

MATH - Grade 5

CUSD 303

Year 2012-2013

| Domain | Cluster Standard | Standard | Skill Statement | Resources |
|-----------------------------------|---|---|--|--|
| Operations and Algebraic Thinking | Write and interpret numerical expressions | 5.OA1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols | 5.OA1 Apply parentheses, brackets, or braces in numerical expressions | <i>Eureka Math, 2015 (Great Minds)</i> |
| | | 5.OA2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product | 5.OA2 Solve expressions with parentheses, brackets, or braces 5.OA2 Write simple expressions that record calculations with numbers 5.OA2 Interpret numerical expressions without evaluating them | |
| | | Analyze patterns and relationships | 5.OA3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms | |
| | | | 5.OA3 Explain informally the relationship between the corresponding terms | |
| | | | T1.5.OA3 Explain how ordered pairs are related and then graph the ordered pairs on coordinate grids | |
| | | | 5.OA3 Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane | |
| | Understand the place value system | 5.NBT1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left | T1.5.NBT1 Review place value system (i.e. a digit in the one place represents 10 times as much as it represents to the right) | |
| | | | 5.NBT1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left | |
| | | 5.NBT2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10 | T1.5.NBT2 Define powers of 10 | |
| | | | 5.NBT2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 | |
| | | | 5.NBT2 Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10 | |
| | | | 5.NBT2 Denote powers of 10 using whole-number exponents | |
| | | 5.NBT3 Read, write, and compare decimals to thousandths | 5.NBT3 Read and write decimals to thousandths | |
| | | | 5.NBT3 Compare decimals to thousandths | |
| | | 5.NBT3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ | 5.NBT3a Read and write decimals to thousandths using base ten numerals | |
| | | | 5.NBT3a Read and write decimals to thousandths using number names | |
| | | | T1.5.NBT3a Review expanded form with decimals | |
| | | 5.NBT3b Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons | 5.NBT3a Read and write decimals to thousandths using expanded form | |
| | | | 5.NBT3b Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons | |

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| Number and Operations in Base Ten (cont'd) | Understand the place value system (cont'd) | 5.NBT4 Use place value understanding to round decimals to any place | 5.NBT4 Round decimals to any place using knowledge of place value | Eureka Math, 2015 (Great Minds) |
| | Perform operations with multi-digit whole numbers and with decimals to hundredths | 5.NBT5 Fluently multiply multi-digit whole numbers using the standard algorithm** | T1.5.NBT5 Model and solve multiplication problems using only standard algorithm | |
| | | | 5.NBT5 Multiply multi-digit whole numbers using the standard algorithm | |
| | | 5.NBT6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models | 5.NBT6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division | |
| | | | 5.NBT6 Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models | |
| | | 5.NBT7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used | 5.NBT7 Add and subtract decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction | |
| | | | T1.5.NBT7 Explain your strategy and reasoning for adding and subtracting decimals | |
| | | | 5.NBT7 Relate the strategy to a written method and explain the reasoning used | |
| | | | 5.NBT7 Multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction | |
| | | | 5.NBT7 Relate the strategy to a written method and explain the reasoning used | |
| Numbers and Operations- Fractions | Use equivalent fractions as a strategy to add and subtract fractions | 5.NF1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$) | 5.NF1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators | |
| | | | T1.5.NF2 Estimate using benchmark fractions | |
| | | | 5.NF2 Estimate mentally and assess the reasonableness of answers using benchmark fractions and number sense of fractions | |
| | Apply and extend previous understandings of multiplication and division to multiply and divide fractions | 5.NF2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$ | 5.NF2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators | |
| | | | | |
| | | 5.NF3 Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? | 5.NF3 Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$) | |
| | | | 5.NF3 Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers | |

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| Numbers and Operations-Fractions (cont'd) | Apply and extend previous understandings of multiplication and division to multiply and divide fractions (cont'd) | 5.NF4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction | T1.5.NF4 Review multiplication of fractions or whole numbers by a fraction | Eureka Math, 2015 (Great Minds) |
| | | | 5.NF4 Multiply a fraction or whole number by a fraction | |
| | | 5.NF4a Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$) | 5.NF4a Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ | |
| | | 5.NF4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas | T1.5.NF4b Review finding the area of a rectangle with fractional side lengths | |
| | | | 5.NF4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths | |
| | | | 5.NF4b Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas | |
| | | | 5.NF4b Show that the area model is the same as would be found by multiplying the side lengths | |
| | | 5.NF5 Interpret multiplication as scaling (resizing), by: | | |
| | | 5.NF5a Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication | T1.5.NF5a Explain the value of the product based on the size of the factors | |
| | | | 5.NF5a Compare size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication | |
| | | 5.NF5b Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1 | 5.NF5b Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case) | |
| | | | 5.NF5b Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number | |
| | | | 5.NF5b Explain that the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ has the same effect as multiplying a/b by 1 | |
| | | 5.NF6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem | T1.5.NF6 Review multiplication of fractions or whole numbers by a fraction | |
| | | | 5.NF6 Solve real world problems involving multiplication of fractions and mixed numbers | |
| | | | T1.5.NF7 Review division of fractions or whole numbers by a fraction | |
| | | 5.NF7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions | 5.NF7 Divide unit fractions by whole numbers and whole numbers by unit fractions | |
| | | 5.NF7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$ | 5.NF7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients | |
| | | | 5.NF7a Explain that a fraction divided by a whole number is equal to a smaller fraction because of the relationship between multiplication and division | |

