

QAD Math: Pre3-Grade 2 Overview

Key Areas of Focus for Pre3-Pre4:

One to one correspondence.

Key Areas of Focus for Grades KG-Grade 2:

Addition and subtraction - concepts, skills and problem solving.

Expected Fluency Pre4-Grade 2:

Pre3	Pre4	KG	Grade 1	Grade 2
One to one correspondence.	One to one correspondence.	Add and Subtract within 5.	Add and Subtract within 10	Add and Subtract within 20. Add and Subtract within 100.

CRITICAL AREAS Pre4-Grade 2:

Pre3	Pre4	KG	Grade 1	Grade 2
One to one correspondence to 5.	One to one correspondence to 10.	Representing, relating, and operating on whole numbers, initially with sets of objects.	Developing understanding of whole number relationships and place value, including grouping in tens and ones.	Extending understanding of base-ten notation.
			Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.	Building fluency with addition and subtraction.
			Developing understanding of linear measurement and measuring lengths as iterating length units.	Using standard units of measure.
Recognising shapes	Shape attributes	Describing shapes and space.	Reasoning about attributes of, and composing and decomposing geometric shapes.	Describing and analyzing shapes.

QAD Math Continuum of Development - Content Standards Pre3-Grade 2

Domain: COUNTING					
Subdomain	Pre3	Pre4 / Stage 1	KG / Stage 2-3	Grade 1 / Stage 4	Grade 2 / Stage E5
Know number names and the count sequence.	Count verbally to 3, then 5, by ones • Rote count number names in order • Use verbal counting as meaningful counting to solve a problem, such as finding out how many are in a set	CC.1. Count verbally to 10 by ones.	CC.1. Count to 100 by ones and by tens. DOK 1	NBT.1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. DOK 1, 2	NBT.2. Count within 1000; skip-count by 5s, 10s, and 100s. DOK 1
	Identify, create and extend repeating patterns	Identify, create and reproduce repeating patterns			
		CC.2. Recognize the concept of just after or just before a given number in the counting sequence up to 10.	CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). DOK 1, 2		
	Recognize some written numerals; does not yet relate to concrete representations of quantity.	CC.3. Identify written numerals 0-10.	CC.3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects) DOK 1		
Count to tell the number of objects.			CC.4. Understand the relationship quantities; connect counting to cardinality DOK 2		NBT.3. Read & write numbers to 1000 using base ten numerals, number names, & expanded form. DOK1,2
			CC.4a. When counting objects, say the number names in the standard order, pairing each object with only one number name and each number name with only one object. DOK2		
	Understand the relationship between numbers and quantities to 3 and then 5; connect counting to cardinality.	CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality.	CC.4b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of arrangement or the order in which they were counted. DOK 2		
	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object When objects are organized in a row by the adult, can apply the strategy of touching objects as they are counted.	CC.4a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. (Organises objects in a row and applies the strategy of touching objects as they are counted.)	CC.4c. Understand that each successive number name refers to a quantity that is one larger. DOK 2		
		CC.4b. Recognize that the last number name said tells the number of objects counted.	CC.5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. DOK 2		
	Recognize that 1 is less than 2, 2 is less than 3, ...up to 5	CC.4c. Recognize that each successive number name refers to a quantity that is one larger.	CC.6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. DOK 2		
	Represent a number (0-3, then to 4) by producing a set of objects with concrete materials, pictures, and/or numerals (with 0 representing a count of no objects) Build sets (0-4) with concrete materials to show a given amount when given a model.	CC.5. Represent a number (0-5, then to 10) by producing a set of objects with concrete materials, pictures, and/or numerals (with 0 representing a count of no objects).			
	Recognizes when small sets are the same size. E.g. When shown a set of 1 to 4 objects, makes another set of 1-4 objects.	CC.6. Recognize the number of objects in a set without counting (Subitizing). (Use 0-5 objects)			
	Explore relationships by comparing groups of objects to determine greater than/more or less than, and equal to/same for groups of 1-4. Compare	CC.7 Explore relationships by comparing groups of objects up to 10, to determine greater than/more or less than, and equal to/same Identify			

	sets visually and/or matching the sets using one-to-one correspondence for sets of 1-4. Apply this comparative language to larger groups when quantities are greatly varied.	whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies (includes groups with up to 5 objects).			
Compare numbers			CC.7. Compare two numbers between 1 and 10 presented as written numerals. DOK 1,2	NBT.3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$. DOK 2	NBT.4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons. DOK 2

Domain: NUMBER & OPERATIONS IN BASE TEN					
Subdomain	Pre3	Pre4 / Stage 1	KG / Stage 2-3	Grade 1 / Stage 4	Grade 2 / Stage E5
Work with numbers to gain foundations for place value		NBT.1. Investigate the relationship between ten ones and ten	NBT.1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. DOK 2	NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: DOK 2	NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. "0 holds place value" DOK 2
				NBT.2a. 10 can be thought of as a bundle of ten ones — called a "ten." DOK 2	NBT.1a. 100 can be thought of as a bundle of ten tens — called a "hundred." DOK 2
				NBT.2b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. DOK 2	NBT.1b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). DOK 2
				NBT.2c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones) DOK 2	
Use place value understanding and properties of operations to add and subtract.				NBT.4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. DOK 1, 2,3	NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. DOK 1, 2
				NBT.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. DOK 2, 3	NBT.8. Mentally add 10 or 100 to a given number 100- 900, and mentally subtract 10 or 100 from a given number 100-900. DOK 2
Use place value Understanding and properties of operations to add and subtract.				NBT.6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. DOK 2, 3	

