and expressions. |
| | | <p>M.2.2.U.2</p> <p>represent the idea of a variable as an unknown quantity using a letter or a symbol;</p> <ul style="list-style-type: none"> • (3) Use a variable to represent an unknown number in simple equations. • (4) Use a variable to represent an unknown number in simple equations. • (5) Use a variable to represent an unknown number in simple expressions, equations, and inequalities. |
| | | <p>M.2.2.U.3</p> <p>express mathematical relationships using equations.</p> <ul style="list-style-type: none"> • (3) Choose appropriate symbols for operations and relations to make a number sentence true. • (3) Write fact families using multiplication and division. • (4) Use and interpret formulas to answer questions about quantities and their relationships. • (4) Solve simple algebraic expressions with one variable. • (5) Write simple algebraic expressions with one variable and evaluate them by substitution. |
| | M.2.3 | <p>Use mathematical models to represent and understand quantitative relationships. (NCTM)</p> <p>M.2.3.U.1</p> <p>model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions.</p> <ul style="list-style-type: none"> • (3) Use a variety of models to represent and draw conclusions about a quantitative relationship. • (4) Use a variety of models to represent and draw conclusions about a quantitative relationship. • (5) Use a variety of models to represent and draw conclusions about a quantitative relationship • (5) Identify and graph ordered pairs of positive numbers. • (5) Identify and graph ordered pairs including negative numbers. |
| M.3 | Geometry | <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships. (NCTM)</p> <p>M.3.1</p> <p>M.3.1.U.1</p> <p>identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes;</p> <ul style="list-style-type: none"> • (3) Identify different two-dimensional (plane) figures: regular/irregular polygons. • (3) Describe two- dimensional and three-dimensional shapes using the terms point, line, line segment, ray, angle, vertex, face, and edge. • (3) Identify parallel, perpendicular, and intersecting lines. • (4) Identify different two-dimensional (plane) figures: circles and regular/irregular polygons. |

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| | | <ul style="list-style-type: none"> • (4) Describe two-dimensional and three-dimensional shapes using the terms point, line, line segment, ray, angle, vertex, face, edge, radius, diameter, chord, and center. • (4) Identify parallel, perpendicular, and intersecting lines. • (4) Label line, line segment, parallel, perpendicular, intersecting, ray, and angle using letters and geometric symbols. • (4) Identify triangular prism, square pyramid, triangular pyramid. • (5) Identify and compare triangular prism, square pyramid, triangular pyramid. |
| | | <p>M.3.1.U.2</p> <ul style="list-style-type: none"> • Classify two- and three-dimensional shapes according to their properties and develop definitions of classes of shapes such as triangles and pyramids; • (3) Classify polygons-triangle (equilateral, isosceles, right, scalene); quadrilateral (rectangle, parallelogram, square); pentagon; hexagon; octagon and define according to their properties. • (4) Classify polygons-triangle (equilateral, isosceles, right, scalene, acute, obtuse); quadrilateral (rectangle, parallelogram, square, trapezoid, rhombus); pentagon; hexagon; octagon and define according to their properties. • (5) Classify polygons-triangle (equilateral, isosceles, right, scalene, acute, obtuse); quadrilateral (rectangle, parallelogram, square, trapezoid, rhombus); pentagon; hexagon; octagon and define according to their properties. |
| | | <p>M.3.1.U.4</p> <ul style="list-style-type: none"> • (5) Classify three-dimensional shapes according to their attributes. • explore congruence and similarity; • (3) Identify congruent and similar figures. • (4) Identify congruent and similar figures. • (5) Identify congruent and similar figures. |
| M.3.2 | | <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems. (NCTM)</p> <p>M.3.2.U.1</p> <p>describe location and movement using common language and geometric vocabulary;</p> <ul style="list-style-type: none"> • (3) Locate the point on a grid given an ordered pair. • (3) Name the ordered pair for a point on a grid. • (4) Plot the point on a grid given an ordered pair. • (4) Name the ordered pair for a point on a grid. • (5) Define and identify the terms quadrant, origin, x-axis, y-axis. <p>M.3.2.U.3</p> <p>find the distance between points along horizontal and vertical lines of a coordinate system</p> <ul style="list-style-type: none"> • (3) Find the distance/change between 2 points on either the vertical or horizontal line within the first quadrant. • (4) Find the distance/change between 2 points on either the vertical or horizontal line within the first quadrant. • (5) Find the distance/change between 2 points on either the vertical or horizontal line within the first quadrant. |
