

Archdiocese of New York Kindergarten Mathematics Parent Matrix

This parent matrix is intended to be a tool for you as a parent to help support your child’s learning. The table below contains all of the Kindergarten Mathematics learning standards. Learning standards describe the knowledge and skills that students should master by the end of Kindergarten. Each standard has a specific code. For example, K.CC.1 stands for “Kindergarten Counting and Cardinality Standard 1.” You will often see these standards referenced on your child’s quizzes, worksheets, tests, etc.

You should access the recommended resources in the right hand “Resources” column electronically by clicking on the hyperlinks provided. **However, we suggest that you also download and print this matrix.** You will notice that the column all the way to the left is marked “Parent Notes.” You can use this column to take notes on your child’s progress. You may wish to check off each standard after you have worked on it with your child.

In Kindergarten Mathematics, there are five main domains of standards. These include Counting & Cardinality, Operations & Algebraic Thinking, Number & Operations in Base Ten, Measurement & Data, and Geometry. Each category is highlighted in a different color. **Your child’s teacher will be able to tell you which standards you should focus on with your child throughout the year.**

We hope that this parent matrix is a valuable resource for you. If you find that you would like additional practice materials to work on you can use the standard codes provided below to search for additional resources.

Counting & Cardinality	Operations & Algebraic Thinking	Number & Operations - Base Ten	Measurement & Data	Geometry
These standards focus on students’ understanding that numbers represent quantities. They will learn to sequence, count, and compare numbers.	These standards focus on relationships among numbers and quantities - including patterns, functions, and operations (addition, subtraction, etc).	These standards pertain to representations of numbers and the relationships between them. They focus on place value and number systems (the way we name and represent numbers).	These standards pertain to students’ ability to use different strategies and mathematical tools such as rulers and clocks to measure lengths and time and interpret and represent data in different ways (e.g. on a number line, bar graph, picture graph, etc).	These standards require students to examine, describe, and produce both 2-D and 3-D geometric shapes (e.g. circles, triangles, rectangles).

COUNTING AND CARDINALITY

Parent Notes	Standard Code	Standard	What does this standard mean?	What can I do at home?	Resources
	Counting and Cardinality Grade K Standard 1 (K.CC.1)	Count to 100 by 1s and 10s	Kindergarteners are fascinated with counting, often before they know how to count. This enthusiasm provides an ideal environment for learning to count to 100. Students should learn to count by ones and by tens. Learning the sequence "ten, twenty, thirty, forty, . . . , ninety, one-hundred" provides structure that helps children remember the sequence "twenty-eight, twenty-nine, thirty, thirty-one...).	Ask your child to skip count by 10s. Allow them to time themselves and to see how fast they can do it.	https://www.youtube.com/watch?v=sijJVm_Nhsl
	Counting and Cardinality Grade K Standard 2 (K.CC.2)	Count forward beginning from a given number within the known sequence (instead of beginning with 1)	While the previous standard asks students to know the count sequence to 100 starting at one, this standard asks students to count on from any given starting number. Typically, this should be counting by 1s. This standard requires ensuring that students can recite the number names sequentially beginning at a number other than one.	Ask your child to continue counting when you provide them with a number other than 1. For example, ask them to tell you what number comes after 56? Or 75?	http://pbskids.org/curiousgeorge/busyday/drive/teacher.html http://www.ictgames.com/counting.htm
	Counting and Cardinality Grade K Standard 3 (K.CC.3)	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing no objects)	Students in kindergarten are ready to expand their knowledge of numbers to include representing the number of objects in writing. It is important for students to represent the size of a set of objects both by writing a numeral and by saying the name of the numeral. This should be done within the range of 0 to 20.	Ask your child to practice writing their numerals from 0 to 20. Have them create a book that shows a number and has that number of objects. They can make a booklet of numbers from 0 to 20.	https://www.youtube.com/watch?v=PI_42zNDtGI

	Counting and Cardinality Grade K Standard 4 (K.CC.4)	Understand the relationship between numbers and quantities; connect counting to cardinality	Students should say number names and manipulate objects in order to count the number of objects in a set. Students should be encouraged to count sets of different types of objects to see that even if their contents are different, sets can have the same size. Students need practice in counting objects in a set by connecting each object to a number name, and in connecting the number of objects in a set to a specific number.	Ask your child to count boxes of food, such as cereal boxes or cans of food. Allow them to show you that even if the contents are different, the number of objects in the set (or group) is the same.	https://www.youtube.com/watch?v=JgV0C3zgcM0&lr=1
	Counting and Cardinality Grade K Standard 5 (K.CC.5)	Count to answer “how many” questions about as many as 20 things arranged in a line, a rectangular array, or a circle	Students should learn to count sets of up to 10 objects that are scattered or that are in easy-to-count arrangements. They should also learn to count out specific numbers of objects up to 20.	Ask your child to count out pieces of macaroni, shells, or pennies up to 20.	http://pbskids.org/curiousgeorge/busyday/hideseek/teacher.html
	Counting and Cardinality Grade K Standard 6 (K.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	Students should be able to use matching or counting strategies to make this determination	Ask your child to compare groups. Which group of two sets of objects has more? Has less? The same?	https://www.youtube.com/watch?v=qfTYOmyU504&feature=related

