

Midfield City Schools

MES 4th Grade

Math Pacing Guide

Year 2017-2018

Operations and Algebraic Thinking [OA]

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten [NBT]

- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform Multi-digit arithmetic.

Number and Operations – Fractions [NF]

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data [MD]

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller one.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry [G]

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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Month Introduced	AL COS Standards	Resources	Vocabulary	Student can...	DOK Level
September	4.1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. [4-OA1]	Go Math- Ch2.1	N/a	explain how a multiplication equation can be used to compare.	DOK 3
September	4.2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (See Glossary, Table 2.) [4-OA2]	Go Math- Ch2.2	n/a	multiply or divide to solve word problems that use multiplication to compare.	DOK 2
September	4.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [4-OA3]	Go Math- Ch.2.9, 1.6, 1.7, 2.12, 3.7, 4.3, 4.12	Addend, addition, difference	solve multistep word problems using the four operations. interpret the meanings of remainders. represent problems using equations with a letter standing for the unknown quantity (variable). decide if my answer makes sense using mental math, estimation, and rounding.	DK 2-3

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October	4.4. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite. [4-OA4]	Go Math- Ch 5.1-5.5	n/a	find factor pairs for whole numbers 1-100. recognize a whole number as a multiple of each of its factors. decide whether a whole number (1-100) is a multiple of a given one-digit number determine if a whole number (1-100) is prime or composite.	DOK 1
October	4.5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. [4-OA5]	Go Math- Ch 5.6, 10.7	n/a	create a number or shape pattern that follows a given rule. identify characteristics about the pattern that are not part of the rule.	DOK 4
August	4.6. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. [4-NBT1]	Go Math- Ch1.1, 1.5, 2.3, 3.1, 4.4	Digit, place value, regroup	determine that a digit represents ten times what it would be in the place to its right.	DOK 1

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August	4.7. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. [4-NBT2]	Go Math- Ch1.2, 1.3, 1.5	Expanded form, standard form, word form, sum	read multi-digit whole numbers using numerals, number names, and expanded form. write multi-digit whole numbers using numerals, number names, and expanded form. compare two multi-digit numbers using $>$, $=$, and $<$.	DOK 2
August	4.8. Use place value understanding to round multi-digit whole numbers to any place. [4-NBT3]	Go Math- Ch1.4, 1.6, 1.7, 2.4	Estimate, rounding, addend, addition, differences	round multi-digit whole numbers to any place.	DOK 1
August	4.9. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [4-NBT4]	Go Math- Ch1.6-1.8	Estimate, rounding, addend, addition, differences	fluently add multi-digit numbers. fluently subtract multi-digit numbers.	DOK 1

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September-October	4.10. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [4-NBT5]	Go Math- Ch2.3-2.10 Ch3.1-3.7	Factor, multiply, number line, place value, product, estimate, rounding, expanded form, associative property of multiplication, regroup	multiply a four digit whole number by a one digit whole number using strategies and properties of operations. multiply two two-digit numbers using strategies and properties of operations. represent the calculation using an equation, rectangular array, and/or area models. explain the calculation using an equation, rectangular array, and/or area models.	DOK 2
October	4.11. Find whole-number quotients and remainders with up to four-digit dividends and one-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. [4-NBT6]	Go Math-Ch4	Multiple, counting number, factor, multiplication, product, remainder, divide, dividend, division, divisor, quotient, hundreds, one, tens, thousands, compatible, distributive property, partial quotient	apply strategies to find whole number quotients and remainders with up to four-digit dividends and one-digit divisors. represent the calculation using an equation, rectangular array, and/or area models. explain the calculation using an equation, rectangular array, and/or area models	DOK 2

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December	4.12. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [4-NF1]	Go Math- Ch6.1-6.5	Equivalent fraction, denominator, fraction, numerator, simplest form, common factor, common denominator, common multiple, multiple	explain why fractions are equivalent using fraction models. recognize and create equivalent fractions.	DOK 3
December	4.13. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. [4-NF2]	Go Math- Ch6.6-6.8	Benchmark , common denominator, common numerator	compare two fractions with different numerators and denominators using $<$, $>$, and $=$. show the comparison using a fraction model from the same whole. prove my comparisons using a fraction model.	DOK 3
January	4.14. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. [4-NF3]	Go Math- Ch7.1-7.10	Fraction, unit fraction, denominator, numerator, mixed numbers, simplest form		DOK 1

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January	4.14a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. [4-NF3a]	Go Math- Ch7.1	Fraction	add fractions. subtract fractions.	DOK 1
January	4.14b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. [4-NF3b]	Go Math-Ch7.2, 7.6	Unit fraction, denominator, numerator, mixed number, simplest form	break apart a fraction into a sum of fractions with the same denominator in more than one way. record each sum of fractions using an equation.	DOK 3-4
January	14.c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. [4-NF3c]	Go Math- Ch7.7-7.9	associative property of addition, commutative property of addition	add mixed numbers with like denominators. subtract mixed numbers with like denominators	DOK 3-4
January	4.14d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. [4-NF3d]	Go Math- Ch7.3-7.5, 7.10	n/a	solve word problems using addition of fractions with the same denominator. solve word problems using subtraction of fractions with the same denominator. prove my equation using a fraction model.	DOK 3

