New York City Department of Education
Scope and Sequence Sample– Grade 3
2012-13 School Year

Overview

This document was created after closely examining the Common Core Learning Standards (CCLS) and the previous New York State Standards. It provides a high-level CCLS-aligned scope and sequence for Mathematics that also takes into account the differences in and transition from the New York State Standards. The scope and sequence is aligned to the Common Core and demonstrates a focus on the major work of the grade[1], which the State has indicated will be the focus of next year's 3-8 State exams. This scope and sequence represents one way that a school may choose to organize and teach the full range of the standards before the state test. It is not based on any additional information about the changes in next year's tests. This document contains the following components:

- **Year-long Overview:** A one-page view of the year that shows the:
  - **Unit Summary**: The number of suggested units across the year and the amount of instructional time spent on each unit. The instructional time is represented as pre-State test and post-State test.
  - **Omitted Concepts:** Concepts that are no longer taught at this grade-level according to the CCLS.
  - **Bridge Guidance:** Concepts that would have been taught in earlier grades, according to the Common Core, but were not part of the New York State Standards. They should be considered and woven into units during transition years since the concepts were not previously addressed/addressed fully in the New York State Standards. We ask that you consider the needs of your students when deciding if it is necessary to teach these concepts.
- **High-level Unit Overviews:** Overviews of each unit that include the:
  - **Unit Description:** A narrative description of the concepts the unit is intended to cover and the amount of instructional time suggested.
  - **Standards:** The group of related standards that should be taught within the unit. The standards within units are **not** intentionally sequenced. Schools should use the high-level unit overviews and compare them to current curricula to teach a unit that fully represents the standards addressed.

How to Use:

To use this document, teacher teams could:

- Review the year-long and unit overviews to assess whether the scope and sequence makes sense for their school.
- Use the high-level unit overviews and resources available at the school and forthcoming from the State to teach a sequence of instruction that fully addresses the standards represented.

[1] For a listing of content emphases by cluster, refer to http://engageny.org/resource/math-content-emphases. For additional guidance—including key advances by grade, opportunities for in-depth focus, connections between content and practice standards, etc.—refer to http://www.parcconline.org/sites/parcc/files/PARCC%20MCF%20for%20Mathematics_Fall%202011%20Release.pdf.
With questions or feedback on this document, please email commoncorefellows@schools.nyc.gov.

Version 6.6.2012

This document provides a high-level scope and sequence aligned to the Common Core Learning Standards for Mathematics and demonstrates a focus on the major work of the grade, which the SED has indicated will be the focus of next year's 3-8 State exams. This scope and sequence represents one way that a school may choose to organize and teach the full range of the standards before the state test. It is not based on any additional information about the shift(s) in next year's tests.

Grade 3 Year-Long Overview:

This table shows an overview of all units that should be taught across the year and the recommended instructional time for each unit[1].

Grade 3: Suggested Distribution of Units in Instructional Days	Time	# of weeks
Unit 1: Rounding, Addition, and Subtraction Algorithms of Numbers to 100	15%	**4 weeks**
Unit 2: Multiplication and Division with Factors of 2,3,4,5, and 10	25%	**6 weeks**
Unit 3: Geometry: Shapes, Perimeter, Area, and the Number Line	12%	**3 weeks**
Unit 4: Multiplication and Area, Multiples of 10 x Factors up to 5	10%	**3 weeks**
Unit 5: Multiplication and Division by Factors of 6,7,8,9 Multiples of 10 up to 90 by Single Digit Numbers	20%	**5 weeks**
Unit 6: Fractions as Numbers on the Number Line	18%	**5 weeks**
State Test		
Post-test: After the state test, teachers should consider focusing their instruction on re-visiting the *key advances from the previous grade* and *the grade level fluency expectations and/or culminating standards* identified in the PARCC Content Model Frameworks. Students should continue to solve a wide scope of problems corresponding to the *key advances from the previous grade* and receive sufficient support and opportunities for practice with *the grade level fluency expectations and/or culminating standards.*		

Omitted Concepts:

- Describe and extend geometric patterns.
- Measure and compare customary capacity and mass
- Display data in a frequency table.

Bridge Concepts

- Solving one and two step addition and subtraction problems within 100.
- Read, write, and subtract within 1000.

[1] Unit overviews and suggested instructional time are based on *Common Core Curriculum Maps in Mathematics: Overview of Kindergarten-Grade 4 Units* developed by Common Core, Inc.

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Unit 1: Rounding, Addition, and Subtraction Algorithms of Numbers to 100 - (4 Weeks)

DESCRIPTION: Students build on their work they did in grade 2 in order to fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operation, and/or the relationship between addition and subtraction. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Standards

The standards listed below are **not** intentionally sequenced and should **not** simply be taught consecutively. Strong units weave these standards together in a thoughtful and coherent way. Schools and teacher teams can use this document to compare their current curriculum to and choose high leverage moments to enhance instruction.

3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.

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.

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. 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.[2]

Bridge Guidance:

Standards

2.OA.1 Use addition & subtraction strategies within 100 to solve one *& two*[3]-step word problems involving situations of adding to, taking from, putting together, taking apart, & comparing, with unknowns *in all positions*,[4] e.g., by using drawings & equations with a symbol for the unknown number to represent the problem.

2.NBT.3 Read & write numbers to 1000 using base-ten numerals, number names, & expanded form.

