



Common Core State Standards At-a-Glance Transition Documents Third Grade

S²TEM Centers SC
www.s2temsc.org

S²TEM Centers SC is a statewide system of support for improving instruction and increasing student achievement in mathematics and science. S²TEM Centers SC, like S²MART Centers before them, are an initiative of South Carolina's Coalition for Mathematics and Science. The S²TEM Centers SC seek to work collaboratively with STEM-oriented partners in education, business and government.



Preface

The S²TEM Centers SC At-a-Glance Transition Documents were created in response to a request by district leaders for a quick overview of the magnitude of the changes as South Carolina moves from the 2007 SC Academic Standards for Mathematics to the Common Core State Standards for Mathematics (CCSSM). These documents do not provide a detailed analysis of the CCSSM or include all of the sub-skills that might need to be taught to ensure mastery of the standard, nor do they replace the current Support Documents for Mathematics that is available for Kindergarten through Algebra 1. More robust instructional resources will be created as SC gets closer to full implementation of the CCSSM.

In addition to the S²TEM Centers SC At-a-Glance Transition Documents, educators should have copies of the CCSSM from www.corestandards.org, as well as the appendices that accompany the standards. Specifically, K-8 educators will need access to the CCSSM glossary which includes tables 1, 2, and 3 to completely understand the intent of the standards.

The format of the documents is:

- Bulleted list of content that is new to the given grade level
- Bulleted list of content that is no longer included in the standards for the given grade level
- Four column table showing: Common Core State Standard, Understanding CCSS: Notes and Examples, 2007 SC Academic Standard, Major Changes

Throughout this document, the Common Core State Standards are identified by grade level, domain, and standard number. So, for example, 3.NBT.2 refers to the 3rd grade Number and Operations in Base Ten standard #2.

Please note: The CCSSM identifies a list of 8 Standards for Mathematical Practice in addition to the content standards for each grade. These mathematical practices are similar to NCTM's Process Standards. The Standards for Mathematical Practice identify the "habits of mind" used by proficient mathematics students. They are: (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.

As with any curriculum document, the S²TEM Center SC At-a-Glance Transition Documents are updated regularly to ensure accuracy of information. The date of the most recent edits is noted in the footer on each page of the documents. Please contact the S²TEM Centers SC CCSSM team at ccss.s2temsc@gmail.com with edits, refinements, and questions. Thank you.

During the period of July 1, 2009 to June 30, 2011, S2TEM Centers SC operated as S2MART Centers SC.

Acknowledgements

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Grade 3 Overview

“In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.” *Common Core State Standards for Mathematics*

Operations and Algebraic Thinking (3.OA)

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten (3.NBT)

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions (3.NF)

- Develop understanding of fractions as numbers.

Measurement and Data (3.MD)

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and related area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry (3.G)

- Reason with shapes and their attributes.

Common Core State Standards Initiative. (2010). Common Core State Standards for Mathematics. Washington, DC: National Governors Association Center for Best Practices and the Council of Chief State School Officers.

THIRD GRADE CHANGES AT-A-GLANCE

What content is NEW to 3rd Grade?

- Apply properties of operations as strategies to multiply and divide. (3. OA.5)
- Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. (3. NF. 3)
- Recognize area as an attribute of plane figures and understand concepts of area measurement. (3. MD.5)
- Measure areas by counting unit squares (3. MD. 6)
- Relate area to the operations of multiplication and addition. (3. MD.7)
- Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category (3.G.1)

Note: The Common Core State Standards are identified by grade level, domain, and standard number. So, for example, 3.OA.5 refers to the 3rd grade Operations and Algebraic Thinking standard #5.

THIRD GRADE CHANGES AT-A-GLANCE

What content will no longer be included in the 3rd Grade Standards?*

- Compare whole number quantities using *is less than*, *is greater than*, and *is equal to* and the symbols $<$, $>$, and $=$.
- Represent whole numbers in word form.
- Generate strategies to multiply whole numbers by using a single-digit factor and one multi-digit factor
- Analyze the magnitude of digits on the basis of their place value
- Create numeric patterns that involve whole-number operations.
- Apply procedures to find missing numbers in numeric patterns that involve whole-number operations.
- Illustrate situations that show change over time as increasing.
- Identify attributes of circles
- Classify polygons, lines, line segments, angles, and triangles
- Exemplify points, lines, line segments, rays and angles
- Predict the results of one transformation of a geometric shape
- Use the fewest possible number of coins when making change
- Recall equivalencies related to time and length
- Apply a procedure to find the range of a data set
- Predict on the basis of data whether events are likely, unlikely, certain, or impossible to occur
- Understand when the probability of an event is 0 or 1
- Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.