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February	4.15. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. [4-NF4]	Go Math- Ch8.1-8.5	Fraction, multiple, product, unit fraction, identity property of multiplication		DOK 4
February	4.15a. Understand a fraction a/b as a multiple of $1/b$. [4-NF4a]	Go Math- Ch8.1	Fraction, multiple, product, unit fraction	use a visual fraction model to show that fractions have multiples.	DOK 1
February	4.15b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. [4-NF4b]	Go Math- Ch8.2-8.3	n/a	use a fraction model to multiply a fraction by a whole number.	DOK 3
February	4.15c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. [4-NF4c]	Go Math- Ch8.2-8.5	Identify property of multiplication	use fraction models to solve word problems involving multiplication of a fraction by a whole number.	DOK 3
February	4.16. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) [4-NF5]	Go Math- Ch9.3, 9.6	Equivalent decimal, equivalent fractions	make an equivalent fraction for tenths as hundredths. make an equivalent fraction for tenths as hundredths, therefore I can add fractions for tenths and hundredths.	DOK 4
February	4.17. Use decimal notation for fractions with denominators 10 or 100. [4-NF6]	Go Math- Ch9.1-9.4	Decimal, decimal point, tenth, compound fraction, place value, whole, hundredth	use decimal notation for fractions with denominators 10 or 100.	DOK 1

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March	4.18. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. [4-NF7]	Go Math- Ch9.7	n/a	<p>compare two decimals to hundredths according to their size using $>$, $<$, $=$.</p> <p>show the comparison when the two decimals are from the same whole.</p> <p>prove the results using a visual model.</p>	DOK 3
March	4.19. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l, ml; hr., min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. [4-MD1]	Go Math Ch12.1-12.4, 12.6-12.11		<p>determine the relative sizes of measurement within one system of units.</p> <p>express measurements in a larger unit in terms of a smaller unit.</p> <p>record the measurement equivalents in a two-column table.</p>	DOK 2

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Month Introduced	AL COS Standards	Resources	Vocabulary	Student can...	DOK Level
March	4.20. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [4-MD2]	Go Math- Ch12.2-12.5, 12.7-12.10		use the four operations to solve word problems including distance, time, volume, mass, and money. express measurements in a larger unit in terms of smaller units using simple fractions or decimals. represent measurement quantities using diagrams such as a number line diagram.	DOK 2
December	4.21. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. [4-MD3]	Go Math-13.1-13.5		use the area and perimeter formulas in real world and math problems.	DOK 4
March	4.22. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. [4-MD4]			make a line plot using fractional units. use the line plot information to solve problems by adding and subtracting fractions.	DOK 2
December	4.23. Recognize angles as shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. [4-MD5]	Go Math- Ch11.1-11.2			DOK 1

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November	4.23a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a 'one-degree angle,' and can be used to measure angles. [4-MD5a]	Go Math- Ch11.1-11.2		show what a degree is within a circle.	DOK 1
November	4.23b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. [4-MD5b]	Go Math- Ch11.2		use degrees to measure angles. read the degree of an angle.	DOK 1
November	4.24. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. [4-MD6]	Go Math- Ch11.3		use a protractor to construct and measure angles	DOK 1
November	4.25. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world or mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. [4-MD7]	Go Math- Ch11.7		recognize the sum of the angle parts is equal to the whole angle. solve addition and subtraction problems with unknown angles on a diagram.	DOK 1-2

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April	4.26 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. [4-G1]	Go Math- 10.1-10.3	See copy	draw geometric figures. use two-dimensional figures to identify geometric terms.	DOK 1
April	4.27 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. [4-G2]	Go Math- Ch10.2	See copy	classify two-dimensional figures based on parallel or perpendicular lines and angle size. recognize and identify right triangles.	DOK 2
December	4.28 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. [4-G3]	Go Math- Ch10.5-10.6	See copy	recognize a line of symmetry. identify a figure with a line of symmetry. draw a line of symmetry.	DOK 1
May	Pre-requisite and foundational skills for 5th Grade- ???			System Initiative to bridge the gap between grade levels. Standards identified as weak standards during pacing session	

“I can” statements from ND, NC, and Utah.

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Assessment Schedule

1st Quarter	2nd Quarter/3rd Quarter	4th Quarter
Standards Tested	Standards Tested	Standards Tested
BM1 Assessment- All Standards (Week of August 28, 2017)	Formative Assessment- November, 2017 (Projected Testing Timeframe; waiting on new contract) Standards- 1-11, 23a, 23b, 24, 25	BM2 Assessment- All Standards (Projected Testing Timeframe- Week of February 5 th or 12 th - pending new contract)

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