

3rd Grade

Standards for Mathematical Practice

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| <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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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Operations and Algebraic Thinking

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
Represent and solve problems involving multiplication and division.		Represent and solve problems involving multiplication and division.	
3.OA.1	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as 5×7.</i>	NC.3.OA.1	For products of whole numbers with two factors up to and including 10: <ul style="list-style-type: none"> • Interpret the factors as representing the number of equal groups and the number of objects in each group. • Illustrate and explain strategies including arrays, repeated addition, decomposing a factor, and applying the commutative and associative properties.
3.OA.2	Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i>	NC.3.OA.2	For whole-number quotients of whole numbers with a one-digit divisor and a one-digit quotient: <ul style="list-style-type: none"> • Interpret the divisor and quotient in a division equation as representing the number of equal groups and the number of objects in each group. • Illustrate and explain strategies including arrays, repeated addition or subtraction, and decomposing a factor.
3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	NC.3.OA.3	Represent, interpret, and solve one-step problems involving multiplication and division. <ul style="list-style-type: none"> • Solve multiplication word problems with factors up to and including 10. Represent the problem using arrays, pictures, and/or equations with a symbol for the unknown number to represent the problem. • Solve division word problems with a divisor and quotient up to and including 10. Represent the problem using arrays, pictures, repeated subtraction and/or equations with a symbol for the unknown number to represent the problem.

Operations and Algebraic Thinking

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = _ \div 3$, $6 \times 6 = ?$</i>		<i>STANDARD INCORPORATED INTO NC.3.OA.3</i>
Understand properties of multiplication and the relationship between multiplication and division.		Understand properties of multiplication and the relationship between multiplication and division.	
3.OA.5	Apply properties of operations as strategies to multiply and divide. <i>Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)</i>		<i>STANDARD INCORPORATED INTO NC.3.OA.1</i>
3.OA.6	Understand division as an unknown-factor problem. <i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i>	NC.3.OA.6	Solve an unknown-factor problem, by using division strategies and/or changing it to a multiplication problem.
Multiply and divide within 100.		Multiply and divide within 100.	
3.OA.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	NC.3.OA.7	Demonstrate fluency with multiplication and division with factors, quotients and divisors up to and including 10. <ul style="list-style-type: none"> • Know from memory all products with factors up to and including 10. • Illustrate and explain using the relationship between multiplication and division. • Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
Solve problems involving the four operations, and identify and explain patterns in arithmetic.		Solve two-step problems.	
3.OA.8	Solve two-step word problems using the four operations. 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.	NC.3.OA.8	Solve two-step word problems using addition, subtraction, and multiplication, representing problems using equations with a symbol for the unknown number.
3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i>	Explore patterns of numbers.	
		NC.3.OA.9	Interpret patterns of multiplication on a hundreds board and/or multiplication table.

Number and Operations in Base Ten

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
Use place value understanding and properties of operations to perform multi-digit arithmetic. (Note: A range of algorithms may be used.)		Use place value to add and subtract.	
3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.		<i>STANDARD INCORPORATED INTO NC.3.NBT.2</i>
3.NBT.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	NC.3.NBT.2	Add and subtract whole numbers up to and including 1,000. <ul style="list-style-type: none"> • Use estimation strategies to assess reasonableness of answers. • Model and explain how the relationship between addition and subtraction can be applied to solve addition and subtraction problems. • Use expanded form to decompose numbers and then find sums and differences.
3.NBT.3		Generalize place value understanding for multi-digit numbers.	
	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.	NC.3.NBT.3	Use concrete and pictorial models, based on place value and the properties of operations, to find the product of a one-digit whole number by a multiple of 10 in the range 10–90.

Number and Operations – Fractions

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
Develop understanding of fractions as numbers.		Understand fractions as numbers.	
3.NF.1	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.	NC.3.NF.1	Interpret unit fractions with denominators of 2, 3, 4, 6, and 8 as quantities formed when a whole is partitioned into equal parts; <ul style="list-style-type: none"> • Explain that a unit fraction is one of those parts. • Represent and identify unit fractions using area and length models.
3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. <ol style="list-style-type: none"> a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. 	NC.3.NF.2	Interpret fractions with denominators of 2, 3, 4, 6, and 8 using area and length models. <ul style="list-style-type: none"> • Using an area model, explain that the numerator of a fraction represents the number of equal parts of the unit fraction. • Using a number line, explain that the numerator of a fraction represents the number of lengths of the unit fraction from 0.