| M.3.3 | | <p>Apply transformations and use symmetry to analyze mathematical situations. (NCTM)</p> <p>M.3.3.U.1</p> <p>predict and describe the results of sliding, flipping, and turning two-dimensional shapes;</p> <ul style="list-style-type: none"> • (3) Describe the changes in direction and position that occur in a figure as a result of a transformation: translation (slide), reflection (flip), or rotation (turn). • (5) Describe and predict the changes in direction and position that occur in a figure as a result of combinations of transformations: translations (slides), reflections (flips), or rotations (turns). <p>M.3.3.U.2</p> <p>describe a motion or a series of motions that will show that two shapes are congruent;</p> <ul style="list-style-type: none"> • (3) Justify congruency of two shapes using descriptions of transformation(s). • (4) Justify congruency of two shapes using descriptions of transformation(s). • (5) Describe a tessellation. <p>M.3.3.U.3</p> <p>identify and describe line and rotational symmetry in two- and three-dimensional shapes and designs</p> <ul style="list-style-type: none"> • (3) Identify and draw lines of symmetry in geometric shapes. • (4) Identify rotational and line symmetry in polygons. • (4) Identify shapes that have rotational symmetry. • (5) Identify rotational and line symmetry in polygons. • (5) Identify shapes that have rotational symmetry. |
| M.3.4 | | <p>Use visualization, spatial reasoning, and geometric modeling to solve problems. (NCTM)</p> <p>M.3.4.U.1</p> <p>build and draw geometric objects;</p> <ul style="list-style-type: none"> • (3) Draw lines, line segments, rays, and angles. • (4) Draw polygons-triangle (equilateral, isosceles, right, scalene, acute, obtuse); quadrilateral (rectangle, parallelogram, square, trapezoid, rhombus); pentagon; hexagon; octagon to solve a problem. • (5) Draw circles and polygons-triangle (equilateral, isosceles, right, scalene, acute, obtuse); quadrilateral (rectangle, parallelogram, square, trapezoid, rhombus); pentagon; hexagon; octagon to solve problems. <p>M.3.4.U.2</p> <p>create and describe mental images of objects, patterns, and paths.</p> <ul style="list-style-type: none"> • (3) Describe an object using geometric shapes to solve problems. • (3) Continue a pattern of geometric shapes to solve problems. • (3) Continue a line (path) to solve problems. • (4) Describe an object using geometric shapes to solve problems. • (4) Continue a pattern of geometric shapes to solve problems. • (4) Continue a line (path) to solve problems. • (5) Describe an object using geometric shapes to solve problems. • (5) Continue a pattern of geometric shapes to solve problems. • (5) Continue a line (path) to solve problems. <p>M.3.4.U.3</p> <p>identify and build a three-dimensional object from two-dimensional representations of that object;</p> <ul style="list-style-type: none"> • (3) Interpret a two-dimensional shape (net) to identify and build the corresponding three-dimensional shape. • (4) Done in Grade 5 A. Interpret a two-dimensional shape (net) to identify and build the corresponding three-dimensional shape. • (5) Interpret a two-dimensional shape (net) to identify and build the corresponding three-dimensional shape. <p>M.3.4.U.4</p> <p>use geometric models to solve problems in other areas of mathematics, such as number and measurement;</p> <ul style="list-style-type: none"> • (3) Determine perimeter, area, and volume using geometric models in problem solving. • (4) Determine perimeter, area, and volume using geometric models in problem solving. • (5) Determine perimeter, area, and volume using geometric models in problem solving. <p>M.3.4.U.5</p> <p>recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.</p> <ul style="list-style-type: none"> • (3) Examine geometric connections in other disciplines and everyday life. • (4) Examine geometric connections in other disciplines and everyday life. • (5) Examine geometric connections in other disciplines and everyday life. |
| M.4 | Measurement | |

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| M.4.1 | | Understand measurable attributes of objects and the units, systems, and processes of measurement. (NCTM) |