Domain: OPERATIONS & ALGEBRAIC THINKING					
Subdomain	Pre3	Pre4 / Stage 1	KG / Stage 2-3	Grade 1 / Stage 4	Grade 2 / Stage E5
Understand Addition and Understand Subtraction		OA.1. Explore addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, or verbal explanations.	OA.1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. DOK 2	OA.1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions e.g. by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. DOK 2	OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. DOK 2
		OA.2. Decompose quantity (less than or equal to 5, then to 10) into pairs in more than one way (e.g., by using objects or drawings).	OA.2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. DOK 2	OA.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. DOK 2	OA.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. DOK 1
		OA.3. For any given quantity from (0 to 5, then to 10) find the quantity that must be added to make 5, then to 10, e.g., by using objects or drawings.	OA.3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$). DOK 2,3	OA.6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g. knowing that $8 + 4 = 12$ so $12 - 8 = 4$); creating equivalent but easier or known sums (e.g. adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$). DOK 1, 2	
			OA.4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. DOK 2		
			OA.5. AERO.K.OA.5 Fluently add and subtract within 5. DOK 1		
Understand and apply properties of operations and the relationship between addition and subtraction				OA.3. Apply properties of operations as strategies to add and subtract. Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.) DOK 2	
				OA.4. Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8. DOK 2	
Add and subtract within 20				OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). DOK 3	
Work with addition and subtraction equations.				OA.7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$. DOK 2	
				OA.8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$. DOK 2	
Represent and solve problems					NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations. DOK 3

involving addition and subtraction					NBT.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. DOK 2
					NBT.6. Add up to four two-digit numbers using strategies based on place value and properties of operations. DOK 3
Work with equal groups of objects to Gain foundations for multiplication.					OA.3. Determine whether a group of objects (up to 20) has an odd or even number of members e.g.by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. DOK 2
					OA.4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. DOK 2

Domain: MEASUREMENT & DATA					
Subdomain	Pre3	Pre4	KG	Grade 1	Grade 2
Describe & compare measurable attributes	Begins to use descriptive words such as big, little, tall, short, and long in everyday conversations.	MD.1 Describe measurable attributes of objects, such as length or weight.	MD.1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. DOK 2		
Relate addition and subtraction to length	Begins to use comparative words such as big, little, tall, short, and long in everyday conversations.	MD.2. Directly compare two objects with a measurable attribute in common, using words such as longer/shorter; heavier/lighter; or taller/shorter.	MD.2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter. DOK 2		MD.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. DOK 2
					MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. DOK 1, 2
Classify objects & count the number of objects in each category	Sorts by single and common attributes (color, shape, size, function).	MD.3 Sort objects into given categories.	MD.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. DOK 1,2		
Represent and interpret data	Uses simple comparative words for categories that are quite different using greater than/more, less than (10 bears vs. 2 dogs, "More bears than dogs") and	MD.4. Compare categories using words such as greater than/more, less than, and equal to/same.		MD.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points,	MD.9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the

	equal to/same for small categories of same objects (2 bears and 2 bears "same/equal")			how many in each category, and how many more or less are in one category than in another. DOK 2, 3	same object. Represent the data using a line plot. DOK 2
					MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph. DOK 2
Measure lengths indirectly and by iterating length units				MD.1. Order and compare objects by length: (a) Order three objects by length; (b) Compare the lengths of two objects indirectly by using a third object. DOK 2, 3	MD.1. Measure the length of an object by selecting and using appropriate tools such as rulers, meter sticks, and measuring tapes. DOK 1
				MD.2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. DOK 1, 2	MD.2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. DOK 2, 3
					MD.3. Estimate lengths using units of cm & m. DOK 2
					MD.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. DOK 1, 2
Tell and write time	Sequencing events in their daily routine, including the vocabulary: snack time, lunch time, home time.	Identify events in their daily routine, including the vocabulary: today, tomorrow, night-time, daytime.	Tell time to the hour.	MD.3. Tell and write time in hours and half-hours using analog and digital clocks. DOK 1	MD.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. DOK 1
Money				Solve word problems involving money.	MD.8. Solve word problems involving money, using \$/¢, riyals/dirhams symbols appropriately. DOK 2

Domain: GEOMETRY					
Subdomain	Pre3	Pre4	KG	Grade 1	Grade 2
Identify & describe shapes	Match congruent shapes.	G.1 Match like (congruent and similar) shapes.	G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. DOK 1,2		
	Sort shapes e.g. circles vs. squares vs. triangles.	G.2 Group shapes by attributes.	G.2 Correctly name shapes regardless of their orientations or overall size. DOK 1		
	Label and identify simple shapes by name.	G.3 Correctly name shapes (regardless of their orientations or overall size).	G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid"). DOK 1		
Analyze, compare, create and compose shapes		G.4 Describe two-dimensional objects using attributes.	G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). DOK 2,3	G.1 Distinguish between defining attributes (e.g. triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. DOK 2	G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. DOK 1,2
	Comment on common attribute of shapes e.g. "These are all round".	G.5 Describe three-dimensional objects using attributes.	G.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. DOK 2,3	G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones,	G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. DOK 2

				and right circular cylinders) to create a composite shape, and compose from the composite shape. DOK 2,3	
	Copy simple structures using three-dimensional shapes. Build structures using manipulatives and blocks after a model; Describe structures, including some positional relationships, etc.	G.6 Compose and describe structures using three-dimensional shapes; Descriptions may include shape attributes, relative position, etc	G.6 Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle? DOK 2,3		
	Introduce the concept of half through modeling and everyday language	Identify half of a region (from a diagram)	Partition a region or set into equal parts using materials.	G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. DOK 1,2	G.3 Exploring the concept of a fraction: Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. DOK 2,3