

***Pike County School District
Standards Mastery Document***

Kindergarten Mathematics
Revised 2019



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Standards Mastery Document – Revised 2019
Kindergarten Mathematics

The Standards Mastery Document is designed for educators by educators as a resource and tool to help educators increase their depth of understanding of the Common Core Standards. This document will enable teachers to plan College & Career Ready curriculum and classroom instruction that promotes inquiry and higher levels of cognitive demand.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education.

8 Mathematical Practices (MP):

- MP 1. Make sense of problems and persevere in solving them.
- MP 2. Reason abstractly and quantitatively.
- MP 3. Construct viable arguments and critique the reasoning of others.
- MP 4. Model with mathematics.
- MP 5. Use appropriate tools strategically.
- MP 6. Attend to precision.
- MP 7. Look for and make use of structure.
- MP 8. Look for and express regularity in repeated reasoning.

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Kentucky Academic Standards for Mathematics: Kindergarten Overview

Counting/Cardinality (CC)	Operations/Algebraic Thinking (OA)	Number and Operations in Base Ten (NBT)	Measurement and Data (MD)	Geometry (G)
<ul style="list-style-type: none"> • Know number names and the count sequence. • Count to tell the number of objects. • Compare numbers. 	<ul style="list-style-type: none"> • Understand addition as putting together and adding to and understand subtraction as taking apart and taking from. 	<ul style="list-style-type: none"> • Work with numbers 11-19 to gain foundations for place value. 	<ul style="list-style-type: none"> • Describe and compare measurable attributes. • Classify objects and count the number of objects in each category. • Identify coins by name. 	<ul style="list-style-type: none"> • Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders and spheres). • Analyze, compare, create and compose shapes.

In grade K, instructional time should focus on two critical areas:

1. In the Counting and Cardinality and Operations and Algebraic Thinking domains, students will:

- develop a more formal sense of numbers;
- use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. Note: Kindergarten students should see addition and subtraction equations and student writing of equations in kindergarten is encouraged, but it is not required; and
- choose, combine and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

2. In the Geometry and Measurement and Data domains, students will:

- describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and appropriate vocabulary;
- identify, name and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders and spheres; and
- use basic shapes and spatial reasoning to model objects in their everyday environment to create and compose more complex shapes.

Note: More learning time in Kindergarten should be devoted to number than to other topics.

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Table 1
Common Addition and Subtraction Situations¹

	Result Unknown	Change Unknown	Start Unknown
Add To	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2+3=?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2+?=5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $?+3=5$
Take From	Five apples were on the table. I ate two apples. How many apples are on the table now? $5-2=?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5-?=3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $?-2=3$
	Total Unknown	Addend Unknown	Both Addends Unknown ³
Put Together/ Take Apart.	Three red apples and two green apples are on the table. How many apples are on the table? $3+2=?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0, 5 = 1 + 4, 5 = 4 + 1, 5 = 2 + 3, 5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare	(“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Lucy have than Julie?	(Version with “more”): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have?	(Version with “more”): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?
	(“How many fewer?” version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with “fewer”): Lucy has three fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with “fewer”): Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

Blue shading indicates the four Kindergarten problem subtypes. Students in grades 1 and 2 work with all subtypes and variants (blue and green). Yellow indicates problems that are the difficult four problem subtypes students in grade 1 work with but do not need to master until grade 2.

¹ Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

² These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes or results in* but always does mean *is the same number as*.

³ Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10. ⁴ For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

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Table 2
Common Multiplication and Division Situations¹