| | M.4.1.U.1 | <p>understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute;</p> <ul style="list-style-type: none"> • (3) Identify the measurable attributes of an object (length, area, weight, volume, size of an angle). • (3) Name units to measure length, area, weight, volume (capacity), and angles. • (4) Identify the measurable attributes of an object (length, area, weight, volume, and size of an angle). • (4) Name units to measure length, area, weight, volume (capacity), and angles. • (4) Identify the measurable attributes of an object (length, area, weight, volume, and size of an angle). • (4) Name units to measure length, area, weight, volume (capacity), and angles. |
| | M.4.1.U.2 | <p>understand the need for measuring with standard units and become familiar with standard units in the customary and metric systems.</p> <ul style="list-style-type: none"> • (3) Identify units of measure in length - inch, $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, foot, yard, mile, millimeter, centimeter, meter, decimeter, and kilometer. • (3) Identify units of measure in weight - ounce, pound, tons, gram, and kilogram. • (3) Identify units of measure in volume (capacity) - fluid ounce, cup, quart, pint, gallon, milliliter, and liter. • (3) Identify the unit of measure in angles - degree. • (3) Count coins and bills to make change from a given amount. • (4) Identify units of measure in length - inch, $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{1}{8}$ inch, foot, yard, mile, millimeter, centimeter, decimeter, meter, and kilometer. • (4) Identify units of measure in volume (capacity) using gallon, quart, pint, cup, liter, and milliliter. • (4) Identify units of measure in weight/mass - ounce, pound, and ton, kilogram, and gram. • (4) Identify the unit of measure in angles - degree. • (4) Count coins and bills to make change from a given amount. • (5) Identify the unit of measure in angles - degree |
| | M.4.1.U.3 | <p>carry out simple unit conversions, such as from centimeters to meters, within a system of measurement</p> <ul style="list-style-type: none"> • (3) Convert basic units of length: centimeter and meter; inch, foot and yard. • (3) Convert basic units of volume (capacity): fluid ounce, cup, pint, quart, and gallon. • (3) Convert basic units of weight: ounce, pound, and ton. • (3) Convert basic units of time: hour, minute, day, week, month, and year. • (4) Convert basic units of length; inch, foot, yard, and mile; millimeter, centimeter, decimeter, meter, and kilometer. • (4) Convert basic units of time; hour, minute, and second; day, week, month, and year, decade, and century. • (4) Convert basic units of capacity; fluid ounce, cup, pint, quart, and gallon; milliliter and liter. • (4) Convert basic units of weight/mass; ounce, pound, and ton; gram and kilogram. • (5) Make simple conversions using basic units of length: inch, foot, yard, and mile; millimeter, centimeter, decimeter, meter, and kilometer. • (5) Make simple conversions using basic units of time: hour, minute, and second, day, week, month, and year, decade, and century. • (5) Make simple conversions using basic units of capacity/volume: fluid ounce, cup, pint, quart, and gallon; milliliter and liter. • (5) Make simple conversions using basic units of weight/mass; ounce, pound, and ton; gram and kilogram. |
| | M.4.1.U.4 | <p>understand that measurements are approximations and understand how differences in units affect precision;</p> <ul style="list-style-type: none"> • (3) Define approximate versus precise measurements. • (4) Define approximate versus precise measurements. • (5) Define approximate versus precise measurements |
| M.4.2 | | Apply appropriate techniques, tools, and formulas to determine measurements. (NCTM) |
| | M.4.2.U.2 | <p>select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles;</p> <ul style="list-style-type: none"> • (3) Tell time to the nearest minute. • (3) Determine elapsed time to the quarter hour. • (3) Measure temperature using Celsius and Fahrenheit. • (3) Measure length to the nearest inch, half-inch, centimeter, decimeter, and meter. • (3) Measure volume (capacity) using pints, quarts, gallons, and liters. • (3) Measure weight using ounces, pounds, grams, and kilograms. • (3) Measure area to the nearest square unit. • (4) Calculate elapsed time to nearest minute. • (4) Measure angles using a protractor. • (4) Measure temperature using positive and negative degrees Celsius and Fahrenheit. • (4) Measure length to the nearest quarter- inch, eighth -inch, millimeter, centimeter. • (4) Select appropriate units of volume (capacity), pint, quart, gallon, and liter in a given situation. • (4) Select appropriate units of measure in weight/mass, ounce, pound, ton, gram, and kilogram in a given situation. • (4) Measure area to the nearest square unit. • (4) Determine volume of a rectangular solid in cubic units. • (5) Calculate elapsed time to nearest second. • (5) Measure angles using a protractor. • (5) Measure temperature using positive and negative degrees Celsius and Fahrenheit. • (5) Measure length to the nearest quarter- inch, eighth -inch, millimeter, and centimeter. • (5) Determine volume of a rectangular solid in cubic units. |