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| Numbers and Operations-Fractions (<i>cont'd</i>) | Apply and extend previous understandings of multiplication and division to multiply and divide fractions (<i>cont'd</i>) | 5.NF7b Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$ | 5.NF7b Interpret division of a whole number by a unit fraction, and compute such quotients | Eureka Math, 2015 (<i>Great Minds</i>) |
| | | 5.NF7c Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins? | 5.NF7b Explain that a whole number divided by a fraction is equal to a larger whole number because of the relationship between multiplication and division | |
| | | | 5.NF7c Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions | |
| Measurement and Data | Convert like measurement units within a given measurement system | 5.MD1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems | T1.5.MD1 Model and solve multi-step real world problems using conversions | |
| | | | 5.MD1 Convert among different-sized standard measurement units within a given measurement system | |
| | | | 5.MD1 Solve multi-step, real world problems using conversions | |
| | Represent and interpret data | 5.MD2 Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally | 5.MD2 Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$) | |
| | | | 5.MD2 Solve problems involving information presented in line plots using operations on fractions | |
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| | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition | 5.MD3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement | 5.MD3 Recognize volume as an attribute of solid figures | |
| | | | 5.MD3 Explain concepts of volume measurement | |
| | | 5.MD3a A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume | 5.MD3a Explain that a cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume | |
| | | 5.MD3b A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units | 5.MD3b Explain that a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units | |
| | | 5.MD4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units | 5.MD4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units | |
| | | 5.MD5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume | 5.MD5 Relate volume to the operations of multiplication and addition | |
| | | | 5.MD5 Solve real world and mathematical problems involving volume | |
| | | 5.MD5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication | 5.MD5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes | |
| | | | 5.MD5a Show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base | |
| | | | 5.MD5a Represent threefold whole-number products as volumes | |
| | | 5.MD5b Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems | 5.MD5b Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems | |

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| Measurement and Data (<i>cont'd</i>) | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition (<i>cont'd</i>) | 5.MD5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems | 5.MD5c Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems | <i>Eureka Math, 2015 (Great Minds)</i> |
| Geometry | Graph points on the coordinate plane to solve real-world and mathematical problems | 5.G1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate) | 5.G1 Define a coordinate system using a pair of perpendicular number lines, with the intersection of the lines arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers. Explain how the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond | |
| | | 5.G2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation | T1.5.G2 Interpret coordinate grids using real world examples 5.G2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane 5.G2 Interpret coordinate values of points in the context of the situation | |
| | | 5.G3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles | 5.G3 Explain how attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category | |
| | Classify two-dimensional figures into categories based on their properties | 5.G4 Classify two-dimensional figures in a hierarchy based on properties | 5.G4 Classify two-dimensional figures in a hierarchy based on properties | |
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| **Fluency | Perform operations with multi-digit whole numbers and with decimals to hundredths | 5.NBT5 Students fluently multiply multidigit whole numbers using the standard algorithm | 5.NBT5 Multiply multi-digit whole numbers using the standard algorithm | |
| Literacy of Math | Craft and Structure | RST4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone | 5.RST4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area | |
| | Integration of Knowledge and Ideas | RST7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words | 5.RST7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently | |
| | Text Type and Purposes | WHST2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content | 5.WHST2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly | |
| | | | 5.WHST2a Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension 5.WHST2b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic | |

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| Literacy of Math (cont'd) | Text Type and Purposes (cont'd) | | 5.WHST2c Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially | Eureka Math, 2015 (Great Minds) |
| | | | 5.WHST2d Use precise language and domain-specific vocabulary to inform about or explain the topic | |
| | | | 5.WHST2e Provide a concluding statement or section related to the information or explanation presented | |
| Mathematical Practices | | | MP1 Make sense of problems and persevere in solving them | |
| | | | MP2 Reason abstractly and quantitatively | |
| | | | MP3 Construct viable arguments and critique the reasoning of others | |
| | | | MP4 Model with mathematics | |
| | | | MP5 Use appropriate tools strategically | |
| | | | MP6 Attend to precision | |
| | | | MP7 Look for and make use of structure | |
| | | | MP8 Look for and express regularity in repeated reasoning | |