	Unknown Product	Group Size Unknown	Number of Groups Unknown
	$3 \times 6 = ?$	$3 \times ? = 18$ and $18 \div 3 = ?$	$? \times 6 = 18$ and $18 \div 6 = ?$
Equal Groups	<p>There are 3 bags with 6 plums in each bag. How many plums are there in all?</p> <p>Measurement example: you need 3 lengths of string, each 6 inches long. How much string will you need all together?</p>	<p>If 18 plums are shared equally into 3 bags, then how many plums will be in each bag?</p> <p>Measurement example: you have 18 inches of string which you will cut into 3 equal pieces. How long will each piece of string be?</p>	<p>If 18 plums are to be packed 6 to a bag, then how many bags are needed?</p> <p>Measurement example: you have 18 inches of string which you will cut into pieces that are 6 inches long. How many pieces of string will you have?</p>
Arrays² Area³	<p>There are three rows of apples with 6 apples in each row. How many apples are there?</p> <p>Area example: what is the area of a 3 cm by 6 cm triangle?</p>	<p>If 18 apples are arranged into 3 equal rows, how many apples will be in each row?</p> <p>Area example: a rectangle has area of 18 square centimeters. If one side is 3 cm long, how long is a side next to it?</p>	<p>If 18 apples are arranged into equal rows of 6 apples, how many rows will there be?</p> <p>Area example: a rectangle has area of 18 square centimeters. If one side is 6 cm long, how long is the side next to it?</p>
Compare	<p>A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost?</p> <p>Measurement example: a rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?</p>	<p>A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost?</p> <p>Measurement example: a rubber band is stretched to be 18 cm long and is 3 times as long as it was at first. How long was the rubber band at first?</p>	<p>A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue?</p> <p>Measurement example: a rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?</p>
General	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

¹ The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

² The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: the apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.

³ Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

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Table 3 Properties of Operations

The variables a , b and c stand for arbitrary numbers in a given number system.
The properties of operations apply to the rational number system, the real number system and the complex number system.

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists $-a$ so that $a + (-a) = (-a) + a = 0$
Associative property of multiplication	$(a \times b) \times c = a \times (b \times c)$
Commutative property of multiplication	$a \times b = b \times a$
Multiplicative identity property of 1	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$

Table 4 Properties of Equality

The variables a , b and c stand for arbitrary numbers in the rational, real or complex number systems.

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$
Transitive property of equality	If $a = b$ and $b = c$, then $a = c$
Addition property of equality	If $a = b$, then $a + c = b + c$
Subtraction property of equality	If $a = b$, then $a - c = b - c$
Multiplication property of equality	If $a = b$, then $a \times c = b \times c$
Division property of equality	If $a = b$ and $c \neq 0$, then $a \div c = b \div c$
Substitution property of equality	If $a = b$, then b may be substituted for a in any expression containing a .

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Table 5 Properties of Inequality

The variables a , b and c stand for arbitrary numbers in the rational or real number systems.

Exactly one of the following is true: $a < b$, $a = b$, $a > b$
If $a > b$ and $b > c$ then $a > c$
If $a > b$, then $b < a$
If $a > b$, then $-a < -b$
If $a > b$, then $a \pm c > b \pm c$
If $a > b$ and $c > 0$, then $a \times c > b \times c$
If $a > b$ and $c < 0$, then $a \times c < b \times c$
If $a > b$ and $c > 0$, then $a \div c > b \div c$
If $a > b$ and $c < 0$, then $a \div c < b \div c$

**Table 6
Fluency Standards across All Grade Levels**

Grade	Coding	Fluency Standards
K	KY.K.OA.5	Fluently add and subtract within 5.
1	KY.1.OA.6	Fluently add and subtract within 10.
2	KY.2.OA.2 KY.2.NBT.5	Fluently add and subtract within 20. Fluently add and subtract within 100.
3	KY.3.OA.7 KY.3.NBT.2	Fluently multiply and divide within 100. Fluently add and subtract within 1000.
4	KY.4.NBT.	Fluently add and subtract multi-digit whole numbers using an algorithm.
5	KY.5.NBT.5	Fluently multiply multi-digit whole numbers (not to exceed four-digit by two-digit multiplication) using an algorithm.
6	KY.6.NS.2 KY.6.NS.3 KY.6.EE.2	Fluently divide multi-digit numbers using an algorithm. Fluently add, subtract, multiply and divide multi-digit decimals using an algorithm for each operation. Write, read and evaluate expressions in which letters stand for numbers.

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Counting and Cardinality

Standard: K.CC.1

- a. Count to 100 by ones and by tens
- b. Count backwards from 30 by ones.