***Note: Common Core standards implementation will begin in 2010-2011, with full implementation and assessment in 2014-2015.**

THIRD GRADE

OPERATIONS AND ALGEBRAIC THINKING (OA)

Common Core State Standards	Understanding CCSS: Notes and Examples	2007 S.C. Academic Standards for Mathematics	Major Changes
3.OA - Represent and solve problems involving multiplication and division.			
1. Interpret products of whole numbers.	Interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7 . Editorial Clarification: "Describe a context" means real world problems. This standard means to go beyond memorization of facts.	3-2.7 Recall basic multiplication facts through 12×12 and the corresponding division facts.	Continue to teach multiplication facts with the exception of two-digit factors (i.e. through 9×9 only)
2. Interpret whole-number quotients of whole numbers.	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. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$. Editorial Clarification: "Describe a context" means real world problems. This standard means to go beyond memorization of facts.	3-2.7 Recall basic multiplication facts through 12×12 and the corresponding division facts.	Continue to teach multiplication facts with the exception of two-digit factors (i.e. through 9×9 only)

3.0A - Represent and solve problems involving multiplication and division.

<p>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.</p>	<p>See Glossary, Table 2 on page 89 in the Common Core State Standards for Mathematics for an explanation of equal groups, arrays, and measurement quantities.</p>	<p>3-3.3 Use symbols to represent an unknown quantity in a simple addition, subtraction, or multiplication equation.</p>	<p>Continue to teach. The emphasis is on multiplication and division situations involving equal groups, arrays, and measurement quantities.</p>
<p>4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers.</p>	<p>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = \quad \div 3$, $6 \times 6 = ?$.</p>	<p>3-2.7 Recall basic multiplication facts through 12×12 and the corresponding division facts.</p> <p>3-2.8 Compare the inverse relationship between multiplication and division.</p>	<p>Continue to teach multiplication/division facts with the exception of two-digit factors (i.e. through 9×9 only)</p>

3.0A Understand properties of multiplication and the relationship between multiplication and division.

<p>5. Apply properties of operations as strategies to multiply and divide.</p>	<p>Examples:</p> <p>Commutative property of multiplication If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known.</p> <p>Associative property of multiplication</p>		<p>This standard is new to 3rd grade. (See 2007 5-3.4 for reference.)</p>
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	<p>$3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$.</p> <p>Distributive property Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$.</p> <p>Applying properties is a strategy. Students are not expected to memorize or use the formal names of the properties.</p>		
3.0A - Understand properties of multiplication and the relationship between multiplication and division.			
6. Understand division as an unknown-factor problem.	For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.	3-2.8 Compare the inverse relationship between multiplication and division.	Continue to teach, but limit to within 100.
3. OA Multiply and divide within 100.			
7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.	<p>Products are limited to within 100. By the end of Grade 3, students should know from memory all products of two one-digit numbers.</p> <p>Applying properties is a strategy. Students are not expected to memorize or use the formal names of the properties</p>	<p>3-2.7 Recall basic multiplication facts through 12×12 and the corresponding division facts.</p> <p>3-2.8 Compare the inverse relationship between multiplication and division.</p>	Continue to teach multiplication/division facts with the exception of two-digit factors (i.e. through 9×9 only) . Extend to include application of the properties of operations.

3. OA Solve problems involving the four operations, and identify and explain patterns in arithmetic.

<p>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.</p>	<p>This standard is limited to problems posed with whole number and having whole-number answers. Students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order—multiply and/or divide from left to right, add and/or subtract from left to right in the order that it appears.</p>	<p>3-3.3 Use symbols to represent an unknown quantity in a simple addition, subtraction, or multiplication equation.</p>	<p>Continue to teach. Extend to include division and finding the value of an unknown letter or symbol in a whole number equation (See 2007 4-3.5 for reference.)</p>
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3.OA Solve problems involving the four operations, and identify and explain patterns in arithmetic.

<p>9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.</p>	<p>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.</p>	<p>3-2.9 Analyze the effect that adding, subtracting, or multiplying odd and/or even numbers has on the outcome.</p>	<p>Continue to teach. Extend to include explaining arithmetic patterns using properties of operations.</p>
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THIRD GRADE

Number and Operations in Base Ten (NBT)

Common Core State Standards	Understanding CCSS: Notes and Examples	2007 S.C. Academic Standards for Mathematics	Major Changes
3.NBT Use place value understanding and properties of operations to perform multi-digit arithmetic.			
1. Use place value understanding to round whole numbers to the nearest 10 or 100		3-2.4 Apply procedures to round any whole number to the nearest 10, 100, or 1,000.	Continue to teach with the exception of rounding to the nearest 1000 .
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.		3-2.3 Apply an algorithm to add and subtract whole numbers fluently.	Continue to teach. Extend to include strategies based on place value, properties, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.	For example, 9×80 and 5×60 using strategies based on place value and properties of operations.	3-2.11 Use basic number combinations to compute related multiplication problems that involve multiples of 10.	.

THIRD GRADE

Number and Operations--Fractions (NF)

Note: Expectations in this domain are limited to fractions with denominators of 2,3,4,6, and 8.