| | M.4.2.U.1 | <p>develop strategies for estimating the perimeters, areas, and volumes of irregular shapes;</p> <ul style="list-style-type: none"> • (3) Estimate area and volume of irregular shapes using square or cubic units. • (4) Estimate area and volume of irregular shapes using square or cubic units. |
| | M.4.2.U.3 | <p>select and use benchmarks to estimate measurements;</p> <ul style="list-style-type: none"> • (3) Select an appropriate temperature (degrees in Celsius and Fahrenheit) and/or descriptor (hot, cold, warm, cool, etc.) in a given situation. • (3) Estimate length to the nearest inch, half-inch, centimeter, decimeter, and meter. • (3) Estimate capacity using pints, quarts, gallons, and liters. • (3) Estimate volume using cubic units. • (3) Estimate weight using ounces, pounds, grams, and kilograms. • (3) Estimate area to the nearest square unit. • (4) Estimate length to the nearest quarter-inch, eighth-inch, meter, centimeter, and millimeter. |

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| | | <ul style="list-style-type: none"> • (4) Estimate capacity using gallon, quart, pint, cup, liter, and milliliter. • (4) Estimate weights/mass, using ounce, pound, and ton, gram, milligram, and kilogram. • (4) Select an appropriate temperature in degrees Celsius and Fahrenheit in a given situation. • (4) Estimate volume using cubic units. • (5) Estimate length to the nearest quarter-inch, eighth-inch, centimeter, and millimeter. • (5) Estimate capacity using gallon, quart, pint, cup, liter, and milliliter. • (5) Estimate weights, using customary units - using ounce, pound, and ton. • (5) Estimate mass using gram, milligram, and kilogram. |
| | | <p>M.4.2.U.4</p> <ul style="list-style-type: none"> develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms; • (3) Find perimeter and area of basic shapes. (square, rectangle, triangle) • (4) Identify and apply the formula for finding the perimeter of rectangles and squares. |
| | | <p>M.4.2.U.5</p> <ul style="list-style-type: none"> • (4) Identify and apply the formula for finding the area of rectangles, squares, and right triangles. • (5) State and use formulas for finding the perimeters of rectangles, squares and triangles. • (5) State and use formulas for finding the areas of rectangles, squares, and triangles. develop strategies to determine the surface areas and volumes of rectangular solids • (3) Find the volume of a solid figure using cubic units. • (4) Determine the volume of a rectangular solid. • (4) Determine the surface area of a rectangular solid. • (5) Determine the volume of a rectangular solid. • (5) Determine the surface area of a rectangular solid. |
| M.5 | Data Analysis and Probability | |
| | | Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them. (NCTM) |
| | M.5.1 | |
| | | design investigations to address a question and consider how data-collection methods affect the nature of the data set; |
| | M.5.1.U.1 | <ul style="list-style-type: none"> • (3) Design an investigation to answer a question. • (3) Choose a data collection method. • (3) Analyze the effectiveness of the data collection method. • (4) Design an investigation to answer a question. • (4) Choose a data collection method. • (4) Analyze the effectiveness of the data collection method. • (5) Design an investigation to answer a question. • (5) Choose a data collection method. • (5) Analyze the effectiveness of the data collection method. |
| | M.5.1.U.2 | <ul style="list-style-type: none"> collect data using observations, surveys, and experiments; • (3) Use observations, surveys, or experiments to collect data. • (4) Use observations, surveys, or experiments to collect data. • (5) Use observations, surveys, or experiments to collect data. |
| | M.5.1.U.3 | <ul style="list-style-type: none"> represent data using tables and graphs such as line plots, picto-graphs, bar graphs, and line graphs; • (3) Represent data using bar graphs (M), pictographs (D), line plot (I), and line graphs |