	Counting and Cardinality Grade K Standard 7 (K.CC.7)	Compare two numbers between 1 and 10	Students have a natural interest in comparing quantities. This standard incorporates that into what they have learned about numbers (and how to write them). However, early learners need a firm foundation of how to represent quantities between 1 and 10 and that quantities grow bigger as they move forward in the sequence of numbers.	Ask your child to use the correct terminology, "greater than", "less than", or "equal to", when comparing two sets or comparing the written form of two numbers.	http://www.mathscore.com/math/practice/Number%20Comparison%20To%2010/
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OPERATIONS AND ALGEBRAIC THINKING

Parent Notes	Standard Code	Standard	What does this standard mean?	What can I do at home?	Resources
	Operations and Algebraic Thinking Grade K Standard 1 (K.OA.1)	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g. claps), acting out situations, verbal explanations, expressions or equations.	Students should represent the concepts of addition and subtraction by using visual images, making sounds to represent objects (such as with rhythm sticks), expressing situations verbally, or acting out situations in order to create a real-world model of an arithmetic fact.	Ask your child to tell you the name of the answer in an addition problem (the sum) Ask your child to tell you the name of the answer in a subtraction problem (the difference)	http://illuminations.nctm.org/Activity.aspx?id=3564 http://illuminations.nctm.org/Activity.aspx?id=3565

	<p>Operations and Algebraic Thinking Grade K Standard 2 (K.OA.2)</p>	<p>Solve addition and subtraction word problems, and add and subtract within 10, e.g. by using objects or drawings to represent the problem.</p>	<p>Students should be introduced to word problems that depict real-life situations where they encounter the concepts of addition and subtraction within 10. Using word problems that involve real-life situations helps young learners see the relevance of mathematics in the world around them and allows for the natural use of objects or drawings in representing the problems.</p>	<p>Ask your child if they understand that when something is taken away from a whole set or the set is taken apart, the remaining number of objects can be found using subtraction? If more objects are added to a set, can students count on and produce the new total number of objects? If objects are taken away from a set, can student see that the number of remaining objects has decreased?</p>	<p>http://search.myway.com/search/video.jhtml?searchfor=addition+and+subtraction+to+10&p2=%5EUX%5Exdm869%5ES11903%5Eus&n=781aa057&ptb=F7632951-6E5D-49CE-A59A-9E4738C12A1A&si=XXXXXXXXXX&trs=hps&ss=sub&st=tab&tpr=sbt</p>
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	<p>Operations and Algebraic Thinking Grade K Standard 3 (K.OA.3)</p>	<p>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)</p>	<p>Decomposing (splitting) a number is a foundational skill in number sense. The mastery of this skill helps students understand that a quantity can be composed of two smaller quantities in different ways. Further, these sets can be arranged in a variety of ways and the sum total is always the same; for example, we can reorder addends and the sum will be the same ($4 + 2 = 2 + 4$). Students will begin to develop the ability to record the results of compositions and decompositions of sets using equations. This skill lays a firm foundation for understanding of operations and algebraic thinking.</p>	<p>Ask your child to give you several ways to add any two numbers and to arrive at the same number. For example, they can give you $1+4=5$ or $2+3=5$, or $5+0 =5$</p>	<p>https://www.youtube.com/watch?v=58lXlJvjL0o</p>
	<p>Operations and Algebraic Thinking Grade K Standard 4 (K.OA.4)</p>	<p>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.</p>	<p>This standard asks students to determine what number can be added to a given number to make 10. Objects such as counters, blocks, fingers, and other manipulatives can be used and then drawn on paper to represent this problem. Students who have mastered this skill can "make ten" as a strategy for adding; for example, to add $8 + 6$, they can decompose the 6 into $2 + 4$ (note that this also uses skills from K.OA.3), knowing that $8 + 2$ makes ten. Then they can observe that $8 + 2 + 4 = 10 + 4 = 14$.</p>	<p>Ask your child to make the sum of 10 using any two numbers. Allow them to use objects that are the same to represent the problem, as well as to write the problem as a number sentence. For example, a number sentence is $5+5=10$.</p>	<p>http://search.myway.com/search/video.jhtml?searchfor=addition+and+subtraction+to+10&p2=%5EUX%5Exdm869%5ES11903%5Eus&n=781aa057&ptb=F7632951-6E5D-49CE-A59A-9E4738C12A1A&si=XXXXXXXXXX&trs=hps&ss=sub&st=tab&tpr=sbt</p>

