



Public Schools of North Carolina
State Board of Education | Department of Public Instruction

This document is designed to help North Carolina educators teach the Common Core. NCDPI staff are continually updating and improving these tools to better serve teachers.

4th Grade Math Curriculum Crosswalk

The following document is to be used to compare the 2003 North Carolina Mathematics Standard Course of Study and the Common Core State Standards for Mathematics.

As noted in the Common Core State Standards for Mathematics document, the instructional time in Grade 4 should focus on three critical areas:

- (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends;
- (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers;
- (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

To download the Common Core State Standards, please visit <http://www.corestandards.org/the-standards>.

Important Note: The current SCoS will continue to be the taught and tested standards in the 2010-11 and 2011-12 school years. We expect the new Common Core standards to be taught and assessed in schools for the first time in the 2012-13 school year. That said, we are providing resources now and over the next two-years so that schools and teachers can get a head start on internalizing and planning to teach the new standards.

NC SCOS			Common Core			
Strand	Objective	Text of objective	Domain	Standard	Cluster	Comments
					Text of objective	
Numbers & Operations	1.01	Develop number sense for rational numbers 0.01 through 99,999. a) Connect model, number word, and number using a variety of representations. b) Build understanding of place value (hundredths through ten thousands). c) Compare and order rational numbers.	Numbers & Operations in Base Operations	4.NBT.1	Generalize place value understanding for multi-digit whole numbers. 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. <i>For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i>	² Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
				4.NBT.4	Generalize place value understanding for multi-digit whole numbers. Generalize place value understanding for multi-digit whole numbers. 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.	
			Numbers & Operations - Fractions	4.NBT.3	Generalize place value understanding for multi-digit whole numbers. Use place value understanding to round multi-digit whole numbers to any place.	² Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
				4.NF.2	Extend understanding of fraction equivalence and ordering.³ 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.	

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Strand	Objective	Text of objective	Domain	Standard	Cluster	Comments	
				4.NF.5	Understand decimal notation for fractions, and compare decimal fractions. 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. ⁴ For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$.		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.
					Understand decimal notation for fractions, and compare decimal fractions. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.		
				Numbers & Operations - Fractions	4.NF.7	Understand decimal notation for fractions, and compare decimal fractions. 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.	
						Operations & Algebraic Thinking	4.OA.1
1.02	Develop fluency with multiplication and division: a) Two-digit by two-digit multiplication (larger numbers with calculator). b) Up to three-digit by two-digit division (larger numbers with calculator).						

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		c) Strategies for multiplying and dividing numbers. d) Estimation of products and quotients in appropriate situations. e) Relationships between operations.	Numbers & Operations in Base Ten ²	4.OA.2	Use the four operations with whole numbers to solve problems.	
		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.NBT.5	Use place value understanding and properties of operations to perform multi-digit arithmetic.	
			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.			
			4.NBT.6	Use place value understanding and properties of operations to perform multi-digit arithmetic.	Dividing a four-digit number by a one-digit number is new to 4 th grade. Division tasks can include remainders.	
				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.		

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	1.03	Solve problems using models, diagrams, and reasoning about fractions and relationships among fractions involving halves, fourths, eighths, thirds, sixths, twelfths, fifths, tenths, hundredths, and mixed numbers.	Numbers & Operations - Fractions	4.NF.1	Extend understanding of fraction equivalence and ordering. ³	³ Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	
					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.		
	1.04	Develop fluency with addition and subtraction of non-negative rational numbers with like denominators, including decimal fractions through hundredths. a) Develop and analyze strategies for adding and subtracting numbers. b) Estimate sums and differences. c) Judge the reasonableness of solutions.	Numbers & Operations	4.NBT.4	Use place value understanding and properties of operations to perform multi-digit arithmetic.		² Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
					Fluently add and subtract multi-digit whole numbers using the standard algorithm.		
			Numbers & Operations - Fractions	4.NF.3	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.		³ Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.
					Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$		
		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 by an equation. Justify decompositions, e.g., by using a visual fraction model. <i>Examples:</i> $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.					

