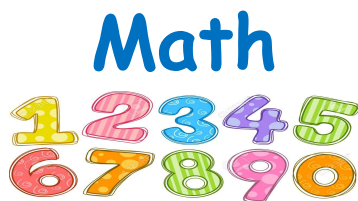


GLEN RIDGE PUBLIC SCHOOLS

Curriculum Guide 2017



Course Title:	PRE-KINDERGARTEN MATHEMATICS
Subject:	Mathematics
Grade Level:	Pre-Kindergarten
Department/School:	Mathematics/Linden Avenue School
Duration:	Full Year/36 Weeks

GRPS Mathematics Mission Statement

Mathematics is an integral part of our lives. Students must be actively involved in their mathematical education with problem solving being an essential part of the curriculum. The mathematics curricula should emphasize thinking skills through a balance of computation, intuition, common sense, logic, analysis and technology. Students will be engaged and challenged in a student-centered learning environment that is developmentally appropriate. Students will communicate mathematical ideas effectively by applying hands-on manipulatives, basic computational skills, mathematical models and technology in order to solve practical problems.

Course Description:

The pre-kindergarten mathematics curriculum provides a guideline for teachers to educate children following the New Jersey Core Curriculum Content Standards as well as Interdisciplinary Standards. Students will develop skills in numeration, counting, operations, patterns, geometry, measurement, data analysis, and algebraic thinking. Students will utilize and further develop these skills in their daily routine and as the year progresses.

This curriculum will challenge students' critical thinking, problem solving, and adaptation capabilities. It allows students to connect math outside the classroom and encourages creative problem solvers and flexible thinkers. It will hold students to high expectations while creating strong foundations as to give *every* child the opportunity to succeed.

The learning activities in this program were designed to take place in a center-based classroom while giving children the opportunity for partner, small and whole group interaction, and individual exploration. The Everyday Mathematics Activity Book provides teachers with a theme book that includes other activities, songs, poems, books, games, software suggestions, and online resources that will further the development of students' knowledge and reinforce the skills that are being taught.

This curriculum will seek to utilize the carefully engineered "Spiral" demonstrated in the Everyday Mathematics Kindergarten curriculum and adapt it to Pre-Kindergarten standards. Using the spiral technique, this curriculum will strategically distribute instruction and practice in a design to best help students develop enduring mastery and depth of knowledge.

Author: Carla Kaminski

Date Submitted: Summer 2017

Pre-Kindergarten Mathematics

Unit 1:

Approximate Duration: September- October

Essential Questions:

How do we introduce mathematical routines into our daily schedule?

How can rote counting, rational counting, place value, notation, comparing and ordering numbers be used in everyday life?

Why are identifying numbers and quantities important?

What are descriptive words and why are they necessary in mathematics?

How are shapes used in our everyday environment?

What is the importance of collecting data?

Upon completion of this unit students will be able to:

- Recognize numbers 0-5 (1.1)
- Understand the concept of zero (1.1)
- Verbally count in sequence to 10 (1.1)
- Count objects, pictures, sounds, and actions (1.1)
- Form groups of 0-10 objects (1.3)
- Develop an awareness of numbers in their daily routine, everyday life (1.2)
- Recognize and describe 2- dimensional geometric shapes (2.2)
- Recognize basic shapes in their environment (2.2)
- Use spatial reasoning (2.3)
- Put together basic puzzles (2.3)
- Make block structures (2.3)
- Identify a calendar and it's purpose (months of year/days of week) (1.2)
- Collect and represent data in various ways (i.e. weather, birthdays, etc.) (3.3)
- Have an understanding of how pictures and objects to represent data (3.3)
- Use technology to reinforce mathematical concepts (4.5)

Interdisciplinary Standards (njcccs.org)

Standard 9.1- 21st Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

Standard 9.3- Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Standard 8.1- Computer and Information Literacy: All students will use computer applications to gather and organize information and to solve problems.

Standard 8.2 – Technology Education: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world as they relate to the individual, society, and the environment.

Standard 6.3- Active Citizenship in the 21st Century: All students will acquire the skills needed to be active, informed citizens who value diversity and promote cultural understanding by working collaboratively to address the challenges that are inherent in living in an interconnected world.

Standard 5.1.A & 5.1.B- Science Practices: All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises

knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

- A. Use mathematical, physical, and computational tools to build conceptual-based or evidence-based models and to pose theories.
- B. Generate Scientific Evidence through Active Investigations: Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

Activities – include 21st Century Technologies:

- Consult curricular materials
- Online components
 - Various SMARTboard lessons geared toward specific goal
 - Math Seeds
- Morning Meeting
 - Create a days in school growing number line
 - Create a daily schedule and monthly calendar
 - Create a weather and temperature chart for collecting and recording data
 - In whole group students count together collecting data of attendance and determining how many students are absent
- **Everyday Math Teacher’s guide to activities (large manual)**
 - **Art:**
 - Make ladybugs- count out spots
 - Sand art numbers
 - Use set number of craft sticks to create pictures
 - Dot pictures/numbers
 - Use sand, shaving cream, finger paint to create different shapes/numbers
 - Shape stamping (or can use vegetables to create shapes)
 - Make a face collage
 - **Games:**
 - Match up numbers to dots
 - Match Dominoes
 - Build towers
 - Bean bag counting game
 - Sort shapes
 - Shape concentration game
 - **Manipulatives:**
 - Calendar
 - Number line
 - Tangrams
 - Shape stencils
 - **Music and Movement:**
 - Number walk
 - Sing counting songs (ie. “Ants go marching” and “This Old Man)
 - Count in funny ways
 - Play the Dice Movement game
 - Play hop scotch
 - Floor shapes
 - Go on a shape walk, explore shapes in school building and outside in nature
 - Do the Hokey Pokey with shapes
- **Everyday Math Teacher’s guide to pre-k manual (small manual)**

- Listen and count (pg. 24)
- Spin number board game (pg.89)
- Play “Simon Says” (pg. 23)
- Egg carton counting (pg. 29)
- Cut shapes (pg. 117)
- Make shape animals (pg. 118)

Other Activities:

- Create shape pictures using circles, squares, rectangles, triangles (i.e. make a garden)
- Use a spinner and count chips
- Use numbered toilet paper rolls and have children put correct number of pipe cleaners in each
- Numbered pipe cleaners- have children bead correct number onto pipe cleaner
- Use stencils to draw shapes
- Fingerprint shapes
- Use snack time for counting
- Use ropes or bodies to create various shapes
- Use numbers in daily routine: calendar, attendance, line up, lunch time, at centers
- Create a weather graph to keep track of monthly weather

Enrichment Activities:

- Introduce 3-dimensional shapes, have students compare similarities between 2 and 3-dimensional shapes
- Create groups of larger numbers
- Classify objects by several categories
- Play games that involve simple addition of 1 digit numbers

Read Alouds:

Counting:

The Very Hungry Caterpillar by Eric Carle
One Duck Stuck by Phyllis Root
Ten Little Fish by Audrey and Bruce Wood
One Fish Two Fish by Dr. Seuss
Sunny Numbers by Carol Crane
City by Numbers by Stephen Johnson
Chicka Chicka 1,2,3 by Bill Martin
Fish Eyes: A Book You Can Count On by Lois Ehlert

Number Concepts:

Ten Black Dots by Donald Crews
10 Little Rubber Ducks by Eric Carle
Zin! Zin! Zin! A Violin by Lloyd Moss

Operations:

Quack and Little Count by Keith Baker
Domino Addition by Lynette Long
6 Sticks by Molly Coxe
The Doorbell Rang by Pat Hutchins

Position and Spatial Relationships:

The Secret Birthday Message by Eric Carle
Oliver Finds His Way by Phyllis Root
Is There a Monster Over There? By Sally O. Lee
The Bernstein Bears: Inside, Outside, Upside Down by Stan and Jan Berenstain

Methods of Assessments/Evaluation:

- Everyday Math Assessment Book (daily/weekly/monthly)
- Smartboard lessons
- Thumbs up/Thumbs down

- Find the mistake
- Anecdotal notes
- Class work
- Independent work
- Manipulatives
- Observation (Teacher in whole/small group, individual)
- Center activities
- Verbal Assessment
- Circle time discussions (review)
- Math games

Resources/Including Online Resources

- Glen Ridge Public Schools Curriculum Guide 2017
- Everyday Mathematics Program: Teacher's Guide to Activities- McGraw/Hill 2008
- Everyday Mathematics Program: Resources for Pre-Kindergarten Classroom
- Everyday Mathematics Program: Music CD
- Online resources
 - Math Seeds
 - Youtube
 - http://nlvm.usu.edu/en/nav/category_g_1_t_1.html
 - www.pbskids.org
 - http://blackboard.aacps.org/portal/tconnect/_elem/Math09/Prek/prekopal.htm
 - www.everythingpreschool.com
 - www.kidzone.ws
 - www.scholastic.com
 - www.abeya.com
 - www.123child.com
 - www.shepardssoftware.com
 - www.dltk.com

Unit 2:

Approximate Duration: November-January

Essential Questions:

- **Which activities will create students' understanding of the meaning, uses, and representation of numbers?**
- **Why is it important at this age to understand common numerical relations?**
- **What is the importance of pattern recognition?**
- **How can shapes be incorporated into counting, numbers, numeration, and operations?**
- **How do charts, tables, and graphs help interpret data?**

Upon completion of this unit students will be able to:

- Recognize numbers from 0-10 (1.1)
- Count in sequence to 20 (1.1)
- Begin to understand "counting down" and counting backwards as well as simple addition (1.1)
- Know that the last number tells "how many" (1.1)
- Arrange groups of numbers in one-to-one correspondence (1.4)
- Recognize and use different ways to represent numbers (i.e. stickers, blocks, cars, dots) (1.3)
- Recognize groups of objects (up to 5) without counting (1.4)
- Recognize and describe the position and location of objects (2.1)
- Use positional words (i.e. in, under, between, and down) (2.1)