	<p>Operations and Algebraic Thinking Grade K Standard 5 (K.OA.5)</p>	<p>Fluently add and subtract within 5</p>	<p>Children need to develop fluency (quickly and with accuracy) for solving addition and subtraction problems within 5. At this stage, students should be able to do problems like $3 + 2$ or $5 - 1$ without needing manipulatives, drawings, strategies, etc. Students should be familiar enough with the facts (or able to count quickly on fingers, for example) to solve problems like these quickly.</p>	<p>Ask your child to add two numbers and see how many they can do in one minute. See if they can do even more problems the next time. Establish the meaning of the vocabulary, “addition” is combining or adding to and “subtraction” is removing some or taking away.</p>	<p>http://search.myway.com/search/video.jhtml?searchfor=addition+and+subtraction+to+10&p2=%5EUX%5Exdm869%5ES11903%5Eus&n=781aa057&ptb=F7632951-6E5D-49CE-A59A-9E4738C12A1A&si=XXXXXXXXXX&trs=hps&ss=sub&st=tab&tpr=sbt</p>
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NUMBER AND OPERATIONS IN BASE TEN

Parent Notes	Standard Code	Standard	What does this standard mean?	What can I do at home?	Resources
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	<p>Number and Operations in Base Ten Grade K Standard 1 (K.NBT.1)</p>	<p>Compose and decompose numbers from 11 to 19 into ten ones and some further ones.</p>	<p>Students will use objects or drawings and record each composition or decomposition by a drawing or an equation (such as $18=10+8$). They should understand that these numbers are composed of ten ones and one, two, three...nine.</p>	<p>Ask your child to compose and decompose a teen number and representing it, using objects, drawings, or an equation, as a bundle of ten ones and an appropriate number of remaining ones.</p>	<p>http://www.ixl.com/math/kindergarten/represent-numbers-up-to-20</p> <p>https://www.youtube.com/watch?v=ayTfarl1gNA</p> <p>https://www.teachingchannel.org/videos/kindergarten-counting-cardinality-lesson</p>
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MEASUREMENT AND DATA

Parent Notes	Standard Code	Standard	What does this standard mean?	What can I do at home?	Resources
	Measurement and Data Grade K Standard 1 (K.MD.1)	Describe measurable attributes of objects, such as length or weight. Describe several attributes of a single object.	In kindergarten, students begin to understand the concept of “measurement” and the idea that all objects have attributes that can be measured. Length and weight are two attributes with which most kindergartners are familiar. Students should describe attributes (that can be measured) with vocabulary that supports description (taller, bigger, shorter, wider, smaller, heavier, etc.). A statement that any attribute that can be measured or compared is applicable with this standard (i.e., darker versus lighter color might come up in a discussion with children).	<p>Ask your child to tell you what is the measure of how long an object is (length) and that weight pertains to how heavy an object is.</p> <p>Ask your child to name several measurable attributes of objects.</p>	<p>https://www.youtube.com/watch?v=wQr5aDuL1FI</p> <p>https://www.youtube.com/watch?v=7MDKuy5Hrj0</p>
	Measurement and Data Grade K Standard 2 (K.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.	Students need a great deal of exposure to comparative language that is used to make comparisons between two objects in a set.	<p>Ask your child to compare two objects and describe which is longer, heavier, taller, wider, etc?</p> <p>Can your child observe physical attributes of objects and verbally compare such things as length and predict which object would be heavier when compared with another?</p>	<p>https://www.youtube.com/watch?v=i8JDbnVzg1c</p>

	<p>Measurement and Data Grade K Standard 3 (K.MD.3)</p>	<p>Classify objects into given categories; count the numbers of objects in each category and sort the categories by count (less than 10).</p>	<p>Sorting objects and classifying them helps children to analyze commonalities and differences within sets. Students will be able to sort objects into given categories, as well as into their own categories, and be able to identify which category has the most objects, second-most objects, and so on.</p>	<p>Ask your child to sort objects into categories defined by you (e.g., sorting candy by color), and specifically ask your child to sort objects into their own categories. Using m&m's is a great way to do this.</p>	<p>https://www.youtube.com/watch?v=Src5g4NzB7Q</p>
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GEOMETRY