| | M.5.1.U.4 | <ul style="list-style-type: none"> • (4) Make tables and graphs of information: line plots, bar graphs, line graphs, and pictographs. • (4) Use graphs to display different types of data. • (4) Represent data on a number line and in tables, including frequency tables. • (5) Represent data on graphs such as line, bar, double bar, pictograph and line plots. • (5) Represent data in tables, including frequency tables. • (5) Use graphs to display different types of data. recognize the differences in representing categorical and numerical data • (3) Recognize the differences in representing data based on categories (names of objects) and numbers. • (4) Read and make stem and leaf plots. • (5) Choose an appropriate graph and identify graphs that are misleading. • (5) Read and make stem and leaf plots. |
| | M.5.2 | Select and use appropriate statistical methods to analyze data. (NCTM) |
| | M.5.2.U.1 | <ul style="list-style-type: none"> describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed; • (3) Use models to analyze sets of data. • (3) Describe the shape of the data set using the terms range and outlier. • (4) Find the mean of a data set. • (5) Find the mean of a data set. |
| | M.5.2.U.2 | <ul style="list-style-type: none"> use measures of center, focusing on the median, and understand what each does and does not indicate about the data set; • (3) Find the mode (D), range (D), median (D), and mean (I) in a set of data. • (3) Determine what these measures tell about a data set. • (4) Find the mean, median, mode, and range of a set of data and describe what each tells about the data set. • (5) Find the mean, median, mode, and range of a set of data and describe what each tells about the data set. |
| | M.5.2.U.3 | <ul style="list-style-type: none"> compare different representations of the same data and evaluate how well each representation shows important aspects of the data. • (3) Represent and compare the same data set using a variety of models. • (4) Choose an appropriate graph. • (4) Evaluate how well the mean, median, & mode represent the data set and choose the appropriate measure. • (5) Choose an appropriate graph. • (5) Evaluate how well the mean, median, & mode represent the data set and choose the appropriate measure. |
| | M.5.3 | Develop and evaluate inferences and predictions that are based on data. (NCTM) |
| | M.5.3.U.1 | <ul style="list-style-type: none"> propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions • (3) Use the results of experiments to predict and justify outcomes. • (4) Use data to predict outcomes of probability experiments. • (4) Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4,). • (5) Use data to predict outcomes of a probability experiments. • (5) Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4,). |
| | M.5.4 | Understand and apply basic concepts of probability. (NCTM) |

| Strands | Performance Standards | Benchmarks | |
|---------|-----------------------|--|---|
| | | M.5.4.U.1 | describe events as likely or unlikely and discuss the degree of likelihood using such words as certain, equally likely, and impossible; <ul style="list-style-type: none"> • (3) Decide the probability that an outcome will happen as likely or unlikely to the degree of certain, impossible, equally likely. • (4) Decide the probability that an outcome will happen and use the vocabulary certain, likely, equally likely, unlikely, or impossible. • (4) Interpret data graphs to answer questions about the degree of likelihood of a situation. • (5) Decide the probability that an outcome will happen and use the vocabulary certain, likely, equally likely, unlikely, or impossible. |
| | | M.5.4.U.2 | <ul style="list-style-type: none"> • (5) Interpret data graphs to answer questions about the degree of likelihood of a situation. predict the probability of outcomes of simple experiments and test the predictions; • (3) Predict and test the possible outcomes for a simple probability experiment. • (4) Predict the probability of outcomes of simple experiments and test the predictions. • (5) Predict the probability of outcomes of simple experiments and test the predictions. |
| M.6 | Problem Solving | Build new mathematical knowledge through problem solving. (NCTM) | Build new mathematical knowledge through problem solving. (NCTM) |
| | M.6.1 | M.6.1.1 Solve problems that arise in mathematics and in other contexts. (NCTM) | Build new mathematical knowledge through problem solving. (NCTM) |
