



GRADE K MATHEMATICS

CURRICULUM

CARLISLE AREA SCHOOL DISTRICT

DATE OF BOARD APPROVAL: AUGUST 18, 2022

COURSE OVERVIEW

Title:	Grade K Mathematics
Grade Level:	K
Level:	N/A
Length:	90 Minute Blocks
Duration:	165-180 Days
Frequency:	Daily
Pre-Requisites:	N/A
Credit:	N/A
Description:	<p>This curriculum document is part of a vertically-aligned sequence of curricula from grades Kindergarten through five. Each grade level is aligned to the Pennsylvania Mathematics Standards, and addresses the four curricular domains: Numbers and Operations, Algebraic Thinking, Geometry, and Measurement and Data. Throughout elementary school, these courses are designed to develop students' concrete and abstract understanding of mathematics, foster strong number sense, and strengthen the ability to solve increasingly complex problems using a variety of methods and strategies. Ultimately, the objective is to empower students as mathematical thinkers and communicators.</p> <p><i>*Throughout document, italicized vocabulary appears in PSSA Mathematics Glossary.</i></p>

COURSE TIMELINE

UNIT	TITLE	KEY CONCEPTS	DURATIONS (DAYS)
	Number and Sense Fluency	<ul style="list-style-type: none"> Ongoing skill development 	
1	Counting and Cardinality	<ul style="list-style-type: none"> Recognizing and writing numbers Comparing numbers to 10 	35 Days
2	Numbers and Operations in Base 10	<ul style="list-style-type: none"> Recognizing and writing numbers to 19 Comparing numbers, understanding “more” and “less” Counting to 100 	35 Days
3	Operations and Algebraic Thinking	<ul style="list-style-type: none"> Composing/adding numbers to 10 Decomposing/subtracting numbers to 10 Solving problems involving addition and subtraction 	60 Days
4	Measurement	<ul style="list-style-type: none"> Comparing attributes of length, area, weight, and capacity 	10 Days
5	Geometry	<ul style="list-style-type: none"> Classifying objects by color, shape, and attribute Understanding 2- and 3-dimensional shapes 	25 Days

DISCIPLINARY SKILLS and PRACTICES

DISCIPLINARY SKILL/PRACTICE	DESCRIPTION
Make sense of problems and persevere in solving them	Make conjectures about how real world application problems may be solved, monitor progress toward a solution, and make adjustments in the problem solving plan if necessary.
Reason abstractly and quantitatively	Estimate and check answers to problems and determine the reasonableness of results.
Construct viable arguments and critique the reasoning of others	Justify and communicate conclusions effectively and respond to arguments logically.
Model with mathematics	Use mathematics to model real world problems, interpreting the mathematical results in the context of the situation.
Use appropriate tools strategically	Consider the tools available in solving problems and understand the insights gained by using the tool as well as the limitation of the tool.
Attend to precision	Calculate accurately and efficiently within the context of problems and communicate results precisely.
Look for and make use of structure	Examine problems to discern a pattern or structure and utilize this finding in similar problems.
Look for and express regularity in repeated reasoning	Notice repeated calculations or processes and generalize from those insights in order to solve problems.

**Adapted from PA Academic Standards for Mathematics.*

FLUENCY UNIT

Unit Title	Number Sense and Math Fluency (Ongoing)		
Unit Description	This is an ongoing mathematics fluency unit that is designed to be taught and reviewed consistently throughout the school year.		
Unit Assessment	N/A		
Essential Question	Learning Goals	Content and Vocabulary	Standards
Fluency Skills	<input type="checkbox"/> Identify numbers visually (1-10). <input type="checkbox"/> Count (0-100). <input type="checkbox"/> Master addition facts (0-5). <input type="checkbox"/> Master subtraction facts (0-5). <input type="checkbox"/> Routinely review calendars, days of the week, the date, weather, etc. as related to math.	Vocabulary subitize, ten frame, fingers, dice, dominoes, numerals, tally marks	CC.2.1.K.A.1 Know number names and write and recite the count sequence.