2.NBT.7 Add & subtract within 1000, using concrete models or drawings & strategies based on place value, properties of operations, &/or the relationship between addition & subtraction: relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds & hundreds, tens & tens, ones & ones; & sometimes it is necessary to compose or decompose tens or hundreds.

[2] *In Unit 1, patterns are mostly in reference to understanding place value. A larger unit can be decomposed into 10 equal addenLesson 2.7ds. Conversely 10 equal addends can be composed into 1 larger unit.*

[3] *2.OA.1 In Unit 1 problem solving focuses primarily on one step problems. 2 step problems are taught primarily in Unit 3.*

[4] *2.OA.1 IN Unit 1, story problems focus primarily on the positions of result & change unknown.*

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Unit 2: Multiplication and Division with Factors of 2,3,4,5, and 10 - (6 Weeks)

DESCRIPTION: Students will build on the work they have done in Grade K-2 around number; place value, addition and subtraction concepts, skills and problem solving to multiplication and division. Students develop an understanding of the meanings of multiplication and division of whole numbers through problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. Note: students are not expected fluently multiply and divide within 100 until the end of the year. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Standards

The standards listed below are **not** intentionally sequenced and should **not** simply be taught consecutively. Strong units weave these standards together in a thoughtful and coherent way. Schools and teacher teams can use this document to compare their current curriculum to and choose high leverage moments to enhance instruction.

3.OA.1 Interpret products of whole numbers, e.g., interpret 5 x 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 x 7.

3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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 in to equal shares of 8 objects each. Froe example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

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.

3.OA.4 Determine the unknown number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 = ___÷ 3. 6 x 6 = ?

3.OA.5 Apply properties of operations as strategies to multiply and divide.2 Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)

3.OA.6 Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8. Multiply and divide within 100.[5]

3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

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.

[5] *3.OA.1-9 In Unit 2, the students work with factors through 5 and include 10. This work includes 2 x 8, 3 x 9 and 5 x 7.*

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3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. 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.[6]
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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.[7]
Bridge Guidance:
Standards
2.OA.1 Use addition & subtraction strategies within 100 to solve one *& two*[8]-step word problems involving situations of adding to, taking from, putting together, taking apart, & comparing, with unknowns *in all positions*,[9] e.g., by using drawings & equations with a symbol for the unknown number to represent the problem.

[6] *In Unit 1, patterns are mostly in reference to understanding place value. A larger unit can be decomposed into 10 equal addenLesson 2.7ds. Conversely 10 equal addends can be composed into 1 larger unit.*

[7] *3.MD 3 In Unit 2, each unit of the bar or picture graph would have a value of 2,3,4, 5 or 10. Greater values are used in Unit 5.*

[8] *2.OA.1 In Unit 1 problem solving focuses primarily on one step problems. 2 step problems are taught primarily in Unit 3.*

[9] *2.OA.1 IN Unit 1, story problems focus primarily on the positions of result & change unknown.*

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Unit 3: Geometry: Shapes, Perimeter, Area, and the Number Line - (3 Weeks)

DESCRIPTION: Students will solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. They will also understand concepts of area and relate area to multiplication and to addition. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Standards

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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.

3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.

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.

3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

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.

3.MD.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, e.t., by using drawings (such as a beaker with a measurement scale) to represent the problem.[10]

3.MD.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line.[11]

[10] *3.MD 2 The scale is an example of a vertical (as with a beaker) or round (as with a dial scale) number line.*

[11] *3.MD 1 The clock is an example of a round number line.*

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Unit 4: Multiplication and Area, Multiples of 10 x Factors up to 5 - (3 Weeks)

DESCRIPTION: Students continue to work towards building fluency with multiplication using strategies bases on place value while making connections to the concept of area. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

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3.MD.7 Relate area to the operations of multiplication and addition.

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.

b. 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.

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 × b and a × c. Use area models to represent the distributive property in mathematical reasoning.

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.

3.NBT.3 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.

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Unit 5: Multiplication and Division by Factors of 6,7,8,9 Multiples of 10 up to 90 by Single Digit Numbers – (5 Weeks)

DESCRIPTION: Students develop an understanding of the meanings of multiplication and division of whole numbers through problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. Note: students are expected to fluently multiply and divide within 100 until the end of the year. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Standards

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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.

3.OA.4 Determine the unknown number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 = ___÷ 3. 6 x 6 = ?

3.OA.5 Apply properties of operations as strategies to multiply and divide.2 Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)

3.OA.6 Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

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.3

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. 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.[12]

3.NBT.3 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.

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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

[12] *In Unit 1, patterns are mostly in reference to understanding place value. A larger unit can be decomposed into 10 equal addenLesson 2.7ds. Conversely 10 equal addends can be composed into 1 larger unit.*

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Unit 6: : Fractions as Numbers on the Number Line – (5 Weeks)

DESCRIPTION: Students will develop and understanding of fractions as numbers. They begin with the concept of a unit fraction and view fractions in general as being built out of unit fractions. Students will use fractions along with visual fraction models to represent parts of a whole understanding g that the size of a fractional part is relative to the size of the whole. Students will be able to use fractions to represent numbers equal to, less, than, and greater than one. They solve problems that involve comparing fractions by using fraction models and strategies based on noticing equal numerators or denominators. The Mathematical Practices should be evident throughout instruction and connected to the content addressed in this unit. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Standards

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3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area and describe the area of each part as ¼ of the area of the shape.

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.

3.NF.2 Understand a fraction as a number on a 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 positioning it into equal *b* 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 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.

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

b. 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.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. 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.

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 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.

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.