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	1.05	Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil.	Operations & Algebraic Thinking	4.OA.3	<p>Use the four operations with whole numbers to solve problems.</p> <p>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.</p>	
					<p>Understand decimal notation for fractions, and compare decimal fractions.</p> <p>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 100⁴. <i>For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.</i></p>	
			Numbers & Operations - Fractions	4.NF.5	<p>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.</p> <p>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.</p>	

⁴Students 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.

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			Operations & Algebraic Thinking	4.OA.4	Gain familiarity with factors and multiples. 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.	Moved from 6 th grade NC SCOS
					Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.³ Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of $1/b$. <i>For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.</i> b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. <i>For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</i>	

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					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. <i>For example, if each person at a party will eat 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?</i>	
Measurement	2.01	Develop strategies to determine the area of rectangles and the perimeter of plane figures.	Measurement & Data	4.MD.3	<p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i></p>	
	2.02	Solve problems involving perimeter of plane figures and areas of rectangles.		4.MD.3	<p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i></p>	

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			Measurement & Data	4.MD.1	<p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>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. <i>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), ...</i></p>	Moved from 3 rd grade NC SCOS.
				4.MD.2	<p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>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.</p>	Moved from 3 rd grade NC SCOS.
				4.MD.5	<p>Geometric measurement: understand concepts of angle and measure angles.</p> <p>Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p>	Angles concepts moved from 5 th grade NC SCOS.

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Strand	Objective	Text of objective	Domain	Standard	Cluster	Comments
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			Measurement & Data		<p>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 $1/360$ of a circle is called a “one-degree angle,” and can be used to measure angles.</p> <p>b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p>	
				4.MD.6	<p>Geometric measurement: understand concepts of angle and measure angles.</p> <p>Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p>	Angles concepts moved from 5 th grade NC SCOS.
				4.MD.7	<p>Geometric measurement: understand concepts of angle and measure angles.</p> <p>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 and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.</p>	Angles moved from 5 th grade NC SCOS.
Geometry	3.01	Use the coordinate system to describe the location and relative position of points and draw figures in the first quadrant.				Coordinate system moved to 5 th grade in Common Core.

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	3.02	Describe the relative position of lines using concepts of parallelism and perpendicularity.	Geometry	4.G.1	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	
					Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	
				4.G.2	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.	
	3.03	Identify, predict, and describe the results of transformations of plane figures. a) Reflections. b) Translations. c) Rotations.				Moved to 8 th grade Common Core.
			Geometry	4.G.3	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 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.	Symmetry moved from 5 th grade NC SCOS.

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Data Analysis & Probability	4.01	Collect, organize, analyze, and display data (including line graphs and bar graphs) to solve problems.	Measurement & Data	4.MD.4	Represent and interpret data. 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. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i>	This standard integrates fractions, measurement and data. Students should measure (weight, capacity, length) objects to the fractions of a unit, and then create a line plot of the data.	
	4.02	Describe the distribution of data using median, range and mode.					Moved to 6 th grade Common Core.
	4.03	Solve problems by comparing two sets of related data.					Moved to 7 th grade Common Core.
	4.04	Design experiments and list all possible outcomes and probabilities for an event.					Moved to 7 th grade Common Core.

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Algebra	5.01	Identify, describe, and generalize relationships in which: a) Quantities change proportionally. b) Change in one quantity relates to change in a second quantity.	Operations & Algebraic Thinking	4. OA.5	Generate and analyze patterns.	Generating shape patterns based on a rule are new to 4 th grade. This standard calls for students to identify characteristics of the patterns they generate. (For the pattern, start with 1 penny and add 3 pennies each time, students would generate the pattern: 1, 4, 7, 10 and talk about the terms alternating between odd and even, terms being 1 more greater than multiples of 3, and explain why numbers like 18 and 21 would not be in the pattern.)
		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. <i>For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i>				
	5.02	Translate among symbolic, numeric, verbal, and pictorial representations of number relationships.				
	5.03	Verify mathematical relationships using: a) Models, words, and numbers. b) Order of operations and the identity, commutative, associative, and distributive properties.				Properties introduced in 3 rd grade Common Core.