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DRAFT Grade 4

Maryland College and Career Ready Standards for Mathematics

Standards Crosswalk Document

Mathematics Branch

May 2025

Number and Operation Sense (NOS)
Previously Number and Operations in Base Ten (NBT); Operations and Algebraic Thinking (OA); Number and Operations – Fractions (NF)

4.NOS.A GENERALIZE PLACE VALUE UNDERSTANDING FOR MULTI-DIGIT WHOLE NUMBERS.
PREVIOUSLY 4.NBT.A.1

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4.NOS.A.1	Apply and extend place value understanding to multi-digit whole numbers within 1,000,000.
	  a. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.
	  b. Estimate quantities by reasoning about their location on a number line, their relationship to benchmark numbers, and rounding to any place.
	  c. Compare two multi-digit numbers by reasoning about the values of the digits and the location of the numbers on a number line. Record the results of comparisons with the symbols >, =, and <.
		Not applicable	Standard added to support numeracy development (number and operation sense).

4.NOS.A.2	Explain that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right (e.g., recognize that $700 ÷ 70 = 10$ by applying concepts of place value and division).	4.NBT.A.1	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. For example, recognize that $700 ÷ 70 = 10$ by applying concepts of place value and division.
Not applicable	Content embedded in 4.NOS.A.1.	4.NBT.A.2	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.
Not applicable	Content embedded in 4.NOS.A.1.	4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.

4.NOS.B USE PLACE VALUE UNDERSTANDING AND PROPERTIES OF OPERATIONS TO PERFORM MULTI-DIGIT ARITHMETIC. PREVIOUSLY 4.NBT.B

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4.NOS.B.3	Fluently add and subtract multi-digit whole numbers within 1,000,000. a. Extend estimation strategies to estimate sums and differences. b. Use computational strategies (e.g., decomposition, partials sums) efficiently. c. Use a standard algorithm d. Determine and explain when a strategy or algorithm is most efficient.	4.NBT.B.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm
4.NOS.B.4	Extend place value understanding and basic facts to multiply a multi-digit whole number by a multiple of ten.	Not applicable	Standard added to support numeracy development (number and operation sense).
4.NOS.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers. a. Extend estimation strategies to estimate products. b. Use strategies based on place value (e.g., partial products) to multiply. c. Use properties of operations (e.g., use doubling and halving strategy to think of 12 × 32 as 6 × 64) to multiply. d. Represent and explain the computation by connecting rectangular arrays, area models, and/or equations to the meaning of multiplication.	4.NBT.B.5	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.

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4.NOS.B.6	Divide whole numbers with up to four-digit dividends and one-digit divisors with and without remainders. a. Extend estimation strategies to estimate quotients. b. Use strategies based on place value (e.g., partial quotients) to divide. c. Use properties of operations and/or the inverse relationship between multiplication and division to divide. d. Represent and explain the computation by connecting rectangular arrays, area models, and/or equations to the meaning of division.	4.NBT.B.6	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.NOS.C GAIN FAMILIARITY WITH FACTORS AND MULTIPLES.
PREVIOUSLY 4.OA.B

2025 MD Index	2025 Standards Statement	2010 Index	2010 Previous Standards Statement
4.NOS.C.7	Recall or quickly derive multiplication and division facts within 100 (e.g., factors less than or equal to 10 and quotients less than are equal to 10). a. Skip count (2s, 5s, 10s) and apply properties of operations (0s, 1s) to derive foundational facts. b. Derive unknown facts from known facts using double facts (e.g., to solve 4 × 3, double 3 to get 6 and double 6 to get 12) to multiply and divide. c. Use properties of operations (e.g., to solve 8 × 7, think of (5 × 7 + (3 × 7)) to multiply. d. Use the inverse relationship between multiplication and division (e.g., think of $4 \times \ ? = 28$ to solve $28 \div 4 = ?$) to multiply and divide.	Not applicable	Standard extended beyond Grade 3.

| 4.NOS.C.8 | Explain and apply concepts of factors, multiples, and prime and composite numbers for whole numbers in the range of 1-100.
   a. Identify factor pairs for a whole number in the range of 1–100.
   b. Determine whether a given whole number in the range of 1–100 is a multiple of a one-digit number.
   c. Distinguish between factors and multiples and explain how they relate to a given number.
   d. Determine whether a given whole number in the range of 1–100 is prime, composite, or neither. | 4.OA.B.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 of 1–100 is prime or composite. |

4.NOS.D EXTEND UNDERSTANDING OF FRACTION EQUIVALENCE AND ORDERING.
PREVIOUSLY 4.NF.A

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4.NOS.D.9	Understand and generate equivalent fractions.
	   a. Identify and generate equivalent fractions using representations and the Identity Property of Multiplication.
	   b. Explain why fractions are equivalent $(\frac{c}{d} = \frac{n \times c}{n \times d})$.
		4.NF.A.1	Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{n \times a}{n \times b}$ 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.NOS.D.10	Compare two fractions with different numerators and different denominators, understanding that comparisons are valid only when the two fractions refer to the same whole.
	   a. Use benchmark numbers (e.g., $\frac{1}{2}$, 1), common numerators, and common denominators to compare.
	   b. Record comparisons with symbols >, =, <.
	   c. Justify comparisons using representations and reasoning.
		4.NF.A.2	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 $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, <, and justify the conclusion, e.g., by using a visual fraction model.

