

DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Mathematics

Grade Level: Kindergarten

Date of Board Approval: 2017

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Planned Instruction

Title of Planned Instruction: Grade K Mathematics

Subject Area: Mathematics

Grade(s): K

Course Description:

The Kindergarten mathematics course covers the Pennsylvania Common Core Math Standards that make sense of problems and persevere in solving them, construct viable arguments and critique the reasoning of others, use appropriate tools strategically, look for and make use of structure, reason abstractly and quantitatively, model with mathematics, attend to precision, and look for and express regularity in repeated reasoning.

Time/Credit for the Course: Full Course

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Curriculum Map

1. Marking Period One

Numbers and Operations in Base Ten

A) Counting and Cardinality

- Represent, Count and Write Numbers 0-5, (20 Days)
- Compare Numbers to 5 (10 Days)
- Represent, Count and Write Numbers 6-9 (15 Days)

2. Marking Period Two

Numbers and Operations in Base Ten

Algebraic Concepts

A) Counting and Cardinality

- Represent and Compare Numbers to 10 (13 days)
- Addition (26 Days)
- Subtraction ((6 Days)

3. Marking Period Three:

Numbers and Operations

Algebraic Concepts

- Subtraction Continued (19 days)
- Represent, Count, and Write Numbers 11-19, (20 Days)
- Represent, Count, and Write 20 and Beyond (6 Days)

4. Marking Period Four:

Geometry

Measurement and Data

Algebraic Concepts

- Continued Represent, Count, and Write 20 and Beyond (9 Days)
- Identify and Describe 2D shapes (7 Days)
- Identify and Describe 3D Shapes (8 days)
- Measurement (6 days)
- Classify and Sort Data (4 Days)
- Getting Ready for Grade 1 (11 Days)
 - Add on a ten frame
 - Part-Part- Whole
 - Equal Sets
 - Related Addition Equations
 - Subtract on a Ten Frame
 - Missing Part
 - Related Subtraction Equations

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Curriculum Plan

Mathematical Standard Areas:

Numbers and Operations

Counting and Cardinality

Numbers and Operations in Base 10

Standards Addressed: CC.2.1. K.A.1, CC.2.1. K.A.2

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

- Understand the relationship between numbers and quantities; connect counting to cardinality. 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.
- Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).
- 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.
- 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.
- 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).
- 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.

Objectives:

- Model and count to tell the number of objects 0–5. (DOK Level 2)
- Represent objects 0–5 with a number name and a written numeral. (DOK Level 2)
- Solve problems by using the strategy make a model. (DOK Level 3)
- Model and count to tell the number of objects 6-9 (DOK Level 2)
- Represent objects 6-9 with a number name and a written numeral (DOK Level 2)
- Solve problems by using the strategy draw a picture (DOK Level 3)
- Use matching and counting strategies to compare sets to 5. (DOK Level 1)
- Construct a model to solve problems using a matching strategy. (DOK Level 3)

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Curriculum Plan

Mathematical Standard Areas:

Numbers and Operations

Counting and Cardinality

Numbers and Operations in Base 10

Algebraic Concepts

Operations and Algebraic Thinking

Standards Addressed: CC.2.1. K.A.1, CC.2.1. K.A.2, CC.2.1. K.A.3, CC.2.2. K.A.1
CC.2.1. K.A.1, CC.2.1. K.A.2, CC.2.1. K.A.3, CC.2.1. K.B.1, CC.2.2. K.A.1, CC.2.4. K.A.4

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

- 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.
- 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 R or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
- Write numbers from 0-20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
- 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.
- Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- 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.
- Compare two numbers between 1 and 10 presented as written numerals.
- Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g. claps), acting out situations, verbal explanations, expressions, or equations.

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(Drawings need not show details, but should show the mathematics in the problem.)