Enduring Skills:

MP 7: Look for and make use of structure

MP 8: Look for and express regularity in repeated reasoning.

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
Difference between letter and number	Students verbally count forward by ones (1,2,3,4...) to 100	Recognize patterns with written numerals
One to One Correspondence	Students verbally count forward by tens (10, 20, 30...) to 100	Use dimes, fingers, number line and other manipulatives to count by 10s
	Students verbally count backwards by ones (30,29,28,27...) from 30.	State the number before and after a given number.

Coherence KY.K.CC.1→KY.1.NBT.1

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Counting and Cardinality

Standard: K.CC.2

Count forward beginning from a given number within the known sequence **within 100** (instead of having to begin at 1).

Enduring Skills:

MP 7: Look for and make use of structure

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Count in sequence from 1-100</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Students verbally count forward starting at a number other than one (58, 59, 60, 61, 62...)100.</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Produce the number word after a given number without dropping back.</p>
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Coherence KY.K.CC.2→KY.1.NBT.1

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Counting and Cardinality

Standard: K.CC.3

- a. Write numbers from 0 to 20.
- b. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Enduring Skills:

MP 2: Reason abstractly and quantitatively

MP 7: Look for and make use of structure.

MP 8: Look for and express regularity in repeated reasoning.

<p>Know: What content does the student need to know to demonstrate this standard?</p>	<p>Do: What skill must the student demonstrate?</p>	<p>Mastery: How does the student demonstrate the learning of the standard?</p>
<p>Count orally from 0-20</p>	<p>Students write all numerals in the range of 0-20 (1,2,3,4,5...) When students are given a written numeral, represent with objects within 20 (4...★★★★).</p>	<p>Match a collection of items with the appropriate numeral</p> <p>Write the number that represents a given number of objects from 0-20</p>

Coherence KY.K.CC.3→KY.1.NBT.1

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Counting and Cardinality

Standard: K.CC.4.a.b.c

Understand the relationship between numbers and quantities; connect counting to cardinality.

- a. 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.
- b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- c. Understand that each successive number name refers to a quantity that is one larger.

Enduring Skills:

MP 2: Reason abstractly and quantitatively

MP 8: Look for and express regularity in repeated reasoning.

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
<p>Numbers represent quantities</p> <p>Count sequentially to 20</p>	<p>Match each object with one and only one number name</p> <p>Start counting objects in a straight line then move them into other arrangements such as arrays, circles, etc....</p> <p>Students understand each object being counted is given only one number name and this name occurs in the correct sequence (one, two, three, four...).</p>	<p>Use manipulatives to explain their thinking:</p> <p>Through repeated experiences of adding one counter to an existing collection, students see that the total is one more and know this is true every time another counter is added.</p> <p>Once student concluded counting a group of objects in different arrangements, the student correctly identifies the amount of objects in that group (rather than recounting the group).</p> <p>Students verbally count by ones, connecting each number word with a quantity (or collection) as the count progresses.</p>

Coherence KY.K.CC.4→KY.1.OA.5

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Counting and Cardinality

Standard: K.CC.5

Given a number from 1-20, count out that many objects.

- a. Count to answer “how many?” questions **with** as many as 20 things arranged in a line, a rectangular array, or a circle,
- b. Count to answer “how many” questions **with** as many as 10 things in a scattered configuration.

Enduring Skills:

MP 2: Reason abstractly and quantitatively

MP 3: **Construct viable arguments and critique the reasoning of others.**

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
<p>Count orally and write sequentially to 20</p> <p>Match a numeral card with the number of items in a set</p> <p>Given a drawing of items such as flowers, teddy bears or cars, circle a number of items and write the numeral</p>	<p>Count out a number of items using a variety of concrete objects</p> <p>Given a numeral, count that number of items from a sample of a collection of items</p> <p>Draw a given number of items</p> <p>When presented with a collection (in the range of 1-20) the student connects that collection to the correct numeral.</p>	<p>When presented with a numeral (in the range of 1-20), the student creates a collection of a like amount.</p> <p>Verbally tell the meaning for "How many?"</p> <p>When presented with collection in structured arrangements (line, circle, array, and others) the student determines the quantity that collection by counting.</p> <p>When presented with collections in an unstructured arrangement the student determines the quantity of that collection by counting.</p>

Coherence KY.K.CC.5→KY.1.NBT.1

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Counting and Cardinality

Standard: 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.