Parent Notes	Standard Code	Standard	What does this standard mean?	What can I do at home?	Resources
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	<p>Geometry Grade K Standard 1 (K.G.1)</p>	<p>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</p>	<p>Early introductions to geometry include a basic understanding and ability to name shapes including triangles, squares, circles, and rectangles, and to be able to describe a physical object (door) using the name of a shape (rectangle). Another component of early geometry understanding is the ability to use words that describe spatial relationships, such as above, beyond, under, next to, etc., in terms of positions of objects in relation to other things (e.g., the rectangle door is beside the square window). Focus should be placed on understanding, such as in recognizing that a geometric shape is an abstraction; a rectangle is the shape that doors, windows, and the cover of a book have in common.</p>	<p>Ask your child to find rectangles in the house and describe the relative positions of the rectangles they see, e.g. This rectangle (a poster) is over the coach). You can use a digital camera to record these relationships. Hide shapes around the room. Have your child say where they found the shape using positional words, e.g. I found a triangle UNDER the chair.</p> <p>Have your child create drawings involving shapes and positional words: Draw a window ON the door or Draw an apple UNDER a tree. Some children may be able to follow two- or three-step instructions to create their drawings. Use a shape in different orientations and sizes along with</p>	<p>https://www.youtube.com/watch?v=jZj3Gel3Rmk</p>
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	<p>Geometry Grade K Standard 2 (K.G.2)</p>	<p>Correctly name shapes regardless of their orientation or overall size.</p>	<p>Students understand that shapes are not defined by orientation (triangles cannot be "upside down" because orientation is not a defining characteristic of a triangle) or size, and can identify them by defining attributes such as number of sides.</p>	<p>Ask your child to pick up a book, turn it over, and ask if it is still a book. Then do the same thing with a triangle. Finally, turn over a large cut out of the letter b. Point out that although a letter can become a different letter when you turn it or flip it, other things remain the same. Ask your child to stand up and turn around. Is it still them? Reinforce this idea with shapes.</p>	<p>https://www.youtube.com/watch?v=1GqYGvaZRCI https://www.youtube.com/watch?v=LKGFF9RGAa8 https://www.youtube.com/watch?v=ll-NVwFTJkU</p>
	<p>Geometry Grade K Standard 3 (K.G.3)</p>	<p>Identify shapes as two dimensional (lying in a plane "flat") or three-dimensional ("solid")</p>	<p>Two-dimensional shapes are flat, like a drawing or tile, while three-dimensional shapes can be used as containers or building blocks. Students do not initially see any difference between flat and solid shapes, and that is the crux of this standard. Students need experience thinking about whether shapes are solid or flat while they interact with them.</p>	<p>Ask your child to find three-dimensional shapes in their room. Can your child explain that a two-dimensional shape is flat, while a three-dimensional shape is not flat (a kindergartener's way of saying that it has length, breadth, and width)?</p>	<p>https://www.pinterest.com/pint80/kg3-common-core-2d-or-3d/</p>

	<p>Geometry Grade K Standard 4 (K.G.4)</p>	<p>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)</p>	<p>Students should be pushed to describe differences and similarities between shapes by using the language referenced in the standard as opposed to just any wording. For instance, children should be encouraged to move past statements like "It has flat sides and is pointy" to more specific statements like "It has 3 sides and 3 corners".</p>	<p>Ask your child to give justification for how he/she knows that an object is indeed a particular shape. For example, "It is a square because all the sides are the same." Can your child sort objects by attributes, and can they describe why they sorted them the way they did?</p>	<p>http://www.k-5mathteachingresources.com/support-files/my3dshapesbook.pdf</p>
	<p>Geometry Grade K Standard 5 (K.G.5)</p>	<p>Model shapes in the world by building shapes from components (e.g. sticks and balls of clay) and drawing shapes.</p>	<p>Giving students opportunities to build, use computer graphic programs, and draw will allow them to deepen their understanding of the properties of two- and three-dimensional shapes.</p>	<p>Ask your child to use simple tools like stencils, tracing paper, blocks, playdough, and sticks to create two- and three-dimensional objects.</p>	<p>http://www.teachingideas.co.uk/maths/contents_shape.htm</p>

	Geometry Grade K Standard 6 (K.G.6)	Compose simple shapes to form larger shapes.	Students need numerous experiences exploring with shapes in order to use them to compose other shapes. Materials such as pattern blocks and tangrams are ideal for practice composing shapes. Students can compose several different triangles using various pattern blocks. There are also many shape outlines for pattern blocks available online and commercially. Students use these shape outlines the same as they would use a puzzle frame to guide them in placing the pieces to form the shape. It is not necessary that students compose only geometric shapes. Students will benefit from using shapes to form houses, flowers, stars, animals, etc. as well	Ask your child to describe how he/she is putting together smaller shapes to create larger ones. How many similar shapes are contained in the larger one? Are there different ways to put together different smaller shapes to form the larger one?	http://illuminations.nctm.org/Activity.aspx?id=4206
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