- Order groups of objects using the words more, less, fewer, and same (1.3)
- Identify and describe similarities and differences in objects (3.4)
- Understand patterns (3.1)
- Recognize attributes of objects (3.1)
- Sort objects according to attributes (3.4)
- Read graphs (3.3)
- Compare objects according to their size, length weight, and capacity (2.8)
- Understand the concept of volume (2.8)
- Know the difference between float and sink (4.1)
- Recognize slow vs fast (and other opposites) (2.8)
- Discuss, listen, and ask questions during activities (4.3)
- Recognize coins by size and color (3.4)

Upon completion of this unit students will have practiced and mastered:

- Recognizing numbers 0-5 (1.1)
- Understanding the concept of zero (1.1)
- Verbally counting in sequence to 10 (1.1)
- Counting objects, pictures, sounds, and actions (1.1)
- Forming groups of 0-10 objects (1.3)
- Develop an awareness of numbers in their daily routine, everyday life (1.2)
- Recognizing and describing 2- dimensional geometric shapes (2.2)
- Recognizing basic shapes in their environment (2.2)
- Using spatial reasoning (2.3)
- Putting together basic puzzles (2.3)
- Making block structures (2.3)
- Identifying a calendar and it's purpose (months of year/days of week) (1.2)
- Collecting and representing data in various ways (i.e. weather, birthdays, etc.) (3.3)
- Having an understanding of how pictures and objects to represent data (3.3)
- Using technology to reinforce mathematical concepts (4.5)

Interdisciplinary Standards (njcccs.org)

9.1- 21st Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

8.1 Computer and Information Literacy: All students will use computer applications to gather and organize information and to solve problems.

6.3 Active Citizenship in the 21st Century: All students will acquire the skills needed to be active, informed citizens who value diversity and promote cultural understanding by working collaboratively to address the challenges that are inherent in living in an interconnected world.

5.1.A & 5.1.B Science Practices: All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

- A. Use mathematical, physical, and computational tools to build conceptual-based or evidence-based models and to pose theories.
- B. Generate Scientific Evidence through Active Investigations: Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

Activities – include 21st Century Technologies:

- Consult curricular materials
- Online components

- Various SMARTboard lessons geared toward specific goal
- SMARTexchange.com
- **Everyday Math Teacher's guide to activities (large manual)**
 - **Art:**
 - Making caterpillars
 - Pattern block pictures
 - Dot pictures
 - Creating number books/number shapes
 - Create leaf patterns
 - Make color patterns with paint, dots, or use manipulatives (i.e. bears)
 - Number patterns (i.e. 2 pom poms, 1 ribbon, etc.)
 - **Games:**
 - Dice games where children roll dice and have to count out various objects (create groups)
 - Matching games with number cards
 - Mystery socks- put several of the same object in the sock and try to guess by feeling how many is in it
 - More or less game
 - Bingo
 - Have an attribute match
 - Play "Officer Officer"
 - Play a matching coin game
 - **Manipulatives:**
 - Dominoes
 - Go fish number cards
 - Pattern blocks
 - Coins
 - **Literacy:**
 - Count backwards from 5 to 0 while singing "There were five little bears"
 - Count backwards from 5 to 0 while counting "Five little monkeys"
 - Go on a number walk- explore numbers in their environment/school
 - Sing and dance to animals on parade
 - **Music and Movement:**
 - Rhythmic counting/counting patterns (i.e. 1,2 clap..3,4 clap)
 - Movement patterns
 - Child patterns/sort children by attributes
 - Counting songs to 10 (ie. Ants go marching)
 - Freeze dance and count
 - Play the dice movement game
 - Lead children through an obstacle course
 - Sing "Oh where oh where has my little dog gone"
- **Everyday Math Teacher's guide to pre-k manual (small manual)**
 - Touch and feel number cards (pg. 80)
 - Finger show game, grab game, tissue collages (show more and less) (pg. 81 & 82, pg. 19)
 - Quick count (pg. 50)
 - Five of everything collage (pg. 48)
 - Read my mind (pg. 136)
 - Find the block (pg. 106)
 - Patterns with craft sticks (pg. 86)
 - Red and not red (pg. 33)
 - Patterns in a rhyme (pg. 16)

- o Three object patterns (pg. 151)

Other Activities:

- Use small snacks by eating to count and develop an awareness of addition and subtraction
- Make a number line with the number of days in school, days in a week, etc.
- Have children make pictures in corresponding number boxes (i.e 3 butterflies in box 3, 1 apple in box 1, etc.)
- Count from 1 to 20 in various languages (point to number on number line)
- Encourage verbal communication of numbers (how many buttons, who has more blocks, how many, how many do you have if you give one to me)
- Have students stamp corresponding dots to corresponding numbers (1 dot on number 1 and so on)
- Stringing or beading
- Number punching
- Sort pasta
- Make pasta patterns/pattern macaroni necklaces
- Sort coins into egg cartons or muffin tins
- Introduce weaving to children to generate patterns

