Mathematics
Kindergarten

CURRICULUM GUIDE
Approved
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This curriculum may be modified through varying techniques, strategies and materials, as per an individual student's Individualized Education Plan (IEP).

Approved by the Insert district Board of Education
At the regular meeting held on August 22, 2017
And
Aligned with the New Jersey Student Learning Standards

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Philosophy and Rationale

Mathematics is an essential subject for individuals to become productive members of society. At the kindergarten level, students are given the number sense foundation necessary for continued mathematical instruction. In the Great Meadows Regional School District, we seek to create a vital community of learners. We believe that a solid foundation in counting, number recognition, adding, subtracting, shape recognition, mathematical language, and problem solving will help students learn more complex mathematical concepts in their continued education. Students explore numbers, counting, shapes, data collection, and mathematical language through engaging activities. Through self-reflection, collaboration with peers, teacher conferences, and assessments, students discover themselves as effective mathematicians through a multitude of shared learning experiences in a supportive and positive learning environment.

Mission Statement

The Great Meadows Regional School District will provide quality educational opportunities that ensure the individual success of all students within a safe and supportive environment and to build lifelong learners who will met society's challenges into an beyond the 21st century. To that end, it is anticipated that all students will achieve the New Jersey Student Learning Standards at all grade levels.

Scope and Sequence

This curriculum is divided into three units which span the entire school year (180 days). The units are grouped based on academic standards.

Unit 1 covers Numbers and Operations, approximately 120 days of concentrated instruction, this unit is covered all 180 days
Unit 2 covers Measurement and Data, approximately 30 days
Unit 3 covers Geometry and Positioning, approximately 30 days

Each of the three units focuses on a specific content area, however there is scaffolding that links each unit.

I. Unit 1: Math: Critical Area 1: Number and Operations

Stage 1: Desired Results

Content Standards:

Mathematics: Counting and Cardinality

K.CC.A.1: Count to 100 by 1's and 10's.
K.CC.A.2: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
K.CC.A.3: Write numbers from 0-20. Represent a number of objects with written numeral 0-20 (with 0 representing a count of no objects).
K.CC.B.4: Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4a: When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.CC.B.4b: 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.
K.CC.B.4c: Understand that each successive number name refers to a quantity that is one larger.
K.CC.B.5: Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.
K.CC.C.6: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
K.CC.C.7: Compare two numbers between 1 and 10 presented as written numerals.

Mathematics: Understand addition, and understand subtraction

K.OA.A.1: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
K.OA.A.2: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
K.OA.A.3: Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
K.OA.A.4: For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
K.OA.A.5: Fluently add and subtract within 5.

Mathematics: Work with numbers 11-19 to gain foundations for place value

K.NBT.A.1: Compose and decompose numbers from 11 to 19 into tens ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Essential Questions:

How is number order helpful to us and why do we count?

How do I represent numbers using drawings and equations?

Enduring Understandings:

Numbers have names and we use them to count.
Relationships between number and quantities: connect counting to cardinality.
Knowledge of numbers 0-10.
Counting is used to find how many or how much a quantity represents.
The last number name said is the total number of objects counted.
Counting one more will be the next larger number.
Written numerals represent an amount.
Comparing quantity of numbers can be described as less than, greater than, or equal to.

The quantity of numbers can be combined in different groups of numbers which can be explored through adding and subtracting.
You use addition to put groups together and find how many in all.
You use subtraction to find the difference between two numbers and take away from a group.
You can use objects and/or drawings to represent and solve addition and subtraction problems.
Teen numbers are composed of a group of “ten and some more.”
Numbers can be represented with drawings and equations.

Knowledge and Skills:

With prompting and support, students will be able to:

- Write numbers 0-100.
- Represent a number of objects with a written numeral 0-20.
- Represent a number with objects/manipulatives.
- Count out a number of objects from 1-20.
- Count groups of objects up to 20.
- Compare two numbers between 0 and 10 presented as numerals.
- Rote count to 100.

