New York State P-12 Learning Standards for Mathematics (Revised 2017)

Grade 3
Operations & Algebraic Thinking

		Standard Code	Standard	Additional Clarification/Examples
Clusters	A. Represent and solve problems involving multiplication and division.	3.OA.A.1	1. Interpret products of whole numbers.	e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. Describe a context in which a total number of objects can be expressed as 5 × 7.
		3.OA.A.2	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 into equal shares of 8 objects each. Describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.
		3.OA.A.3	3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	e.g., using drawings and equations with a symbol for the unknown number to represent the problem.
		3.OA.A.4	4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	e.g., determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = __ ÷ 3, 6 × 6 = ?.

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$
Equal Groups	There are a bags with b plums in each bag. How many plums are there in all? *Measurement example:* You need a lengths of string, each b inches long. How much string will you need altogether?	If p plums are shared equally into a bags, then how many plums will be in each bag? *Measurement example:* You have p inches of string, which you will cut into a equal pieces. How long will each piece of string be?	If p plums are to be packed b to a bag, then how many bags are needed? *Measurement example:* You have p inches of string, which you will cut into pieces that are b inches long. How many pieces of string will you have?
Arrays & Area	There are a rows of apples with b apples in each row. How many apples are there? *Area example*: What is the area of an a cm by b cm rectangle?	If p apples are arranged into a equal rows, how many apples will be in each row? *Area example*: A rectangle has area p square centimeters. If it is a cm long, what is its width?	If p apples are arranged into equal rows of b apples, how many rows will there be? *Area example*: A rectangle has area p square centimeters. If it is b cm wide, what is its length?

Array problems can also be stated in terms of columns, exchanging the order of a and b, so that the same array is described. For example: There are b columns of apples with a apples in each column. How many apples are there?

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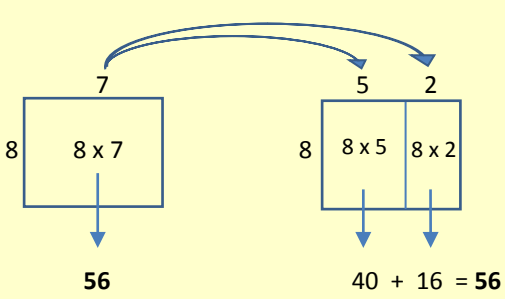
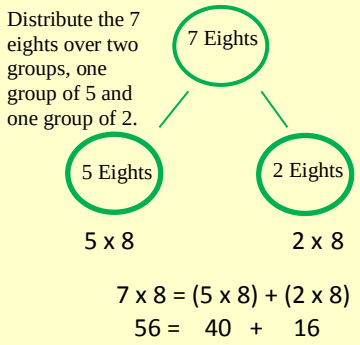
Clusters	B. Understand properties of multiplication and the relationship between multiplication and division.	3.OA.B.5	5. Apply properties of operations as strategies to multiply and divide.	e.g., • If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) • 3 × 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.) Note: Students need not use formal terms for these properties. Note: A variety of representations can be used when applying the properties of operations, which may or may not include parentheses. The area model (3.MD.7c) is a multiplication/division strategy that appies the distributive property (3.OA.5), e.g.,  
		3.OA.B.6	6. Understand division as an unknown-factor problem.	e.g., find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

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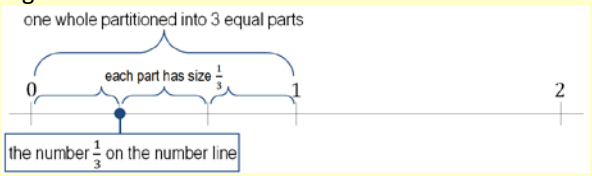
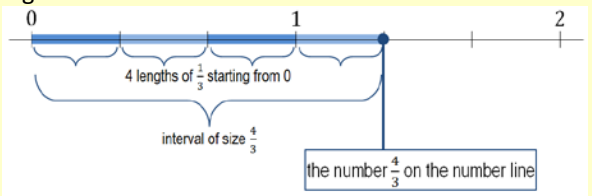
Clusters	C. Multiply and divide within 100.	3.OA.C.7	7a. Fluently solve single-digit multiplication and related divisions, using strategies such as the relationship between multiplication and division or properties of operations. 7b. Know from memory all products of two one-digit numbers.	e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8 Note: Fluency involves a mixture of just knowing some answers, knowing some answers from patterns, and knowing some answers from the use of strategies.
	D. Solve problems involving the four operations, and identify and extend patterns in arithmetic.	3.OA.D.8	8. Solve two-step word problems posed with whole numbers and having whole-number answers using the four operations. a. Represent these problems using equations or expressions with a letter standing for the unknown quantity. b. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Note: Two-step problems need not be represented by a single expression or equation.
		3.OA.D.9	9. Identify and extend arithmetic patterns (including patterns in the addition table or multiplication table).	