Number and Operations – Fractions

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
3.NF.3	<p>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <ol style="list-style-type: none"> Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.</i> Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. 	NC.3.NF.3	<p>Represent equivalent fractions with area and length models by:</p> <ul style="list-style-type: none"> Composing and decomposing fractions into equivalent fractions using related fractions: halves, fourths and eighths; thirds and sixths. Explaining that a fraction with the same numerator and denominator equals one whole. Expressing whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
	<i>NEW STANDARD NUMBER, Concept from 3.NF.3d</i>	NC.3.NF.4	<p>Compare two fractions with the same numerator or the same denominator by reasoning about their size, using area and length models, and using the $>$, $<$, and $=$ symbols. Recognize that comparisons are valid only when the two fractions refer to the same whole with denominators: halves, fourths and eighths; thirds and sixths.</p>

Measurement and Data

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.		Solve problems involving measurement.	
3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	NC.3.MD.1	Tell and write time to the nearest minute. Solve word problems involving addition and subtraction of time intervals within the same hour.
3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). ¹ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Note: Excludes multiplicative comparison problems- problems involving notions of “times as much”; see Glossary, Table 2.)	NC.3.MD.2	Solve problems involving customary measurement. <ul style="list-style-type: none"> • Estimate and measure lengths in customary units to the quarter-inch and half-inch, and feet and yards to the whole unit. • Estimate and measure capacity and weight in customary units to a whole number: cups, pints, quarts, gallons, ounces, and pounds. • Add, subtract, multiply, or divide to solve one-step word problems involving whole number measurements of length, weight, and capacity in the same customary units.
Represent and interpret data.		Represent and interpret data.	
3.MD.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>	NC.3.MD.3	Represent and interpret scaled picture and bar graphs: <ul style="list-style-type: none"> • Collect data by asking a question that yields data in up to four categories. • Make a representation of data and interpret data in a frequency table, scaled picture graph, and/or scaled bar graph with axes provided. • Solve one and two-step “how many more” and “how many less” problems using information from these-graphs
3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.		<i>STANDARD INCORPORATED WITH NC.3.MD.2 AND LINE PLOTS MOVED TO 4TH GRADE</i>
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.		Understand the concept of area.	
3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. <ol style="list-style-type: none"> a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. 	NC.3.MD.5	Find the area of a rectangle with whole-number side lengths by tiling without gaps or overlaps and counting unit squares.

Measurement and Data

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
3.MD.6	Measure areas by counting unit squares (square cm, square m, square in., square ft, and improvised units).		<i>STANDARD INCORPORATED WITH NC.3.MD.5</i>
3.MD.7	<p>Relate area to the operations of multiplication and addition.</p> <ol style="list-style-type: none"> Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. 	NC.3.MD.7	<p>Relate area to the operations of multiplication and addition.</p> <ul style="list-style-type: none"> Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving problems, and represent whole-number products as rectangular areas in mathematical reasoning. Use tiles and/or arrays to illustrate and explain that the area of a rectangle can be found by partitioning it into two smaller rectangles, and that the area of the large rectangle is the sum of the two smaller rectangles. <p><i>PART D MOVED TO 4TH GRADE</i></p>
3.MD.8	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Understand the concept of perimeter.	
		NC.3.MD.8	Solve problems involving perimeters of polygons, including finding the perimeter given the side lengths, and finding an unknown side length.

Geometry

Current Standard Abbreviation	Current Standard	Proposed Standard Abbreviation	Final Draft Proposed Standard
Reason with shapes and their attributes.		Reason with shapes and their attributes.	
3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	NC.3.G.1	Reason with two-dimensional shapes and their attributes. <ul style="list-style-type: none"> • Investigate, describe, and reason about composing triangles and quadrilaterals and decomposing quadrilaterals. • Recognize and draw examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.
3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.</i>		<i>STANDARD INCORPORATED INTO AREA MODELS IN NC.3.NF</i>