- Count forward from a given number within the known sequence (count on).
- Fluently add and subtract numbers from 0-5.
- Solve addition and subtraction problems using numbers 0-10 using objects and or drawings.
- Compose and decompose teen numbers into groups of “ten ones and more ones.”
- Record compositions and decompositions using drawings and equations.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations Benchmarks (embedded student proficiencies)

Students will show evidence of understanding by completing daily math calendar activities such as counting and identifying numbers, daily counting activities including counting by ones and skip counting by 2’s, 5’s, and 10’s. Students will also identify place value each day through tracking the days of school throughout the year. They will work on addition and subtraction towards the end of the year as their number sense gets stronger. Numbers and Operations are used by the students throughout the entire year, even during geometry the students are counting sides and vertices of shapes and while measuring they are again counting and identifying numbers.

Assessment Methods (formative, summative, other evidence and/or student self-assessment)

Curriculum Assessments, student workbook, teacher observation of student work completion, Re-teach and Enrich activities, classwork, class discussions, interactive games, Quick Checks, Online math activities, Mid-Chapter Checkpoints, “Show What You Know”

Stage 3: Learning Plan

Students will be engaged through large and small group discussion allowing students to revise, rethink, and refine their understanding of topics covered. Differentiation will be provided through written, visual, auditory and hands-on activities to meet all learning styles. Students will be provided with individualized instruction as needed. Introduction of new vocabulary will help students express their ideas, opinions, and feelings. For example, students will use five and ten frames, writing explanations in show what you know, answering directed questioning and responses, completing student activity pages. Students will complete daily calendar and weather activities which include counting and ordering numbers.

In this Unit, kindergartners will practice the 21st Century Skills of Communication and Collaboration. We also focus on many Life and Career Skills by supporting students’ interactions with peers and teachers throughout their school day.

Time Allotment

Approximately 120 days.
This standard is covered throughout the majority of the year.

Resources
Current District Curriculum, Youtube math videos ie: Jack Hartmann, Math on the Spot videos, Chapter Resources, Manipulatives ie: counters, cubes, dice, etc., five and ten frames, Read Alouds.

II. Unit 2: Math: Critical Area 2: Measurement and Data

Stage 1: Desired Results

Content Standards:

Mathematics:

K.MD.A.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more or” / “less of” the attribute, describe the difference.

Mathematics: Classify objects and count the number of objects in each category

K.MD.B.3: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Essential Questions:

Why is it important to compare objects by length, weight, and height?

How does sorting help you display information?

Enduring Understandings:

Objects have measurable attributes.
We can compare and describe objects by length, capacity, and weight.
Information can be organized into graphs.
Graphs help us understand information more easily.

Knowledge and Skills:

With prompting and support, students will be able to:

- Identify and compare measurable attributes.
- Classify objects into categories.
- Count the number of objects in a category.
- Sort objects into categories.
- Explore non-standard and standard measuring tools.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations

Benchmarks (embedded student proficiencies)

Students will show evidence of understanding by describing attributes of objects and events. With guidance and support students will represent and interpret data.

Assessment Methods (formative, summative, other evidence and/or student self-assessment)

Assessments, student workbook, teacher observation of student work completion, Re-teach and Enrich activities, classwork, class discussions, interactive games, Quick Checks, Online Math Activities, Mid-Chapter Checkpoints, "Show What You Know," Classroom calendar, weather graph, Calendar/weather and temperature packets.

Stage 3: Learning Plan

Students will demonstrate understanding of measurement by comparing measurable attributes. Students will be able to make sense of data and persevere in interpreting them and reason abstractly and quantitatively. Students will use appropriate tools to solve problems. Differentiation will be provided through written, visual, auditory and hands-on activities to meet all learning styles. Students will be provided with individualized instruction as needed. Introduction of new vocabulary will help students express their ideas, opinions, and feelings. Think, Discuss, Share activities allow students to participate in collaborative conversations with peers and adults in small and large groups to plan their ideas.

In this Unit, kindergarteners will practice the 21st Century Skills of Communication and Collaboration. We also focus on many Life and Career Skills by supporting students' interactions with peers and teachers throughout their school day.

Time Allotment

Approximately 30 days

Resources

Current District Curriculum, Student books, Monthly Calendar/weather/temperature packet, timers, Classroom calendar, Classroom weather graph, rulers, Number grids, Number lines, Online Resources.