Enrichment Activities:

- Challenge students with stamping higher numbers, 2 digit for example
- Have students match the numerical number with the written number (Lady Bug game)
- Grouping by 2s, 5s, 10s and counting up to 100
- Create challenging number patterns

Methods of Assessments/Evaluation:

- Student Growth Objective Assessment
- Smartboard lessons
- Thumbs up/Thumbs down
- Find the mistake
- Dry erase/White boards
- Anecdotal notes
- Weekly assessments
- Rubrics
- Class work
- Independent work
- Manipulative
- Observation (Teacher in whole/small group, individual)
- Center activities
- Verbal Assessment
- Circle time discussions
- Math games
- Games involves movement
- Revisit Essential Questions
- 3*2*1 (3-Learned, 2-Unsure, 1-I want to learn more about)

Resources/Including Online Resources

- Glen Ridge Public Schools Curriculum Guide 2017
- Everyday Mathematics Program: Teacher's Guide to Activities- McGraw/Hill 2008
- Everyday Mathematics Program: Resources for Pre-Kindergarten Classroom
- Everyday Mathematics Program: Music CD
- Online resources
 - o Math Seeds
 - o Youtube
 - o http://nlvm.usu.edu/en/nav/category_g_1_t_1.html

- www.pbskids.org
- http://blackboard.aacps.org/portal/tconnect/_elem/Math09/Prek/prekopal.htm
- www.everythingpreschool.com
- www.kidzone.ws
- www.scholastic.com
- www.abeya.com
- www.123child.com
- www.shepardssoftware.com
- www.dltk.com

Unit 3:

Approximate Duration: February-April

Essential Questions:

- **In which ways can everyday objects be used, for children to understand operations?**
- **How can creating number stories propel critical thinking?**
- **How can geometry be used in problem solving?**
- **What are various measurement systems and how are they used in everyday life?**
- **Why is it important to understand various measuring devices and how to use them?**

Upon completion of this unit students will be able to:

- Develop a concept of counting numbers through to 30 (1.1)
- Develop their counting flexibility, count backwards, count by 5s, 10s, etc., with the help of a number line (1.1)
- Understand ordinals including first and last (1-5) (1.1)
- Become aware of other symbols in their environment (ie. Street signs, room numbers, etc.) (1.2)
- Compare larger groups of objects using more, less, same (1.3)
- Spontaneously count on their own (up to 20) (1.4)
- Recognize and determine a number of objects without counting them (1.4)
- Recognize patterns in their environment (3.1)
- Use rules to create and extend repeating patterns (3.4)
- Further their knowledge of addition and subtraction by putting objects together or taking some away (1.5)
- Distinguish and describe objects according to various attributes (2.8)
- Identify and describe 3-dimensional shapes (2.4)
- Use shapes to make patterns, designs, and pictures (2.6)
- Sequence events in time (2.9)
- Use vocabulary such as length, weight, capacity, or volume (2.8)
- Classify objects by terms light and heavy using a rocker balance (2.7)
- Develop an awareness of quantities (1.3)
- Use measuring cups to measure ingredients (2.7)
- Become familiar with standard measuring tools (2.7)
- Understand how to use measuring devices (i.e. Cups for liquid, tape for length, etc). (2.7)
- Understand the concept of symmetry (2.4)

Upon completion of this unit students will have practiced and mastered:

- Recognizing numbers from 0-10 (1.1)
- Counting in sequence to 20 (1.1)
- Beginning to understand “counting down” and counting backwards as well as simple addition (1.1)
- Knowing that the last number tells “how many” (1.1)

- Arranging groups of numbers in one-to-one correspondence (1.4)
- Recognizing and using different ways to represent numbers (i.e. stickers, blocks, cars, dots) (1.3)
- Recognizing groups of objects (up to 5) without counting (1.4)
- Recognizing and describing the position and location of objects (2.1)
- Using positional words (i.e. in, under, between, and down) (2.1)
- Ordering groups of objects using the words more, less, fewer, and same (1.3)
- Identifying and describing similarities and differences in objects (3.4)
- Understanding patterns (3.1)
- Recognizing attributes of objects (3.1)
- Sorting objects according to attributes (3.4)
- Reading graphs (3.3)
- Comparing objects according to their size, length weight, and capacity (2.8)
- Understanding the concept of volume (2.8)
- Knowing the difference between float and sink (4.1)
- Recognizing slow vs fast (and other opposites) (2.8)
- Discussing, listening, and asking questions during activities (4.3)
- Recognizing coins by size and color (3.4)

Interdisciplinary Standards (njcccs.org)

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- B. Generate Scientific Evidence through Active Investigations: Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

Activities – include 21st Century Technologies:

- Consult curricular materials
- Online components
 - Various SMARTboard lessons geared toward specific goal
 - SMARTexchange.com
- **Everyday Math Teacher’s guide to activities (large manual)**
 - **Art:**
 - Make collages with different materials that equal a total (ie. 3 pom poms and 3 ribbons = 6)
 - Order pictures (sequence) 1st, 2nd, 3rd, last, etc.
 - Make 3-D shapes with clay, model magic, or play dough
 - Symmetry with paint/mirror images
 - **Games:**
 - Play “One more elephant” game, may be done with different objects

- Play “Mystery change game” with counters and a “screen”
- Play “How many more” game with objects and dice
- Use 3-D shapes to play “shapes by feel”
- Make a shape design to match partners design using attribute blocks

○ **Manipulatives:**

- Bears
- Base blocks
- Any small objects that can be easily used for counting
- Attribute blocks

○ **Literacy:**

- Read “Blueberries for Sal” by Robert McCloskey
- Read “The Mitten” have children predict what will happen, keep track of the animals

○ **Music and Movement:**

- Sing “Five Little Monkeys” and other take away songs
- Sing “One more elephant”
- Do the “hokey pokey” using 3-D shapes

● **Everyday Math Teacher’s guide to pre-k manual (small manual)**

- Three Finger Hand prints (pg. 92)
- Play “One More” stories (pg. 94)
- Play “Two Handed Adding Game” (pg. 157)
- Play “Joining Objects” (pg. 161)
- Play “Make 5” card game (pg. 162)
- Play “Hidden Treasure” by taking away beads or jewels (pg. 167)
- Build a cube (pg. 184)
- Pattern block puzzles (pg. 132)
- Folding squares (pg. 116)
- Building cylinder towers/cubes (pg. 101)
- Hexagon cakes (pg. 46)

● **Other Activities:**

- Use base blocks for counting, adding, and subtracting
- Make color patterns, 4 blue dots and 5 red dots equal 9 dots
- Use a “Feely” bag or box so children can count objects without looking
- At snack time, have different snacks and have children count out to make a sum (ie. Count 3 blueberries and 4 blackberries, that equals 7 berries)
- Use subtraction at snack time- take away
- Play the counting game “Five Hungry Frogs”
- Play matching games with coins or cards
- Make touch and feel number cards- use completed products to practice addition (card with 2, and card with 4, you get 6 pieces)
- Adding gumballs
- Dice addition game
- Combine shapes to make a design
- Have students sort objects into groups of designated numbers...ask which group has more, less, same, etc.
- Have children match numerical number numbers to written ones

Enrichment Activities:

- Play card matching games with two digit (numbers) cards
- Regular Bingo (larger numbers)
- Have children act out number stories
- Have children use manipulatives to create larger part-whole relationships

Read Alouds:

Patterns:

Rosie's Walk by Pat Hutchins
My Little Sister Ate One Hare by Bill Grossman
This is the House that Jack Built by Simms Taback
I Know an Old Lady who Swallowed a Fly by Stephen Gulbis
The Pot That Juan Built by Nancy Andrews Goebel
If You Give A Mouse A Cookie by Laure Joffe Numeroff
Is Your Mama A Llama? By Deborah Guarino
Miss Polly Has A Dolly by Pamela Duncan Edwards
The Seals on the Bus by Lenny Hort
To Market, To Market by Anne Miranda
Who Took the Cookies from the Cookie Jar? By Bonnie Lass
I Went Walking by Sue Williams

Sorting:

The Button Box by Margarete S. Reid
Sorting by Henry Pluckrose
Sorting by Lynne Peppas
Sorting Toys by Jennifer L. Marks
I Spy Books by Jean Marzollo

Methods of Assessments/Evaluation:

- Student Growth Objective Assessment
- Smartboard lessons
- Thumbs up/Thumbs down
- Dry erase/White boards
- Anecdotal notes
- Weekly assessments
- Class work
- Independent work
- Manipulatives
- Rubrics
- Observation (Teacher in whole/small group, individual)
- Center activities
- Verbal Assessment
- Circle time discussions
- Math games
- Oral exit slip
- 3*2*1 (3-Learned, 2-Unsure, 1-I want to learn more about)

Resources/Including Online Resources

- Glen Ridge Public Schools Curriculum Guide 2017
- Everyday Mathematics Program: Teacher's Guide to Activities- McGraw/Hill 2008
- Everyday Mathematics Program: Resources for Pre-Kindergarten Classroom
- Everyday Mathematics Program: Music CD
- Online resources
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 - http://nlvm.usu.edu/en/nav/category_g_1_t_1.html
 - www.pbskids.org
 - http://blackboard.aacps.org/portal/tconnect/_elem/Math09/Prek/prekopal.htm
 - www.everythingpreschool.com

- www.kidzone.ws
- www.scholastic.com
- www.abcya.com
- www.123child.com
- www.shepardsoftware.com
- www.dltk.com

Unit 4:

April-May

Essential Questions:

- **Why is it important to be able to recognize written numbers?**
- **What is the importance of knowing when to use addition and subtraction in real life situations?**
- **Why is it important to visually differentiate between geometric shapes?**
- **In what ways are objects that are used as non-standard measuring devices useful?**
- **Why is the meaning of symmetrical and why is it important to recognize symmetry in the your environment?**