UNIT 1

Unit Title	Counting and Cardinality (35 Days)		
Unit Description	Students will learn the meaning of numbers to 10 with a focus on embedded numbers and relationships to 5 using fingers, cubes, drawings, and groups. While continuing to practice fluency with numbers to 10 and with numbers 1–10 still developing, counting to 20 begins. Students will also develop a stronger understanding of 1:1 correspondence when counting. Students then investigate patterns of “1 more” and “1 less” using models such as the number stairs, and to identify greater than, less than, how many more and how many fewer.		
Unit Assessment	Common Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
Can I recognize and write the numbers 0-10?	<input type="checkbox"/> State number names and why are they important. <input type="checkbox"/> Recognize and write the numbers.	Vocabulary numbers, count, ten frame	CC.2.1.K.A.1 Know number names and write and recite the count sequence.
How do I count to find out “how many”?	<input type="checkbox"/> Count to find out “how many.”	Vocabulary numbers, set Example Strategies counting forward and backwards, ten frame, counting a set or pattern, visually seeing the same quantity no matter the arrangement	CC.2.1.K.A.2 Apply one-to-one correspondence to count the number of objects.

<p>How do I compare and order numbers to 10?</p>	<ul style="list-style-type: none"><input type="checkbox"/> Order Numbers 1-10<input type="checkbox"/> Compare sets to determine more, less, and the same.<input type="checkbox"/> Compare numbers to 10.<input type="checkbox"/> Compare and answer how many more and how many fewer.	<p>Vocabulary compare, less, more, same</p>	<p>CC.2.1.K.A.3 Apply the concept of magnitude to compare numbers and quantities.</p>
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UNIT 2

Unit Title	Numbers and Operations in Base 10 (35 Days)		
Unit Description	Students will solidify the meaning of numbers to 20. They will apply their skill with and understanding of numbers within 10 to teen numbers, which are decomposed as “10 ones and some ones.” For example, “12 is 2 more than 10.” The number 10 is special; it is the anchor that will eventually become the “ten” unit in the place value system. Students will also work on their ability to rote count to 100 in several ways.		
Unit Assessment	Common Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do I recognize and write the numbers to 19?	<input type="checkbox"/> Recognize and write the numbers to 19. <input type="checkbox"/> Extend a group of 10 to 19 (Ex. 10 plus 4 is 14).	Vocabulary teen number, decompose, compose, double ten frame	CC.2.1.K.A.1 Know number names and write and recite the count sequence. CC.2.1.K.B.1 Use place value to compose and decompose numbers within 19.
How do I compare and order numbers to 19?	<input type="checkbox"/> Use manipulatives or draw a picture to match numbers to 19. <input type="checkbox"/> Compare two quantities to decide which is more or less by looking at the numbers.	Vocabulary compare, sets, more, less, same, fewer	CC.2.1.K.A.2 Apply one to one correspondence to count the number of objects. CC.2.1.K.A.3 Apply the concept of magnitude to compare numbers and quantities.

Can I count to 100?	<input type="checkbox"/> Count to 100. <input type="checkbox"/> Count by 10's to 100. <input type="checkbox"/> Start and stop count to 100 beginning at any number.	Vocabulary skip count, start/stop count	CC.2.1.K.A.1 Know number names and write and recite the count sequence.
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UNIT 3

Unit Title	Operations and Algebraic Thinking (60 Days)		
Unit Description	Students will be exposed to addition symbols and the understanding of combinations of sets up to 10. They will have practice different addition strategies to solve problems (objects, fingers, drawing pictures, number paths, and counting on). Students will then move on to subtraction. They will be able to recognize and identify subtraction symbols. Then they will practice various subtraction strategies to solve problems (objects, pictures, fingers, number path, count on). Students will learn the meaning of addition and subtraction. They begin building fluency with addition and subtraction facts—a major gateway to later grades.		
Unit Assessment	Common Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do I compose/add numbers 0-10?	<input type="checkbox"/> Use manipulatives or draw a picture to combine sets to 10. <input type="checkbox"/> Use numbers to combine set to make 10.	Vocabulary combine, addition, strategies, add, and, plus sign, equal sign, combinations Example Strategies number path, fingers, objects, pictures, counting on	CC.2.2.K.A.1 Extend the concepts of putting together and taking apart to add and subtract within 10.
How do I decompose/ subtract numbers 0-10?	<input type="checkbox"/> Use manipulatives or draw a picture to decompose a set of 10. <input type="checkbox"/> Use numbers to decompose sets of 10.	Vocabulary subtraction sign, take away, subtract, combinations Strategies fingers, picture, objects, number path, count back	CC.2.2.K.A.1 Extend the concepts of putting together and taking apart to add and subtract within 10.