III. Unit 3: Math: Critical Area 3: Geometry and Positions

Stage 1: Desired Results

Content Standards:

Mathematics: Identify and describe shapes

K.G.A.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
K.G.A.2: Correctly name shapes regardless of their orientation or overall size.
K.G.A.3: Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Mathematics: Analyze, compare, create, and compose shapes

K.G.B.4: Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/ "corners") and other attributes (e.g., having sides of equal length).
K.G.B.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
K.G.B.6: Compose simple shapes to form larger shapes.

Essential Questions:

Why is it important to describe similarities, differences, and attributes of shapes?

How are positional words useful in real life?

Enduring Understandings:

2D and 3D shapes have names regardless of their orientation or size.
2D shapes are flat and 3D shapes are solid.
Attributes are used to compare and analyze shapes.
Positional words can be used to describe relative positions in a real-life environment.
Basic shapes are used to create complex shapes.

Knowledge and Skills:

With prompting and support, students will be able to:

- Identify, compare, compose, describe, and create 2D and 3D shapes.
- Describe the relative position of objects using terms such as above, below, beside, etc.

Stage 2: Evidence of Understanding, Learning Objectives and Expectations
Benchmarks (embedded student proficiencies)

Students will demonstrate their understanding by using language to describe similarities, differences and attributes of shapes. They will compose simple shapes to form new shapes. They will identify, create, and sort 2D and 3D shapes. Students will be able to describe the relative position of objects using terms such as above, below, beside, etc.

Assessment Methods (formative, summative, other evidence and/or student self-assessment)

Teacher Created Assessments, Curriculum Assessments, Student workbook, teacher observation of student work completion, Re-teach and Enrich activities, classwork, class discussions, interactive games, Quick Checks, Online Math Activities, Mid-Chapter Checkpoints, "Show What You Know," Classroom calendar, weather graph, Calendar/weather and temperature packets.

Stage 3: Learning Plan

Students will be engaged through large and small group discussions allowing students to revise, rethink, and refine their understanding shapes and positions. Differentiation will be provided through written, visual, auditory and hands-on activities to meet all learning styles. Students will be provided with individualized instruction as needed. Introduction of new vocabulary will help students express their ideas, opinions, and feelings. Think, Discuss, Share activities allow students to participate in collaborative conversations with peers and adults in small and large groups to plan their ideas. With prompting and support, students will identify and describe 2D and 3D shapes. They will be able to create basic shapes and make new shapes by putting basic shapes together. Students will be able to use positional words to describe the location of objects.

In this Unit, kindergarteners will practice the 21st Century Skills of Communication and Collaboration. We also focus on many Life and Career Skills by supporting students' interactions with peers and teachers throughout their school day.

Time Allotment

Approximately 30 days

Resources

Current District Curriculum, Student books, Tangrams, tangram puzzles, 2D and 3D shapes, "Rosie's Walk" and other Read Alouds, Computer games, online resources, real life outings and experiences.

http://www.state.nj.us/education/cccs/

Integration of 21st Century Theme(s)

The following websites are sources for the following 21st Century Themes and Skills:
http://www.nj.gov/education/code/current/title6a/chap8.pdf
http://www.p21.org/about-us/p21-framework .
http://www.state.nj.us/education/cccs/standards/9/index.html

21st Century Interdisciplinary Themes (into core subjects)
- **Global Awareness**
- **Financial, Economic, Business and Entrepreneurial Literacy**
- **Civic Literacy**
- **Health Literacy**
- **Environmental Literacy**

Learning and Innovation Skills
- **Creativity and Innovation**
- **Critical Thinking and Problem Solving**
- **Communication and Collaboration**

Information, Media and Technology Skills
- **Information Literacy**
- **Media Literacy**
- **ICT (Information, Communications and Technology) Literacy**

Life and Career Skills
- **Flexibility and Adaptability**
- **Initiative and Self-Direction**
- **Social and Cross-Cultural Skills**
- **Productivity and Accountability**
- **Leadership and Responsibility**

Integration of Digital Tools

- **Classroom computers/laptops**
- **Technology Lab**
- **FM system**
- **Other software programs**