Enduring Skills:

MP 1: Make sense of problems and persevere in solving them.

MP 3: Construct viable arguments and critique the reasoning of others

MP 6: Attend to precision

Know: What content does the student need to know to demonstrate this standard?	Do: What skill must the student demonstrate?	Mastery: How does the student demonstrate the learning of the standard?
Numbers equal quantity	Vocabulary of less than, greater than, or equal to	Explain that one set has more or less than another
Knowledge of greater than, less than, or equal to	Compare two collections (each containing up to 10 objects) to determine whether one collection is greater than, less than, or equal to the other.	Identify how many more or less
	Students use matching strategies (pairing items from the collections) or counting strategies (counting one collection and then the other.)	Recognize that one set may be the same as (equal to) another set

Coherence KY.K.CC.6→KY.K.MD.3

Note: Students do not need to use the relation symbols greater than (>), less than (<) and equal to (=) to compare groups of objects.

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Counting and Cardinality

Standard K.CC.7

Compare two numbers between 1 and 10 presented as written numerals.

Enduring Skills:

MP 2: Reason abstractly and quantitatively

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Vocabulary of less than, greater than, or equal to</p> <p>Identify how many more or less</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Explain that one set has more or less than another</p> <p>Recognize that one set may be the same as (equal to) another set</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>When presented with two numerals (between 1 and 10), students determine which numeral is greater than, less than, or equal to the other.</p> <p>Students express some mathematical reasoning regarding their determination (five is larger than three because it has two more.)</p>
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Coherence KY.K.CC.7→KY.1.NBT.3

Note: Students do not need to use the relation symbols greater than (>), less than (<) and equal to (=) to compare numbers between 1 and 10.

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Operations and Algebraic Thinking

Standard: K.OA.1

Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.

Enduring Skills:

MP 2: Reason abstractly and quantitatively.

MP 4: Model with mathematics

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
Count sequentially forward/backward	Adding is putting items together Subtracting is taking away Students flexibly model or represent addition and subtraction tasks across a range of contexts rather than just becoming proficient with a single model or representation. See Table 1	Analyze addition and subtraction problems to determine whether to "put together" or "take apart" Model an addition/subtraction problem given a real-life story Know the symbols (+, -, =) and the words and the math vocabulary they stand for: add, subtract, and equal

Coherence KY.K.OA.1→KY.K.OA.2

Note: Drawings need not show detail but accurately represent the quantities involved in the task.

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Operations and Algebraic Thinking

Standard: K.OA.2

Solve addition and subtraction word problems, and add and subtract within 10, by using objects or drawings to represent the problem.

Enduring Skills:

MP 5: Use appropriate tools strategically.

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Adding is putting items together</p> <p>Subtracting is taking away</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p style="color: red;">Students flexibly model or represent addition and subtraction situations or context problems (involving sums and differences up to 10).</p> <p style="color: red;">See Table 1</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Solve addition/subtraction word problems within 10 using objects and drawings</p> <p>Explain reasonableness of answers using appropriate addition and subtraction vocabulary</p>
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Coherence KY.K.OA.2→KY.1.OA.1

Note: Drawings need not show detail but accurately represent the quantities involved in the task.

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Operations and Algebraic Thinking


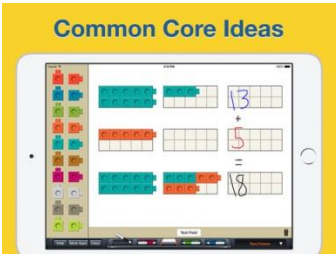

Standard: K.OA.3

Decompose numbers less than or equal to 10.

