

Common Core Math Curriculum – Grade 3

ESSENTIAL QUESTIONS	DOMAINS AND CLUSTERS	GRADE 3 SKILL	VOCABULARY	MATHEMATICAL PRACTICES	ASSESSMENT
<p>How are multiplication and division related?</p> <p>How do we use multiplication and division to solve problems?</p> <p>What are the properties of multiplication?</p> <p>What strategies can we use to memorize facts?</p>	<p><i>Operations and Algebraic Thinking</i> 3.0A</p> <p>Represent and solve problems involving multiplication and division</p> <p>Understand properties of multiplication and the relationship between multiplication and division</p> <p>Multiply and divide within 100</p> <p>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</p>	<ul style="list-style-type: none"> ❑ 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 unknown 3.OA.3 ❑ Draw a visual representation (array, drawing, area model, etc.) for a given multiplication or division word problem 3.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 ❑ 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 ❑ 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 	<ul style="list-style-type: none"> ▪ products ▪ whole numbers ▪ multiplication ▪ array ▪ equal groups ▪ digit ▪ solve ▪ factor(s) ▪ equal groups/ parts ▪ division ▪ dividend ▪ quotient ▪ divisor ▪ digit ▪ Multiplication ▪ Commutative property ▪ associative property ▪ distributive property ▪ fact family ▪ inverse operation ▪ factor(s) ▪ product ▪ operation ▪ relationship ▪ digit ▪ factor(s) 	<p>Make sense of problems and persevere in solving them.</p> <p>Reason abstractly and quantitatively.</p> <p>Construct viable arguments and critique reasoning of others.</p> <p>Model with mathematics.</p> <p>Use appropriate tools strategically.</p> <p>Attend to precision.</p> <p>Look for and make use of structure.</p> <p>Look for and express regularity in repeated reasoning.</p> <p>Tools:</p> <p>White boards Base ten blocks Number lines Ruler Yardstick Multiplication chart Flash cards Multiplication ball Wrap-up facts</p>	<p>NYS Gr. 3 Assessment</p> <p>Anecdotal records</p> <p>Higher Order Questioning</p> <p>Open-ended questioning</p> <p>Performance-based tasks</p> <p>Pencil and paper</p> <p>Oral explanations</p> <p>Math Portfolio</p> <p>Investigations</p> <p>Math Journal writing</p> <p>Peer assessment</p> <p>Teacher Observation</p> <p>Checklists</p> <p>Stenmark, J. K. (ed). (1991).</p>

<p>Why is understanding place value important?</p>	<p style="text-align: center;">Number and Operations in Base Ten 3.NBT</p> <p>Use place value and properties of operations to perform multi-digit arithmetic</p>	<p>symbol for the unknown 3.OA.8</p> <ul style="list-style-type: none"> ❑ Create a numeric pattern using addition & multiplication 3.OA.9 ❑ Explain a given numeric pattern shown in a table or chart 3.OA.9 ❑ Explain a given numeric pattern shown in a table or chart 3.OA.9 ❑ Solve for a missing number (term) in a given arithmetic pattern 3.OA.9 <ul style="list-style-type: none"> ❑ Round whole numbers to the nearest 10 or 100 3.NBT.1 ❑ Explain the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100. ❑ State the value of a given digit (ex. 297 the value of 9 is 90), up to 10,000 3.NBT.1 ❑ State the place value of a given digit 10,000 3.NBT.1 ❑ Write numbers in standard, expanded, and word form 3.NBT.1 ❑ Explain/ define 100 as 10 tens 3.NBT.2 ❑ Explain/ define 1000 as 10 hundreds 3.NBT.2 ❑ State the value of a given digit up to 10,000 3.NBT.2 ❑ State the place value of a given digit 10,000 3.NBT.2 ❑ Explain/ define each property with written examples 3.NBT.2 ❑ Estimate sums/differences 3.NBT.2 ❑ Multiply one-digit whole numbers by multiples of 10 (range of 10-90). 3.NBT.3 	<ul style="list-style-type: none"> ▪ Equation ▪ estimation <ul style="list-style-type: none"> ▪ place value ▪ round ▪ number line ▪ digit ▪ ones ▪ tens ▪ hundreds ▪ thousands ▪ ten thousands ▪ expanded form ▪ standard form ▪ word form ▪ identity property ▪ sum ▪ difference ▪ product 	<p>Hundreds chart Fraction tiles Analog clocks Liquid measurement containers Balance scale Gram weights Graph/graph paper Unit square tiles Polygon shapes</p>	<p><i>Mathematics Assessment: Myths, Models, Good Questions.</i> Reston, VA: NCTM</p> <p>http://palm.sri.com/</p> <p>http://teach-nology.com/web_tools/rubrics/math/</p>
<p>How do we round numbers to 1,000</p>	<p style="text-align: center;">Number and Operations – Fractions 3.NF</p> <p>Develop understanding of fractions as numbers</p>	<ul style="list-style-type: none"> ❑ 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 ❑ 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 the number line between 0 and 1 into equal parts based on the denominator of the fraction. 3.NF.2a ❑ 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 ❑ Compare and order fractions. 3.NF.3a ❑ Draw/use models/convert numerically to represent equivalent fractions. 3.NF.3a ❑ Plot two or more equivalent fractions on a number line to prove equivalency. 3.NF.3a ❑ Draw/use manipulatives to translate numeric equivalent fractions to visual representations (vice versa). 3.NF.3b ❑ 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 	<ul style="list-style-type: none"> ▪ Partition ▪ Numerator ▪ Denominator ▪ Partition ▪ Number line ▪ fraction ▪ equivalent fractions ▪ Fraction ▪ equal to ▪ greater than ▪ less than 		
<p>What is a fraction?</p>					
<p>What are different types of fractions?</p>					
<p>How are fractions used in our daily lives?</p>					
<p>What are equivalent fractions?</p>					