Common Core State Standards	Understanding CCSS: Notes and Examples	2007 S.C. Academic Standards for Mathematics	Major Changes
3.NF Develop understanding of fractions as numbers.			
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 $1/b$.	Editorial Clarification: Understand the distinction between fraction of a set, fraction of a region (area model), and fractions on a number line (linear model).	3-2.5 Understand fractions as parts of a whole.	Note: Limit fractions with denominators of 2, 3, 4, 6, and 8.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram. 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		3-2.5 Understand fractions as parts of a whole. 3-2.6 Represent fractions that are greater than or equal to 1.	Continue to teach. Extend to include understanding fractions as a number on the number line . Note: Limit fractions with denominators of 2, 3, 4, 6, and 8.

<p>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.</p>			
<p>3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p>b. Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.</p> <p>c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p> <p>d. 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</p>	<p>Use number lines or other visual fraction models for explanations.</p> <p>b. Use a visual pictorial model.</p> <p>c. 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.</p> <p>d. Use a visual pictorial model.</p>		<p>This is a new standard to 3rd grade. (See 2007 SC 4-2.8 and 4-2.9.)</p>

refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions.			
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THIRD GRADE

Measurement and Data (MD)

Common Core State Standards	Understanding CCSS: Notes and Examples	2007 S.C. Academic Standards for Mathematics	Major Changes
3.MD Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.			
<p>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.</p>	<p>Represent the problem on a number line diagram.</p>	<p>3-5.6 Use analog and digital clocks to tell time to the nearest minute.</p>	<p>Continue to teach. Extend to include measuring time intervals in minutes and solving word problems involving addition and subtraction of time intervals by representing the problem on a number line diagram.</p>
<p>2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.</p>	<p>Use drawings such as a beaker with a measurement scale to represent the problem.</p> <p>This does not include compound units such as cm^3 and finding the geometric volume of a container. In adding, subtracting, multiplying and dividing to solve word problems involving masses/volumes, drawings can be used. This excluded multiplicative comparison problems (“times as much”). For more information, see the Glossary, Table 2 on page 89 of the Common Core Standards for Mathematics.</p>	<p>3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams.</p> <p>3-5.3 Recognize the relationship between meters and yards, kilometers and miles, liters and quarts, and kilograms and pounds.</p> <p>3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and</p>	<p>Continue to teach with the exception of measuring meters, fluid ounces, and pints. Extend to include word problems involving masses or volumes (grams, kilograms, liters).</p>

		mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.	
3.MD Represent and interpret data.			
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.	For example, draw a bar graph in which each square in the bar graph might represent 5 pets.	3-6.2 Organize data in tables, bar graphs, and dot plots. 3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots. 3-6.4 Analyze dot plots and bar graphs to make predictions about populations.	Continue to teach with the exception of analyzing and making predictions about populations. The terminology has changed from dot plots to line plots.
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.		3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams. 3-6.2 Organize data in tables, bar graphs, and dot plots.	The terminology has changed from dot plots to line plots. Continue to teach. Extend to include measurement to the nearest fourth of an inch (See SC 2007 4-5.1). Students should be able to measure lengths using rulers marked with halves and fourths of an inch. (See 3.MD.3)

3.MD Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

<p>5. Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>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.</p> <p>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.</p>			<p>This standard is new to 3rd grade.</p>
<p>6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).</p>	<p>Use concrete and pictorial models.</p>		<p>This standard is new to 3rd grade.</p>
<p>7. Relate area to the operations of multiplication and addition.</p> <p>a. 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.</p> <p>b. Multiply side lengths to find areas of rectangles with whole number side</p>	<p>Use concrete and pictorial models. Then, move to abstract representations.</p>		<p>This standard is new to 3rd grade.</p>

<p>lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>c. 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.</p> <p>d. 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.</p>			
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3.MD Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

<p>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.</p>		<p>3-5.5 Generate strategies to determine the perimeters of polygons.</p>	<p>Continue to teach. Extend to include real-world and mathematical problems involving perimeters of polygons. (See SC 2007 4-5.4 and SC 2007 5-5.4)</p>
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THIRD GRADE

Geometry (G)

Common Core State Standards	Understanding CCSS: Notes and Examples	2007 S.C. Academic Standards for Mathematics	Major Changes
3.G Reason with shapes and their attributes			
<p>1. Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</p>	<p>For example, rhombuses, rectangle, and others are in different categories, but all have 4 sides. Their shared attribute of having 4 sides define the larger category of quadrilaterals.</p>		<p>This standard is new to 3rd grade.</p>
<p>2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.</p>	<p>For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.</p> <p>Editorial Clarification: Limit denominators to 2, 3, 4, 5, and 8.</p>	<p>3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons.</p>	<p>Continue to teach. Extend to include description of the area of each part as a unit fraction of the whole.</p>