Common Core Math Curriculum – Grade 3

ESSENTIAL QUESTIONS	DOMAINS AND CLUSTERS	GRADE 3 SKILL	VOCABULARY	MATHEMATICAL PRACTICES	ASSESSMENT
How are multiplication and division related? How do we use multiplication and division to solve problems?	***Operations and Algebraic Thinking 3.0A*** Represent and solve problems involving multiplication and division	❑ Describe whole number products in terms of factors 3.OA.1 ❑ Draw a model to represent a given product 3.OA.1 ❑ Create a manipulative model to represent a multiplication equation 3.OA.1 ❑ State/ list the factors of a given product 3.OA.1 ❑ Translate word form in a multiplication context to numeric form and vice versa 3.OA.1 ❑ Describe whole number division in terms of equal groups/ partitions 3.OA.2 ❑ Translate word form in a division context to numeric form and vice versa 3.OA.2 ❑ Draw a model to represent a given product 3.OA.2 ❑ Create a manipulative model to represent a division equation 3.OA.2 ❑ Solve multiplication and division word problems within 100 3.OA.3 ❑ Write an equation to represent a multiplication or division word problem with a symbol for the unknown3.OA.3 ❑ Draw a visual representation (array, drawing, area model, etc.) for a given multiplication or division word problem3.OA.3 ❑ Choose the appropriate operation based on context clues in text 3.OA.3 ❑ Solve for a missing factor of a given product (divisor, dividend or quotient) with a symbol for the unknown 3.OA.4 ❑ Evaluate the truth value of a product for a given factor 3.OA.4	▪ products ▪ whole numbers ▪ multiplication ▪ array ▪ equal groups ▪ digit ▪ solve ▪ factor(s) ▪ equal groups/ parts ▪ division ▪ dividend ▪ quotient ▪ divisor ▪ digit ▪ Multiplication	Make sense of problems and persevere in solving them. Reason abstractly and quantitatively. Construct viable arguments and critique reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision. Look for and make use of structure.	NYS Gr. 3 Assessment Anecdotal records Higher Order Questioning Open-ended questioning Performance-based tasks Pencil and paper Oral explanations Math Portfolio
	Understand properties of multiplication and the relationship between multiplication and division	❑ Explain and give a numeric example commutative, associative & distributive property of multiplication 3.OA.5 ❑ State the property shown in a given multiplication equation 3.OA.5 ❑ Describe division in terms of multiplication (inverse operations) 3.OA.6 ❑ Solve division problems through application of fact families 3.OA.6	▪ Commutative property ▪ associative property ▪ distributive property	Look for and express regularity in repeated reasoning. Tools:	Investigations Math Journal writing Peer assessment
What are the properties of multiplication? What strategies can we use to memorize facts?	Multiply and divide within 100 Solve problems involving the four operations, and identify and explain patterns in arithmetic.	❑ Fluently multiply and divide within 100 (know from memory all product of two one-digit numbers) 3.OA.7 ❑ Describe the relationship between factors & products in terms of multiplication & division 3.OA.7 ❑ Solve two-step word problems using the four operations (apply order of operations rules: Multiplication & division are first (read left to right) then addition and subtraction are second (read left to right) 3.OA.8 ❑ Check solutions for a given problem using estimation strategies 3.OA.8 ❑ Write an equation to represent a multiplication or division word problem with a	▪ fact family ▪ inverse operation ▪ factor(s) ▪ product ▪ operation ▪ relationship ▪ digit ▪ factor(s)	White boards Base ten blocks Number lines Ruler Yardstick Multiplication chart Flash cards Multiplication ball Wrap-up facts	Teacher Observation Checklists Stenmark, J. K. (ed). (1991).