- a. Decompose numbers into two groups in more than one way by using objects or drawings and record each decomposition by a drawing or equation.
- b. Use objects or drawings to demonstrate equality as the balancing of quantities.

Enduring Skills:

- MP 2: Reason abstractly and quantitatively
- MP 4: Model with mathematics

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Adding is putting together</p> <p>Subtracting is taking away</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Decompose numbers less than or equal to 10 in more than one way</p> <p>When presented with a numeral or collection (10 or less), the student separates that amount into two groups or collections via drawings or objects.</p>  <p>Students decompose a group of seven objects into three and four, six and one, five and two, and write the related expressions.</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p>  <p>Describe their reasoning in solving problems</p> <p>Recognize mathematical symbols for addition (+), subtraction (-), and equal to, or same as (=) as well as the terms <i>total</i> and <i>difference</i></p> <p>Students represent an equation as the balance of quantities.</p> 
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Coherence KY.K.OA.3→KY.1.OA.6

Note: Drawings need not show detail, but accurately represent the quantities involved in the task.

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Operations and Algebraic Thinking

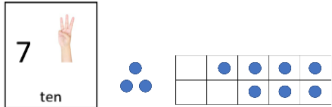
Standard: K.OA.4

For any number from 1 to 9, find the number that makes 10 when added to the given number, by using objects or drawings, and record the answer with a drawing or equation.

Enduring Skills:

MP 7: Look for and make use of structure.

MP 8: Look for and express regularity in repeated reasoning.

<p>Know: What content does the student need to know to demonstrate this standard?</p> <p>How to decompose numbers to 10.</p>	<p>Do: What skill must the student demonstrate?</p> <p>When presented with a numeral or collection of objects between 1-9, represent the corresponding number that makes 10 with objects or drawings.</p>	<p>Mastery: How does the student demonstrate the learning of the standard?</p> <p>Explain their thinking as they describe their models</p> <p>Match representations to expressions and equations provided by the teacher</p> <p>Students record these combinations using either drawings or numbers.</p> <p>Drawings need not show detail, but accurately represent the quantities involved in the task.</p> <div style="text-align: right;">  </div>
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Coherence KY.K.OA.4→KY.1.OA.6

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Operations and Algebraic Thinking

Standard: K.OA.5

Fluently add and subtract within 5.

Enduring Skills:

MP 2: Reason abstractly and quantitatively.

MP 7: Look for and make use of structure.

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Fluently decompose numbers within 5.</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Students solve addition and subtraction tasks (with sums and differences within 5) efficiently, accurately, flexibly, and appropriately.</p> <p><i>*Being fluent means students choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and explain their approaches and they produce accurate answers efficiently. *</i></p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Students express mathematical reasoning regarding their responses ('5-3 equals 2 because when you move three back, you land on two'.)</p>
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Coherence KY.K.OA.5→KY.1.OA.6

Note: Reaching fluency is an ongoing process that will take much of the year.

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Number Base Ten

Standard: K.NBT.1

Compose and decompose numbers from 11 to 19 using quantities (numbers with units) of ten ones and some further ones. Understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others.

MP 4: Model with Mathematics

MP 7: Look for and make use of structure

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
Numbers represent quantities Fluently decompose numbers within 10	Using numbers or representations, students use 10 units as an anchor to compose and decompose quantities (up to 19) Match representations with numerals 11-19	A student works with 16 counters, places 10 counters in a cup, and leaves 6 counters on the table, which represents the idea using the equation $16 = 10 + 6$. 16 triangles = 10 triangles + ^^^^^; 18 beans = 10 beans + 8 beans

Coherence KY.K.NBT.1→KY.1.NBT.2

Note: Drawings need not show detail, but accurately represent the qualities involved in the task.

Note: The language of the standard does not require students to actually create the ten unit (that is in grade 1), but they recognize and break apart a teen number into ten ones and some more ones.

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Kindergarten Mathematics

Measurement and Data

Standard: K.MD.1

Describe measurable attributes (length, height, weight, width, depth) of an object or a set of objects using appropriate vocabulary.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others.

MP 6: Attend to precision.