Upon completion of this unit students will be able to:

- Count in sequence to 50 (1.1)
- Recognize written numerals and name them (one digit and possibly beyond) (1.2)
- Write numerals up to 10 (1.2)
- Identify and describe similarities between 2 and 3-dimensional shapes (2.4)
- Further their understanding of “part-whole” relationships (1.5)
- Further their understanding of addition and subtraction using concrete objects (1.5)
- Use addition and subtraction spontaneously in daily routine (1.5)
- Solve and create their own number stories (1.5)
- Recognize symmetry in their environment and create symmetrical artwork (2.5)
- Compare and sort 2-dimensional and 3-dimensional geometric shapes (2.4)
- Use non-standard objects for measurement (2.7)
- Order objects according to height, weight, and length (2.8)

Upon completion of this unit students will have practiced and mastered:

- Developing a concept of counting numbers through to 30 (1.1)
- Developing their counting flexibility, count backwards, count by 5s, 10s, etc., with the help of a number line (1.1)
- Understanding ordinals including first and last (1-5) (1.1)
- Becoming aware of other symbols in their environment (ie. Street signs, room numbers, etc.) (1.2)
- Comparing larger groups of objects using more, less, same (1.3)
- Spontaneously counting on their own (up to 20) (1.4)
- Recognizing and determining a number of objects without counting them (1.4)
- Recognizing patterns in their environment (3.1)
- Using rules to create and extend repeating patterns (3.4)
- Furthering their knowledge of addition and subtraction by putting objects together or taking some away (1.5)
- Distinguishing and describing objects according to various attributes (2.8)
- Identifying and describing 3-dimensional shapes (2.4)
- Using shapes to make patters, designs, and pictures (2.6)
- Sequencing events in time (2.9)
- Using vocabulary such as length, weight, capacity, or volume (2.8)
- Classifying objects by terms light and heavy using a rocker balance (2.7)

- Developing an awareness of quantities (1.3)
- Using measuring cups to measure ingredients (2.7)
- Becoming familiar with standard measuring tools (2.7)
- Understanding how to use measuring devices (i.e. Cups for liquid, tape for length, etc). (2.7)
- Understanding the concept of symmetry (2.4)

Interdisciplinary Standards (njcccs.org)

9.1- 21st Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

8.1 Computer and Information Literacy: All students will use computer applications to gather and organize information and to solve problems.

6.3 Active Citizenship in the 21st Century: All students will acquire the skills needed to be active, informed citizens who value diversity and promote cultural understanding by working collaboratively to address the challenges that are inherent in living in an interconnected world.

5.1.A & 5.1.B Science Practices: All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.

- A. Use mathematical, physical, and computational tools to build conceptual-based or evidence-based models and to pose theories.
- B. Generate Scientific Evidence through Active Investigations: Students master the conceptual, mathematical, physical, and computational tools that need to be applied when constructing and evaluating claims.

Activities – include 21st Century Technologies:

- Consult curricular materials
- Online components
 - Various SMARTboard lessons geared toward specific goal
 - SMARTexchange.com
- **Everyday Math Teacher’s guide to activities (large manual)**
 - **Art:**
 - Shape stamping with big and small shapes (comparing)
 - Create paper chains and have children order them by length
 - Cookie cutter artwork- small, medium, large
 - **Games:**
 - Play a partner match to find same length of paper, straws, sticks, etc.
 - Play longer or shorter games using a reference object and sort objects
 - Play a bean bag passing game to music going slower and faster
 - **Manipulatives:**
 - Pan Balance
 - Measuring devices
 - **Literacy:**
 - Read “Give a Moose a Muffin” and bake muffins
 - Read “The Tortoise and the Hare”
 - **Music and Movement:**
 - Compare heights of block structures
 - Go on a size hunt
- **Everyday Math Teacher’s guide to pre-k manual (small manual)**
 - How much does it hold (pg. 166)
 - Mystery weight (pg. 165)

- Which weighs more, dry or wet? (pg. 159)
- Hand weighing with two containers (pg. 153)
- More or less on a rocker balance (pg. 141)
- How many steps (pg. 128)
- Build and measure in blocks (pg. 13)

Other Activities:

- Use straws and marshmallows or sticks and play dough to create 3-D shapes
- Experiment with volume and capacity using containers with sand and water
- Sort objects that sink and float using a water table
- Use base block cubes to measure pieces of cut ribbon and match length
- Cook in the classroom using various measuring instruments
- Use a pan balance to compare weights (light vs heavy)
- Create a jewel string to match the one given
- Cut out small, medium, and large stars and have children glue them onto small, medium, and large construction paper
- Bean bag toss: same number of beanbags on a plate with a numerical number written on it

Enrichment Activities:

- Have students trace their hands or feet, cut them out and have them use these as non-standard measuring devices on various objects around the classroom
- Have students journal (draw pictures) explaining something they do in their daily lives that involves numbers
- Have students pick an object and make various cut outs of that object in all different sizes, have them order these cut outs by size (smallest to largest or largest to smallest)
- Have students get a partner- have each student tell the other a real life situation where addition or subtraction is used (ie. Going to the grocery store)

Read Aloud:

Geometry:

The Greedy Triangle by Marilyn Burns
When a Line Bends...A Shape Begins by Rhonda Growler Greene
Changes, Changes by Pat Hutchins
Shape by Shape by Suse McDonald
Go Away Big Green Monster by Ed Emberley
Bear in a Square by Stella Blackstone
Shapes, Shapes, Shapes by Tana Hoban
Color Zoo by Lois Ehlert
The Boy with Square Eyes by Juliet Snape
The Village of Round and Square Houses by Ann Grifalconi

Methods of Assessments/Evaluation:

- Number Writing Assessment
- Smartboard lessons
- Thumbs up/Thumbs down
- Dry erase/White boards
- Anecdotal notes
- Weekly assessments
- Class work
- Independent work
- Manipulative
- Observation (Teacher in whole/small group, individual)
- Center activities
- Verbal Assessment

- Circle time discussions
- 3*2*1 (3-Learned, 2-Unsure, 1-I want to learn more about)
- Find the mistake
- Math games
- Oral Exit Slip

Resources/Including Online Resources

- Glen Ridge Public Schools Curriculum Guide 2017
- Everyday Mathematics Program: Teacher's Guide to Activities- McGraw/Hill 2008
- Everyday Mathematics Program: Resources for Pre-Kindergarten Classroom
- Everyday Mathematics Program: Music CD
- Online resources
 - Math Seeds
 - YouTube
 - http://nlvm.usu.edu/en/nav/category_g_1_t_1.html
 - www.pbskids.org
 - http://blackboard.aacps.org/portal/tconnect/_elem/Math09/Prek/prekopal.htm
 - www.everythingpreschool.com
 - www.kidzone.ws
 - www.scholastic.com
 - www.abcya.com
 - www.123child.com
 - www.shepardssoftware.com
 - www.dltk.com

Unit 5:

Approximate Duration: June

Essential Questions:

- **What is the importance of using the proper measurement tool in the correct situation?**
- **How is measurement used to describe objects in our everyday lives?**
- **Why is it important to recognize patterns and what strategies should be used to determine how they are continued?**
- **How can monetary tools be used in teaching students addition and subtraction?**
- **Why is it crucial for students to explore mathematical concepts and build skills for problem solving and critical thinking at this age?**
- **How can engineering boost mathematical thinking in students?**

Upon completion of this unit students will be able to:

- Further their flexibility in counting, possibly to 100 (1.1)
- Finish patterns when prompted using AB, ABB, ABBC and create their own (3.2)
- Use and recognize 2 and 3-dimensional shapes, spontaneously recall on their own (2.3)
- Recall tools used for measurement and how to use them ((2.7)
- Name and become familiar with various coins
- Collect data for own purposes (3.3)
- Use mathematical knowledge as a problem-solving tool (4.1)
- Solve problems in multiple ways (4.2)

Upon completion of this unit students will have practiced and mastered:

- Counting in sequence to 50 (1.1)
- Recognizing written numerals and name them (one digit and possibly beyond) (1.2)
- Writing numerals up to 10 (1.2)

- Identifying and describing similarities between 2 and 3-dimensional shapes (2.4)
- Furthering their understanding of “part-whole” relationships (1.5)
- Furthering their understanding of addition and subtraction using concrete objects (1.5)
- Using addition and subtraction spontaneously in daily routine (1.5)
- Solving and creating their own number stories (1.5)
- Recognizing symmetry in their environment and create symmetrical artwork (2.5)
- Comparing and sorting 2-dimensional and 3-dimensional geometric shapes (2.4)
- Using non-standard objects for measurement (2.7)
- Ordering objects according to height, weight, and length (2.8)

Interdisciplinary Standards (njcccs.org)

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Activities – include 21st Century Technologies:

- Consult curricular materials
- Online components
 - Various SMARTboard lessons geared toward specific goal
 - SMARTexchange.com
- **Everyday Math Teacher’s guide to activities (large manual)**
 - **Art:**
 - Make a graph of attributes of children’s clothing (collect data by seeing who is wearing short sleeves, dresses, sneakers, etc)
 - Assemble a 100+ piece jigsaw puzzle
 - Make a sand art picture grouping 2 and 3-dimensional shapes based on their attributes
 - Create a number pattern with finger paints
 - **Manipulatives**
 - Playing cards
 - Money
 - **Literacy:**
 - Match written numbers to their corresponding numerical numbers up to 20
 - **Music and Movement:**
 - Sing “B-I-N-G-O”
 - Notice Numbers: Challenge students by going into older grades and read 2 and possible 3 digit numbers
- **Everyday Math Teacher’s guide to pre-k manual (small manual)**