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Essential Questions	Standard	Skills	Vocabulary	Materials	Assessment
		symbol for the unknown 3.OA.8	▪ Equation	Hundreds chart	*Mathematics Assessment: Myths, Models, Good Questions.* Reston, VA: NCTM
		❑ Create a numeric pattern using addition & multiplication 3.OA.9	▪ estimation	Fraction tiles	
		❑ Explain a given numeric pattern shown in a table or chart 3.OA.9		Analog clocks	
		❑ Explain a given numeric pattern shown in a table or chart 3.OA.9		Liquid measurement containers	
	Number and Operations in Base Ten	❑ Solve for a missing number (term) in a given arithmetic pattern 3.OA.9		Balance scale	
	3.NBT	❑ Round whole numbers to the nearest 10 or 100 3.NBT.1	▪ place value	Gram weights	http://palm.sri.com/
Why is understanding place value important?		❑ Explain the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.	▪ round	Graph/graph paper	
	Use place value and properties of operations to perform multi-digit arithmetic	❑ State the value of a given digit (ex. 297 the value of 9 is 90), up to 10,000 3.NBT.1	▪ number line	Unit square tiles	http://teach-nology.com/web_tools/rubrics/math/
			▪ digit	Polygon shapes	
		❑ State the place value of a given digit 10,000 3.NBT.1	▪ ones		
		❑ Write numbers in standard, expanded, and word form 3.NBT.1	▪ tens		
		❑ Explain/ define 100 as 10 tens 3.NBT.2	▪ hundreds		
		❑ Explain/ define 1000 as 10 hundreds 3.NBT.2	▪ thousands		
		❑ State the value of a given digit up to 10,000 3.NBT.2	▪ ten thousands		
How do we round numbers to 1,000		❑ State the place value of a given digit 10,000 3.NBT.2	▪ expanded form		
		❑ Explain/ define each property with written examples 3.NBT.2	▪ standard form		
		❑ Estimate sums/differences 3.NBT.2	▪ word form		
	Number and Operations – Fractions	❑ Multiply one-digit whole numbers by multiples of 10 (range of 10-90). 3.NBT.3	▪ identity property		
			▪ sum		
	3.NF		▪ difference		
		❑ Define a fraction as partitioning one whole into equal parts. The number of equal parts is determined by the denominator of the fraction. 3.NF.1	▪ product		
What is a fraction?	Develop understanding of fractions as numbers	❑ Draw/using manipulatives create a model representing the number of partitions of the whole (denominator), and how many you have/shaded in (numerator).3.NF.1	▪ Partition		
			▪ Numerator		
		❑ Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. 3.NF.2a	▪ Denominator		
			▪ Partition		
What are different types of fractions?		❑ Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. Then mark a point on the number line where the fraction lies based on the numerator. 3.NF.2b	▪ Number line		
			▪ fraction		
		❑ Compare and order fractions. 3.NF.3a	▪ equivalent fractions		
How are fractions used in our daily lives?		❑ Draw/use models/convert numerically to represent equivalent fractions. 3.NF.3a	▪ Fraction		
		❑ Plot two or more equivalent fractions on a number line to prove equivalency. 3.NF.3a	▪ equal to		
			▪ greater than		
		❑ Draw/use manipulatives to translate numeric equivalent fractions to visual representations (vice versa). 3.NF.3b	▪ less than		
What are equivalent fractions?		❑ Explain why two fractions are equivalent. 3.NF.3b			
		❑ Compose whole numbers as fractions (vice versa). 3.NF.3c			
		❑ Plot a whole number and its fractional equivalent on a number line. 3.NF.3c			
		❑ Plot multiple fractional representations of 1. 3.NF.3c			

		❑ Order two fractions (numeric or visual representation) with the same numerator using <, >, =. 3.NF.3d		
		❑ Order two fractions (numeric or visual representation) with the same denominator using <, >, =. 3.NF.3d		
	Measurement and Data 3.MD	❑ Explain the rules for fractions with the same numerator. 3.NF.3d		
		❑ Explain the rules for fractions with the same denominator. 3.NF.3d	▪ analog clock ▪ digital clock	
How do we tell and write time to the nearest minute?	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	❑ Write and read time to the nearest minute on an analog and digital clock. 3.MD.1 ❑ Solve elapsed time in minutes. 3.MD.1 ❑ Deconstruct word problem to determine appropriate operation to solve. 3.MD.1 ❑ Solve word problems requiring the addition or subtraction of time intervals in minutes. 3.MD.1 ❑ Estimate the amount of liquid/solid, using appropriate unit of measurement, based on real life applications (standard units/metric units).3.MD.2 ❑ Measure the amount of liquid/solid, using appropriate unit of measurement, based on real life applications (standard units/metric units). 3.MD.2	▪ minute ▪ hour ▪ elapsed time ▪ interval ▪ AM ▪ PM ▪ Volume ▪ Mass ▪ Liquid ▪ Solid	