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Use Measurement terms such as Shorter, longer, etc</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Know that objects have measurable attributes and know what they are called, such as length and weight</p> <p>For a single object, students, verbally identify more than one attribute measured (wooden block – height, weight).</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Students will describe various attributes of a given object using measurement language such as “heavy” and/or “long/short”.</p>
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Coherence KY.K.MD.1→KY.1.MD.2

Pike County School District
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Measurement and Data

Standard: 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.

Enduring Skills:

MP 2: Reason Abstractly and Quantitatively

MP 6: Attend to precision

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
<p>More/less</p> <p>Taller (longer)/shorter</p> <p>Heavy/Light</p>	<p>Identify and describe various attributes of a given object.</p>	<p>Students consider and compare a common measurable attribute shared by two objects (Which cup is taller, and which is shorter? Which bucket of sand is heavier and which is lighter?)</p> <p>As students compare objects, they focus on a selected attribute, for example, length and then determine which object has more or less of that attribute, saying, this footprint is longer.</p>

Coherence KY.K.MD.1→KY.1.MD.1

Pike County School District
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Kindergarten Mathematics

Measurement and Data

Standard: K.MD.3

Classify and sort objects or people by attributes. Limit objects or people in each category to be less than or equal to 10.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others.

MP 6: Attend to precision.

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Determine different attributes of objects</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Sort objects based on attributes (possibility of more than one way to sort)</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>For a group of 10 (or less) objects/people, students compare and order objects according to a common measurable attribute (height, weight, length, width, depth) shared by the objects (arranging four blocks from heaviest to lightest; arranging classmates from tallest to shortest).</p> <p>As students describe attributes, they use precise shape or measurement language such as “has all straight sides” or “is shorter than a new pencil”</p>
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Coherence KY.K.MD.3→KY.1.MD.4

Pike County School District
Standards Mastery Document – Revised 2019
Kindergarten Mathematics

Measurement and Data

Standard: K.MD.4

Recognize and identify coins by name (penny, nickel, dime, quarter).

Enduring Skills:

MP 6: Attend to precision.

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
<p>Identify measurable attributes of coins (penny is copper, nickel, dime, quarter are silver, nickel is larger than penny etc.)</p>	<p>Students identify coins (penny, nickel, dime, quarter) when presented.</p> <p>When shown a nickel, name the coin as a nickel; select a nickel when presented with a group of different coins.</p>	<p>Compare/Contrast penny, nickel, dime, quarter</p> <p>Students understand that “nickel” is the name of a specific coin with a specific appearance and cannot be used to describe other coins of different appearances.</p>

Coherence KY.K.MD.4→KY.1.MD.3b

Note: Students need not identify the value of these coins, only names.

Pike County School District
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Kindergarten Mathematics

Geometry

Standard: K.G.1

Name and describe shapes in the environment

- a. Describe objects in the environment using names of shapes
- b. describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

Enduring Skills:

MP 6: Attend to precision

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Identify basic shapes</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>For objects in student’s environment, the student accurately provides a shape name (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). (“The clock on the wall is a circle.” “The desktop is a rectangle.”)</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Students use positional language to describe the relationships between objects (“The clock is above the bulletin board.” “My desk is next to the computer table.”)</p> <p>Students use language to describe characteristics of two-and three-dimensional shapes.</p>
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Coherence KY.K.G.1 →KY.K.G.4

Pike County School District
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Kindergarten Mathematics

Geometry

Standard: K.G. 2

Correctly name shapes regardless of their orientations or overall size.

Enduring Skills:

MP 7: Look for and make use of structure.