<p>How do I compose/add and decompose/ subtract numbers 0-10?</p>	<p><input type="checkbox"/> Recognize and write addition equations to represent real world problems.</p> <p><input type="checkbox"/> Recognize and write subtract equations to represent real world problems.</p> <p><input type="checkbox"/> Solve for the unknown in addition and subtraction problems.</p>	<p>Vocabulary unknown, addition, subtraction</p>	<p>CC.2.2.K.A.1 Extend the concepts of putting together and taking apart to add and subtract within 10.</p>
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UNIT 4

Unit Title	Measurement (10 Days)		
Unit Description	Students will learn about measurement attributes and then apply their knowledge to sort into groups. Students will move into understanding and identifying patterns, finally transitioning into extending patterns. Students begin to experiment with comparison of length, weight, and capacity. They first learn to identify the attribute being compared, moving away from non-specific language such as “bigger” to “longer than,” “heavier than,” or “more than.” Comparison begins with developing the meaning of the word “than” in the context of “taller than,” “shorter than,” “heavier than,” “longer than,” etc.		
Unit Assessment	Common Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do I describe an object by comparing its attributes?	<input type="checkbox"/> Describe and compare attributes of length, area, weight and capacity of everyday objects.	Vocabulary size	CC.2.4.K.A.1 Describe and compare attributes of length, area, weight, and capacity of everyday objects.

UNIT 5

Unit Title	Geometry (25 Days)		
Unit Description	Students learn to identify and describe squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres. Students build shapes from components, analyze and compare them, and discover that they can be composed of smaller shapes, just as larger numbers are composed of smaller numbers.		
Unit Assessment	Common Assessment		
Essential Question	Learning Goals	Content and Vocabulary	Standards
How do I classify objects?	<input type="checkbox"/> Sort by color, shape, size, and attribute. <input type="checkbox"/> Sorting by more than one attribute.	Vocabulary sort, attribute	CC.2.4.K.A.4 Classify objects and count the number of objects in each category.
How do I identify and describe two- and three-dimensional shapes?	<input type="checkbox"/> Identify, describe, and draw two- and three-dimensional shapes.	Vocabulary circle, <i>square</i> , <i>triangle</i> , <i>rectangle</i>	CC.2.3.K.A.1 Identify and describe two – and three- dimensional shapes. CC.2.3.K.A.2 Analyze, compare, create, and compose two- and three-dimensional shapes.

ACCOMMODATIONS AND MODIFICATIONS

Adaptations or modifications to this planned course will allow exceptional students to earn credits toward graduation or develop skills necessary to make a transition from the school environment to community life and employment. The I.E.P. team has determined that modifications to this planned course will meet the student's I.E.P. needs.

Adaptations/Modifications may include but are not limited to:

INSTRUCTION CONTENT

- Modification of instructional content and/or instructional approaches
- Modification or deletion of some of the essential elements

SETTING

- Preferential seating

METHODS

- Additional clarification of content
- Occasional need for one to one instruction
- Minor adjustments or pacing according to the student's rate of mastery
- Written work is difficult, use verbal/oral approaches
- Modifications of assignments/testing
- Reasonable extensions of time for task/project completion
- Assignment sheet/notebook
- Modified/adjusted mastery rates
- Modified/adjusted grading criteria
- Retesting opportunities

MATERIALS

- Supplemental texts and materials
- Large print materials for visually impaired students
- Outlines and/or study sheets
- Carbonless notebook paper
- Manipulative learning materials
- Alternatives to writing (tape recorder/calculator)