4.NOS.E BUILD FRACTIONS FROM UNIT FRACTIONS BY APPLYING AND EXTENDING PREVIOUS UNDERSTANDINGS OF OPERATIONS ON WHOLE NUMBERS.
PREVIOUSLY 4.NF.B

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4.NOS.E.11	Apply understanding of a fraction $\frac{c}{d}$ with $d >1$ as a sum of unit fractions ($\frac{1}{d}$) to decompose a fraction (including fractions greater than 1) into a sum of fractions with the same denominator in more than one way, recording each decomposition as an equation. Justify decompositions using visual fraction models and equations (e.g., $\frac{3}{8}=\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$ or $\frac{3}{8}=\frac{1}{8}+\frac{2}{8}$ or $2\frac{1}{8}=1+1+\frac{1}{8}$ or $2\frac{1}{8}=\frac{8}{8}+\frac{8}{8}+\frac{1}{8}$).	4.NF.B.3	Understand a fraction $\frac{a}{b}$ with $a>1$ as a sum of fractions $\frac{1}{b}$. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition as an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $\frac{3}{8}=\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$ or $\frac{3}{8}=\frac{1}{8}+\frac{2}{8}$ or $2\frac{1}{8}=1+1+\frac{1}{8}$ or $2\frac{1}{8}=\frac{8}{8}+\frac{8}{8}+\frac{1}{8}$ 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. d. 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.

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4.NOS.E.12	Apply and extend previous understanding of addition and subtraction of whole numbers to add and subtract fractions with like denominators. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Estimate sums and differences by reasoning about benchmark numbers and assess reasonableness of answers (e.g., $\frac{3}{4}+\frac{3}{4}$ will be greater than 1 because both fractions are greater than $\frac{1}{2}$). c. Apply and extend whole number addition and subtraction strategies (e.g. counting on, making a whole, partial sums, compensation, properties of operations, the inverse relationship between addition and subtraction) to add and subtract fractions. d. Solve problems in context involving addition and subtraction of fractions using visual fraction models and equations to represent the problem.	**Not applicable**	Content separated from previous 4.NF.B.3 as separate standard.

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4.NOS.E.13	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number $(b \times \frac{c}{d})$. a. Estimate products by reasoning about benchmark numbers and assess reasonableness of answers (e.g., $4 \times \frac{1}{2}$ will be less than 4 because I have 4 groups of something less than 1). b. Use understanding of multiplication as equal groups to multiply a unit fraction by whole number (e.g., interpret $b \times \frac{1}{d}$ as b groups of $\frac{1}{d}$). c. Use understanding of multiplication as equal groups to multiply a fraction by whole number (e.g., interpret $b \times \frac{c}{d}$ as b groups of $\frac{c}{d}$ when $\frac{c}{d}$ is greater than or less than 1). d. Solve problems in context involving multiplication of a fraction by a whole number, using visual fraction models and equations to represent the problem.	4.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction $\frac{a}{b}$ as a multiple of $\frac{1}{b}$. For example, use a visual fraction model to represent $\frac{5}{4}$ as the product of $5 \times \frac{1}{4}$, recording the conclusion by the equation $\frac{5}{4} = 5 \times \frac{1}{4}$. b. Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times \frac{2}{5}$ as $6 \times \frac{1}{5}$, recognizing this product as $\frac{6}{5}$. (In general, $n \times \frac{a}{b} = \frac{n \times a}{b}$.) c. 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. For example, if a person at a party will eat $\frac{3}{8}$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

4.NOS.F UNDERSTAND DECIMAL NOTATION FOR FRACTIONS AND COMPARE DECIMAL FRACTIONS.
PREVIOUSLY 4.NF.C

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4.NOS.F.14	Express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100 to add two fractions with respective denominators of 10 and 100.	4.NF.C.5	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. For example, when adding $\frac{3}{10}$ and $\frac{4}{100}$ express $\frac{3}{10}$ as $\frac{30}{100}$, then $\frac{30}{100} + \frac{4}{100} = \frac{34}{100}$.
4.NOS.F.15	Use decimal notation for fractions with denominators 10 and 100 (e.g., rewrite 0.62 as $\frac{62}{100}$ or describe a length as 0.62 meters or locate 0.62 on a number line).	4.NF.C.6	Use decimal notation for fractions with denominators 10 and 100. For example, rewrite 0.62 as $\frac{62}{100}$ or describe a length as 0.62 meters or locate 0.62 on a number line diagram.
4.NOS.F.16	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 >, =, <, and justify the conclusions, (e.g. using a visual model).	4.NF.C.7	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, >, =, <, and justify the conclusions, e.g., by using a visual model.