Know: <i>What content does the student need to know to demonstrate this standard?</i>	Do: <i>What skill must the student demonstrate?</i>	Mastery: <i>How does the student demonstrate the learning of the standard?</i>
<p style="color: red;">Identify basic shapes</p> <p style="color: red;">Use positional language to describe the relationship between objects.</p>	<p style="color: red;">Students identify and name shapes (squares, circles, triangles, rectangles, hexagon, cubes, cones, cylinders, and spheres) regardless of size, orientation, or positioning. (The classroom window is a rectangle and this paper is a rectangle, too.)</p>	<p style="color: red;">Students identify and DESCRIBE shapes (squares, circles, triangles, rectangles, hexagon, cubes, cones, cylinders, and spheres) regardless of size, orientation, or positioning. (The classroom window is a rectangle and this paper is a rectangle, too.)</p> <p style="color: red;">Students explain the location or position of an object does not change its attributes.</p>

Coherence KY.K.G.2→KY.K.G.4

Pike County School District
Standards Mastery Document – Revised 2019
Kindergarten Mathematics

Geometry

Standard: K.G.3

Identify shapes as two-dimensional or three-dimensional.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others.

MP 6: Attend to Precision

<p>Know: What content does the student need to know to demonstrate this standard?</p> <p>Identify basic shapes regardless of size or position.</p>	<p>Do: What skill must the student demonstrate?</p> <p>When presented with a shape or object, students determine whether it is two-dimensional (square, circle, triangle, rectangle, or hexagon) or three-dimensional (cube, cone, cylinder, sphere).</p>	<p>Mastery: How does the student demonstrate the learning of the standard?</p> <p>Students express mathematical reasoning regarding their responses. (The block is three-dimensional because it's thick and not flat like paper.)</p>
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Coherence KY.K.G.3→KY.1. G.1

Pike County School District
Standards Mastery Document – Revised 2019
Kindergarten Mathematics

Geometry

Standard: K.G.4

Describe the similarities, differences and attributes of two and three-dimensional shapes using different sizes and orientations.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others

MP 7: Look for and make use of structure

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Identify two-dimensional and three-dimensional shapes.</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Sort two-dimensional and three-dimensional shapes based on given attributes.</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>When considering two-dimensional shapes (square, circle, triangle, rectangle, hexagon) or objects and three-dimensional shapes (cubes, cone, cylinder, sphere) or object's students describe similarities, differences and attributes. ("The window and paper are both rectangles, but the window sits sideways, and my paper is long ways." "My book and my paper both look like rectangles, but my book is three-dimensional because it is thicker.")</p>
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Coherence KY.K.G.4→KY.1. G.1

Pike County School District
Standards Mastery Document – Revised 2019
Kindergarten Mathematics

Geometry

Standard: K.G.5

Model shapes in the world by building shapes from components and drawing shapes.

Enduring Skills:

MP 1: Make sense of problems and persevere in solving them.

MP 5: Use appropriate tools strategically

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Recognize and identify (two-dimensional and three-dimensional)</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Analyze the attributes of real world objects</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Using a variety of tools, students construct and draw models of shapes (square, circle, triangle, rectangle, hexagon, cube, cone, cylinder, sphere) in the world around them. Students create shapes with the materials that include but are not limited to straws, pipe cleaners, popsicle sticks or clay and describe the shape they create. (Students use sticks and a ball to replicate an ice cream cone.)</p> <p>As students construct and draw shapes, they recognize they are putting together shapes to form new larger shapes, just as they combine objects to have more objects.</p>
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Coherence KY.K.G.5→KY.1. G.1

Pike County School District
Standards Mastery Document – Revised 2019
Kindergarten Mathematics

Geometry

Standard: K.G.6

Compose simple shapes to form larger shapes.

Enduring Skills:

MP 3: Construct viable arguments and critique the reasoning of others.

MP 5: Use appropriate tools strategically.

<p>Know: <i>What content does the student need to know to demonstrate this standard?</i></p> <p>Identify simple shapes and their attributes.</p>	<p>Do: <i>What skill must the student demonstrate?</i></p> <p>Students explore by using simple shapes to construct a larger shape. (Students arrange paper triangles to form a rectangle. Students arrange triangle pattern blocks to form a hexagon.)</p>	<p>Mastery: <i>How does the student demonstrate the learning of the standard?</i></p> <p>Describe the newly constructed shape.</p> <p>Identify the reasoning behind the choice of simple shapes that were used to construct the new larger shape.</p>
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Coherence KY.K.G.6→KY.1. G.2