| | M.6.2 | M.6.2.1 | Solve problems that arise in mathematics and in other contexts. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will solve word problems involving right triangles (Geometry) |
| | M.6.3 | Apply and adapt a variety of appropriate strategies to solve problems. (NCTM) M.6.3.1 | Apply and adapt a variety of appropriate strategies to solve problems. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation and working backwards (Geometry) • (9-12) Students solve multi-step problems, including word problems, involving linear equation and linear inequalities in one variable (Algebra) |
| | M.6.4 | Monitor and reflect the process of mathematical problem solving. (NCTM) M.6.4.1 | Monitor and reflect the process of mathematical problem solving. (NCTM) |
| M.7 | Reasoning and Proof | Recognize reasoning and proof as fundamental aspects of mathematics. (NCTM) | Recognize reasoning and proof as fundamental aspects of mathematics. (NCTM) |
| | M.7.1 | M.7.1.1 | Recognize reasoning and proof as fundamental aspects of mathematics. (NCTM) |
| | M.7.2 | Make and investigate mathematical conjectures. (NCTM) M.7.2.1 | Make and investigate mathematical conjectures. (NCTM) |
| | M.7.3 | Develop and evaluate mathematical arguments and proofs. (NCTM) M.7.3.1 | Develop and evaluate mathematical arguments and proofs. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will prove and apply theorems involving segments divided proportionally (Geometry) • (9-12) Students will prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles (Geometry) • (9-12) Students will understand and apply the inequality theorems: triangle inequality, inequality in one triangle and the hinge theorem (Geometry) • (9-12) Students will write geometric proofs. Use and compare a variety of ways to present deductive proofs, such as flow charts, paragraphs and two-column proofs (Geometry) |
| | M.7.4 | Select and use various types of reasoning and methods of proof. (NCTM) M.7.4.1 | Select and use various types of reasoning and methods of proof. (NCTM) |
| M.8 | Communications | Organize and consolidate their mathematical thinking through communication. (NCTM) | Organize and consolidate their mathematical thinking through communication. (NCTM) |
| | M.8.1 | M.8.1.1 | Organize and consolidate their mathematical thinking through communication. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will complete a minimum of two (2) writing assignments per year (Algebra) |
| | M.8.2 | Communicate their mathematical thinking coherently and clearly to peers, teachers, and others. (NCTM) M.8.2.1 | Communicate their mathematical thinking coherently and clearly to peers, teachers, and others. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will present problem solutions (Algebra) |
| | M.8.3 | Analyze and evaluate the mathematical thinking and strategies of others. (NCTM) M.8.3.1 | Analyze and evaluate the mathematical thinking and strategies of others. (NCTM) |
| | M.8.4 | Use the language of mathematics to express mathematical ideas precisely. (NCTM) M.8.4.1 | Use the language of mathematics to express mathematical ideas precisely. (NCTM) <ul style="list-style-type: none"> • (9-12) Students will write and interpret statements of the form |
| M.9 | Connections | Recognize and use connections among mathematical ideas. (NCTM) | Recognize and use connections among mathematical ideas. (NCTM) |
| | M.9.1 | M.9.1.1 | Recognize and use connections among mathematical ideas. (NCTM) |
| | M.9.2 | Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. (NCTM) M.9.2.1 | Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. (NCTM) |
| | M.9.3 | Recognize and apply mathematics in contexts outside of mathematics. (NCTM) M.9.3.1 | Recognize and apply mathematics in contexts outside of mathematics. (NCTM) |
| M.10 | Representations | Create and use representations to organize, record, and communicate mathematical ideas. (NCTM) | Create and use representations to organize, record, and communicate mathematical ideas. (NCTM) |
| | M.10.1 | M.10.1.1 | Create and use representations to organize, record, and communicate mathematical ideas. (NCTM) |
| | M.10.2 | Select, apply, and translate among mathematical representations to solve problems. (NCTM) M.10.2.1 | Select, apply, and translate among mathematical representations to solve problems. (NCTM) |
| | M.10.3 | Use representations to model and interpret physical, social, and mathematical phenomena. (NCTM) M.10.3.1 | Use representations to model and interpret physical, social, and mathematical phenomena. (NCTM) |