- Fluently add and subtract within 5.
- 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.
- Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- 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 $5 = 4 + 1$).
- Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations

Objectives:

- Model, count, and represent objects to 10 with a number name and a written numeral. (DOK - Level 1)
- Use a drawing to make 10 from a given number. (DOK - Level 1)
- Count forward to 10 from a given number. (DOK - Level 1)
- Use counting strategies to compare sets of objects. (DOK - Level 3)
- Solve problems by using the strategy *make a model*. (DOK - Level 3)
- Use expressions to represent addition. (DOK - Level 1)
- Use objects and drawings to solve addition word problems and record the equations. (DOK - Level 1)
- Decompose numbers into pairs in more than one way and record each decomposition with an equation. (DOK - Level 2)
- Solve problems by using the strategy *act it out*. (DOK - Level 3)
- Use objects and drawings to solve subtraction word problems and record the equations. (DOK -Level 2)
- Understand addition as putting together or adding to and subtraction as taking apart or taking from to solve word problems. (DOK Level 1)

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Curriculum Plan

Mathematical Standard Areas:

Numbers and Operations

Counting and Cardinality

Numbers and Operations in Base Ten

Standards Addressed: CC.2.1. K.A.1, CC.2.1. K.A.2, CC.2.1. K.B.1, CC.2.1. K.A.1, CC.2.1. K.A.2, CC.2.1. K.B.1

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

- 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 (e.g., $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
- 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).
- 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.
- 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).
- Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- 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.
- Count to 100 by ones and by tens.

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Objectives:

- Use objects to decompose numbers 11 through 19 into ten ones and some further ones. (DOK -Level 1)
- Represent 11 to 19 objects with number names and written numerals. (DOK- Level 2)
- Solve problems by using the strategy draw a picture. (DOK- Level 3)
- Model and count with objects to show number 20 and Beyond (DOK-Level 2)
- Represent 20 objects and more with a number name and a written numeral (DOK- Level 2)
- Count forward to 20 from a given number (DOK- Level 1)
- Know the count sequence when counting to 50 and to 100 by ones and tens (DOK- Level 1)
- Solve problems by using the strategy *make a model* (DOK- Level 3)

Curriculum Plan

Mathematical Standard Areas:

Geometry

Geometry

Measurement, Data, and Probability

Measurement and Data

Algebraic Concepts

Operations and Algebraic Thinking

Standards Addressed: CC.2.3. K.A.1, C.C.2.3.K.A.2, CC.2.4. K.A.4, C.C.2.2.K.A.1, CC.2.2.1. A.1

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

- Correctly name shapes regardless of their orientations or overall size.
- 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).
- Compose simple shapes to form larger shapes.
- 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).
- Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- 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.
- 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.
- Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- Classify objects into given categories; count the numbers of objects in each category and

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sort the categories

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Objectives:

- Identify, name, describe, and compare two-dimensional shapes including square, circle, triangle, rectangle, and hexagon. (DOK Level 1)
- Solve problems by using the strategy draw a picture. (DOK- Level 3)
- Identify, name, describe, and compare three-dimensional shapes including cube, cone, cylinder, and sphere. (DOK Level 2)
- Analyze, compare, create, and compose shapes. (DOK Level 4)
- Solve problems by using the strategy use logical reasoning. (DOK Level 1)
- Compare the length, height, and weight of two objects. (DOK - Level 2)
- Describe several measurable attributes of a single object. (DOK - Level 1)
- Solve problems by using the strategy *draw a picture*. (DOK - Level 3)
- Classify objects by color, shape, and size and count the number of objects in each category (DOK- Level 2)
- Construct and read a graph to count objects that have been classified into categories (DOK- Level 2)
- Add facts to 1 on a ten frame (DOK Level 1)
- Find the parts that make the whole (DOK Level 1)
- Model and write doubles facts (DOK Level 3)
- Identify equivalent (DOK Level 1)
- Subtract from 10 on a ten frame (DOK Level 1)
- Find the missing part that makes the whole in subtraction (DOK 1)
- Identify equivalent subtraction expressions (DOK Level 1)

Assessments:

- See District Wide Assessment Plan
- Core program assessments
- Teacher observation, questions, discussions

Extensions:

- Core program resources
- Math Seeds
- iPad apps
- Web-based educational activities

Correctives:

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- Core program resources
- Math Seeds
- iPad apps
- Web-based educational activities

Materials and Resources:

- Core program resources
- Math Seeds
- iPad apps
- Web-based educational activities
- SMART Exchange