<p>How do we tell and write time to the nearest minute?</p>	<p>Measurement and Data 3.MD</p> <p>Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</p>	<ul style="list-style-type: none"> ❑ 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 ❑ Explain the rules for fractions with the same numerator. 3.NF.3d ❑ Explain the rules for fractions with the same denominator. 3.NF.3d 			
<p>How do we choose the appropriate unit of measurement?</p>		<ul style="list-style-type: none"> ❑ 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 ❑ 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 	<ul style="list-style-type: none"> ▪ analog clock ▪ digital clock ▪ minute ▪ hour ▪ elapsed time ▪ interval ▪ AM ▪ PM ▪ Volume ▪ Mass ▪ Liquid ▪ Solid ▪ Grams ▪ Kilograms ▪ Liters 		
<p>How do we represent information in a picture graph or bar graph?</p>	<p>Represent and interpret data</p>	<ul style="list-style-type: none"> ❑ 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 ❑ 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 	<ul style="list-style-type: none"> ▪ picture graph ▪ bar graph ▪ scale ▪ "how many more" ▪ "how many less" ▪ Halves ▪ fourths/quarters ▪ inches 		
	<p>Geometric measurement: understand concepts of area and relate area to multiplication and to addition</p>	<ul style="list-style-type: none"> ❑ 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 	<ul style="list-style-type: none"> ▪ square unit ▪ square ▪ area ▪ plane figure ▪ area ▪ square unit ▪ non-overlapping ▪ unit square 		

<p>How do we measure perimeter and area of geometric shapes?</p>		<ul style="list-style-type: none"> ❑ 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 	<ul style="list-style-type: none"> ▪ standard/ metric unit system ▪ square units ▪ customary unit system ▪ Tiling ▪ Rectangle ▪ Multiply ▪ Distributive property ▪ Rectilinear ▪ Area ▪ Multiplication ▪ Over-lapping units 		
<p>How do we classify geometric shapes?</p>	<p>Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures</p> <p style="text-align: center;">Geometry 3.G</p> <p>Reason with shapes and their attributes</p>	<ul style="list-style-type: none"> ❑ 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.....). 	<ul style="list-style-type: none"> ▪ Perimeter ▪ Area ▪ Polygon ▪ Rectangle ▪ Quadrilaterals ▪ Rhombus ▪ Square ▪ Parallelogram ▪ Trapezoid ▪ Rectangle ▪ Angles ▪ Vertices ▪ Sides ▪ Compare ▪ Contrast ▪ Opposite ▪ Parallel ▪ Polygon 		