Algebraic Thinking (AT)
Previously Operations and Algebraic Thinking (OA)

4.AT.A REPRESENT AND SOLVE PROBLEMS INVOLVING MULTIPLICATION AND DIVISION.
4.OA.A USE THE FOUR OPERATIONS WITH WHOLE NUMBERS TO SOLVE PROBLEMS.

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4.AT.A.1	Interpret a multiplication situation as a comparison (e.g., interpret 35 = 5 × 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.OA.A.1	Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 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.AT.A.2	Multiply or divide to solve multiplicative comparison problems in context by using drawings and equations with a symbol for the unknown number to represent the problem	4.OA.A.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.
4.AT.A.3	Distinguish multiplicative comparison from additive comparison.	Not applicable	Content separated from 4.OA.A.2 as separate standard.
4.AT.A.4	Solve multistep problems in context involving whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. a. Represent these problems using equations with a letter standing for the unknown quantity. b. Assess the reasonableness of answers in terms of context, including interpreting remainders.	4.OA.A.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.

Geometric Reasoning (GR)
Previously Measurement and Data (MD); Geometry (G)

4.GR.A SOLVE PROBLEMS INVOLVING MEASUREMENT AND CONVERSION OF MEASUREMENTS FOR A LARGER UNIT TO A SMALLER UNIT.
PREVIOUSLY 4.MD.A

2025 MD Index	2025 Standards Statement	2010 Index	2010 Previous Standards Statement
4.GR.A.1	Apply the relationship between measurement units within a given measurement system (customary: in, ft, yd, oz, lb, sec, min, hr; metric: cm, m, km, g, kg, mL, L) to convert measurements from a larger unit to smaller unit.	4.MD.A.1	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. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), etc.
4.GR.A.2	Use the four operations to solve problems in context involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving common fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.	4.MD.A.2	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.GR.A.3	Apply the area and perimeter formulas for rectangles in context, including rectangles with missing dimensions.	4.MD.A.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formulas as a multiplication equation with an unknown factor.

4.GR.B UNDERSTAND CONCEPTS OF ANGLE AND MEASURE ANGLES.
PREVIOUSLY 4.MD.C GEOMETRIC MEASUREMENT UNDERSTAND CONCEPTS OR ANGLE AND MEASURE ANGLES.

2025 MD Index	2025 Standards Statement	2010 Index	2010 Previous Standards Statement
4.GR.B.4	Identify angles as geometric figures formed by two rays that share a common endpoint and describe angle size as the amount of rotation between the two rays measured in degrees with reference to a circle.	4.MD.C.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. a. 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 $\frac{1}{360}$ of the circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
4.GR.B.5	Measure angles in whole-number degrees using a protractor. Estimate and sketch angles of specified measures.	4.MD.C.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
4.GR.B.6	Explain that 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 context (e.g., by using an equation with a symbol for the unknown angle measure).	4.MD.C.7	Recognize angle measure as additive. When an angle is decomposed into nonoverlapping 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 and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

4.GR.C DRAW AND IDENTIFY LINES AND ANGLES AND CLASSIFY SHAPE BY PROPERTIES OF THEIR LINES AND ANGLES.
PREVIOUSLY 4.G.A

2025 MD Index	2025 Standards Statement	2010 Index	2010 Previous Standards Statement
4.GR.C.7	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	4.G.A.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures

| 4.GR.C.8 | 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.G.A.2 | 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. |
| Not applicable | Content moved to Grade 2 (2.GR.B.6). | 4.G.A.3 | 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. |

Reasoning with Data and Statistics (DS)
Previously Measurement and Data (MD)

4.DS.A REPRESENT AND INTERPRET DATA.
PREVIOUSLY 4.MD.B

2025 MD Index	2025 Standards Statement	2010 Index	2010 Previous Standards Statement
4.DS.A.1	Ask and answer questions by collecting, organizing and summarizing data, recognizing the importance of context when analyzing data. a. Create scaled data visualization (e.g. bar graphs for categorical data; line plots with fraction units of halves, fourths, and eighths for numerical data) to display data to communicate an idea. b. Summarize data presented in scaled data visualizations (e.g. bar graphs, circle graphs, line plots) and draw conclusions about the data. c. Compare and contrast different data visualizations of the same data by varying attributes (e.g., reordering bars, changing the scale) and explain how changing the attributes affects the interpretation.	4.MD.B.4	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. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.