How do we choose the appropriate unit of measurement?		❑ Solve one-step mass or volume word problems using the appropriate operation. 3.MD.2 ❑ Deconstruct word problem to determine the appropriate operation to solve. 3.MD.2	▪ Grams ▪ Kilograms ▪ Liters	
	Represent and interpret data	❑ Construct a picture graph or bar graph with several categories based on a data set. 3.MD.3 ❑ Construct a scale in which each bar/picture represents more than one object (one fish represents 5 fish/bar graph in increments of 10). 3.MD.3	▪ picture graph ▪ bar graph ▪ scale ▪ "how many more" ▪ "how many less"	
How do we represent information in a picture graph or bar graph?		❑ Solve one- and two-step word problems where information is represented in a scaled bar graph. (Focus on phrases "how many more" and "how many less"). 3.MD.3 ❑ Measure and record lengths using a ruler. 3.MD.4 ❑ Deconstruct word phrases ("how many more" and "how many less") to determine appropriate operation. 3.MD.3 ❑ Construct a line plot of gathered data marked with appropriate units (whole numbers, halves or fourths/quarters). 3.MD.4	▪ Halves ▪ fourths/quarters ▪ inches	
	Geometric measurement: understand concepts of area and relate area to multiplication and to addition	❑ Define a square unit as a square with sides equaling one. 3.MD.5a ❑ Define the area of a square with sides equaling one as one square unit. 3.MD.5a ❑ Define the area of a plane figure as the number of non-overlapping square units. 3.MD.5b ❑ Measure the area of a figure by counting the number of unit squares (both customary and standard/metric units). 3.MD.6	▪ square unit ▪ square ▪ area ▪ plane figure ▪ area ▪ square unit ▪ non-overlapping ▪ unit square	

How do we measure perimeter and area of geometric shapes?		❑ Solve the area of a rectangle by tiling and then counting the number of unit squares. 3.MD.7a ❑ Describe the relationship between counting the number of unit squares and multiplying the side lengths in finding the area of a rectangle. 3.MD.7a ❑ Solve the area of a rectangle by multiplying its side lengths. 3.MD.7a ❑ Solve real-world area problems by either tiling or multiplying the side lengths. 3.MD.7b ❑ Solve for the area of a rectangle by multiplying the side lengths. 3.MD.7c ❑ Solve for the area of a rectangle by breaking one side into a sum (example if the length is 5 break it apart as 2+3) then multiplying each part/addend by the other side 3.MD.7c ❑ Explain why the two strategies above produce the same area (proving distributive property). 3.MD.7c ❑ Add square units to find the area of a given shape by counting the squares of the visual. 3.MD.7d ❑ Multiply length times (x) width to find the area of a given shape 3.MD.7d ❑ Find the area of a rectilinear figure and add the non-overlapping parts/units. 3.MD.7d ❑ Recognize multiple, appropriate operations to solve real world problems. 3.MD.7d	▪ standard/ metric unit system ▪ square units ▪ customary unit system ▪ Tiling ▪ Rectangle ▪ Multiply ▪ Distributive property ▪ Rectilinear ▪ Area ▪ Multiplication ▪ Over-lapping ▪ units	
How do we classify geometric shapes?	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	❑ Solve real world problems finding the perimeter of polygons. 3.MD.8 ❑ Solve real world problems finding a missing side of a polygon given the perimeter. 3.MD.8 ❑ Compare/contrast rectangles with the same perimeter and different area 3.MD.8 ❑ Compare/contrast shapes by their attributes (sides, vertices, angles). 3.G.1 ❑ Categorize shapes based on their attributes. 3.G.1 ❑ Name shapes from visual representations 3.G.1 ❑ Draw quadrilaterals that cannot be classified as a rhombus, rectangle, parallelogram, etc. 3.G.1 ❑ Categorize quadrilaterals based on their attributes (rectangles share attributes of parallelograms). 3.G.1 ❑ Partition shapes into equal parts/areas based on the denominator of the fraction. 3.G.2 ❑ Define each part of the whole as a unit fraction (1/2, 1/3, 1/4, 1/5, 1/6……..). 3.G.2	▪ Perimeter ▪ Area ▪ Polygon ▪ Rectangle ▪ Quadrilaterals ▪ Rhombus ▪ Square ▪ Parallelogram ▪ Trapezoid ▪ Rectangle ▪ Angles ▪ Vertices ▪ Sides ▪ Compare ▪ Contrast ▪ Opposite ▪ Parallel ▪ Polygon	