New York State P-12 Learning Standards for Mathematics (Revised 2017)				
Grade 3 Number & Operations in Base Ten				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	A. Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT. A.1	1. Use place value understanding to round whole numbers to the nearest 10 or 100.	
		3.NBT. A.2	2. Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Note: A range of algorithms may be used.
		3.NBT. A.3	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.	e.g., 9 × 80, 5 × 60
		3.NBT. A.4	4a. Understand that the four digits of a four-digit number represent amounts of thousands, hundreds, tens and ones. 4b. Read and write four digit numbers using base-ten numerals, number names and expanded form.	e.g., 3,245 equals 3 thousands, 2 hundreds, 4 tens, and 5 ones. e.g., the number 3,245 in expanded form can be written as 3,245= 3,000 + 200 + 40 + 5.

New York State P-12 Learning Standards for Mathematics (Revised 2017)				
Grade 3 Number & Operations - Fractions				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	A. Develop understanding of fractions as numbers.	3.NF.A.1	1. Understand a unit fraction, $\frac{1}{b}$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction $\frac{a}{b}$ is the quantity formed by a parts of size $\frac{1}{b}$.	Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.2	2. Understand a fraction as a number on the number line; represent fractions on a number line.	Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.2a	2a. Represent a fraction $\frac{1}{b}$ on a number line by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part starting at 0 locates the number $\frac{1}{b}$ on the number line.	e.g.  Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.2b	2b. Represent a fraction $\frac{a}{b}$ on a number line by marking off *a* lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.	e.g.  Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.

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Grade 3 Number & Operations - Fractions				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	A. Develop understanding of fractions as numbers.	3.NF.A.3	3. Explain equivalence of fractions and compare fractions by reasoning about their size.	Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.3a	3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.3b	3b. Recognize and generate equivalent fractions Explain why the fractions are equivalent.	e.g., $\frac{1}{2} = \frac{2}{4}; \frac{4}{6} = \frac{2}{3}$. e.g., using a visual fraction model. Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.3c	3c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.	e.g., • Express 3 in the form $3 = \frac{3}{1}$ • Recognize that $\frac{6}{3} = 2$ • Locate $\frac{4}{4}$ and 1 at the same point on a number line Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.
		3.NF.A.3d	3d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.	e.g., using a visual fraction model. Note: Fractions are limited to those with denominators 2, 3, 4, 6, and 8.

New York State P-12 Learning Standards for Mathematics (Revised 2017)				
Grade 3 Measurement & Data				
		Standard Code	**Standard**	
Clusters	A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	3.MD.A.1	1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve one-step word problems involving addition and subtraction of time intervals in minutes.	e.g., representing the problem on a number line or other visual model. Note: This includes one-step problems that cross into a new hour.
		3.MD.A.2a	2a. Measure and estimate liquid volumes and masses of objects using grams (g), kilograms (kg), and liters (l).	Note: Does not include compound units such as cm^3 and finding the geometric volume of a container.
		3.MD.A.2b	2b. Add, subtract, multiply, or divide to solve one-step word problems involving masses or liquid volumes that are given in the same units.	e.g., using drawings (such as a beaker with a measurement scale) to represent the problem. Note: Does not include multiplicative comparison problems involving notions of "times as much."
	B. Represent and interpret data.	3.MD.B.3	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 a scaled picture graph or a scaled bar graph.	e.g., draw a bar graph in which each square in the bar graph might represent 5 pets.
		3.MD.B.4	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.	

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Grade 3 Measurement & Data				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	3.MD.C.5	5. Recognize area as an attribute of plane figures and understand concepts of area measurement.	
		3.MD.C.5a	5a. Recognize 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.	
		3.MD.C.5b	5b. Recognize 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.C.6	6. Measure areas by counting unit squares.	Note: Unit squares include square cm, square m, square in., square ft., and improvised units.

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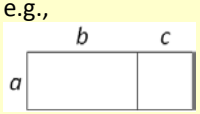
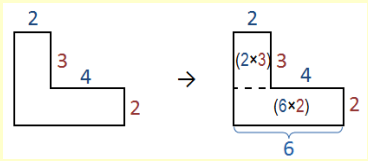
Clusters	C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	3.MD.C.7	7. Relate area to the operations of multiplication and addition.	
		3.MD.C.7a	7a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.	
		3.MD.C.7b	7b. 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.	
		3.MD.C.7c	7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side length a and side length $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.	e.g., 
		3.MD.C.7d	7d. Recognize area as additive. Find areas of figures composed of non-overlapping rectangles, and apply this technique to solve real world problems.	e.g.,  <u>Note</u>: Problems include one unknown side length.

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Grade 3 Measurement & Data				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	3.MD.D.8a	8a. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths or finding one unknown side length given the perimeter and other side lengths.	
		3.MD.D.8b	8b. Identify rectangles with the same perimeter and different areas or with the same area and different perimeters.	

New York State P-12 Learning Standards for Mathematics (Revised 2017)				
Grade 3 Geometry				
		Standard Code	**Standard**	**Additional Clarification/Examples**
Clusters	A. Reason with shapes and their attributes.	3.G.A.1	1. Recognize and classify polygons based on the number of sides and vertices (triangles, quadrilaterals, pentagons, and hexagons). Identify shapes that do not belong to one of the given subcategories.	Note: Include both regular and irregular polygons, however, students need not use formal terms "regular" and "irregular," e.g., students should be able to classify an irregular pentagon as "a pentagon," but do not need to classify it as an "irregular pentagon."
		3.G.A.2	2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	e.g., 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.