- Make and Bake Cookie Shapes (pg.178)
- How Many Hide and Seek (pg. 177)
- How Much Does it Hold (pg. 166)
- Touch and Feel Number Cards (pg. 140) *two digit*
- Shape Design Game (pg. 138)
- Read my Mind Game (pg. 136)
- Coin Sort Data (pg. 102)
- “I Spy” Sculpture Shapes (pg. 100)

Other Activities:

- Make a collage with objects up to 50 (and beyond)
- Use non-standard measuring devices to measure objects around the classroom, estimate their length, height
- Design your own coins
- Create a 3-dimensional structure in blocks with 100 solo cups
- Play “I Spy” recognizing objects with various attributes
- Have students connect the dots to 100 (using a number line if necessary)

Enrichment Activities:

- Play “Top It” or Greater Than game with a partner
- Using small change (i.e. pennies, nickels, dimes) have students purchase objects- “cashier” needs to give back correct amount of change from purchase
- Have students create 3-dimensional shapes using popsicle sticks or other materials and have them create larger structures
- Have students use scales and rulers to differentiate the size of objects based on weight and size, order these objects
- Play counting games in a circle- count by 10s, 5s, 2s etc then rotate the opposite way and count backwards in the same way, switching up ways of counting

Read Aloud

Measurement:

One Inch Tall by Shel Silverstein

How Big is a Foot? By Rolf Myller

Measuring Penny by Loreen Leedy

Twelve Snails to One Lizard: A Tale of Mischief and Measurement by Susan Hightower

Me and the Measure of Things by Joan Sweeney and Annette Cable

Super Sandcastle Saturday by Stuart J. Murphy and Julia Gorton

Methods of Assessments/Evaluation:

- Smartboard lessons
- Thumbs up/Thumbs down
- Dry erase/ White boards
- Anecdotal notes
- Weekly assessments
- Class work
- Independent work
- Manipulative
- Observation (Teacher in whole/small group, individual)
- Center activities
- Verbal Assessment
- Circle time discussions
- Math games
- Oral exit slip
- Find the mistake

- Revisit essential Questions
- Green Yellow Red

Resources/Including Online Resources

- Glen Ridge Public Schools Curriculum Guide 2017
- Everyday Mathematics Program: Teacher's Guide to Activities- McGraw/Hill 2008
- Everyday Mathematics Program: Resources for Pre-Kindergarten Classroom
- Everyday Mathematics Program: Music CD
- Online resources
 - Math Seeds
 - YouTube
 - http://nlvm.usu.edu/en/nav/category_g_1_t_1.html
 - www.pbskids.org
 - http://blackboard.aacps.org/portal/tconnect/_elem/Math09/Prek/prekopal.htm
 - www.everythingpreschool.com
 - www.kidzone.ws
 - www.scholastic.com
 - www.abeya.com
 - www.123child.com
 - www.shepardssoftware.com
 - www.dltk.com

Additional Resources, Literature, Software, and Games:

Everyday Mathematics (McGraw Hill/Wright Group (2008)

Teacher Resource Booklet which includes:

- Theme activities
- Songs and poems
- Literature lists
- Classroom Games
- List of Software
- Newsletter ideas
- Family letters and Home notes
- Theme masters

Additional Literature

- *Anno's Math Games* by M. Anno
- *Bug Dance* by Stuart J. Murphy
- *One Hungry Monster: A Counting Book in Rhyme* by Susan O'Keefe
- *Rooster's Off to See the World* by Eric Carle
- *Over the Meadow* by Ezra Jack Keats
- *Big and Little* by Steve Jenkins
- *Ten, Nine, Eight* by M. Bang
- *One Moose, Twenty Mice* by C. Beaton
- *The King's Chessboard* by D. Birch
- *One Carton of Oops!* By J. Bradbury
- *Spaghetti and Meatballs for All! A mathematical story* by M. Burns
- *Pigs Plus* by J. Burningham
- *Five Little Monkeys Jumping on the Bed* by E. Christlow
- *Gray Rabbit's Odd One Out* by Alan Baker
- *Count!* By Denise Fleming
- *Ten Cats Have Hats: A Counting Book* by Harcourt Brace
- *How do Dinosaurs Count to Ten?* By Jane Yolen
- *1,2,3 to the Zoo 1,2,3 to the Zoo* by Eric Carle

- *Mouse Count* by Ellen Stoll Walsh
- *Is it Larger? Is it Smaller?* By Tana Hoban
- *Brown Rabbit Shape Pob* by Alan Baker
- *The Math Wiz* by B. Duffy
- *Echoes for the Eye: Poems to celebrate patterns in nature* by B. Esbensen
- *Each Orange Had 8 Slices* by P. Giganti
- *Fly on the Ceiling* by J. Glass
- *My Little Sister Ate One Hair* by B. Grossman
- *Amazing & Incredible Counting Stories* by M. Grover
- *Take Away Monsters* by C. Hawkins
- *Henry and the Boy Who Thought Numbers Were Fleas* by M. Kaplan
- *The Librarian Who Measured the Earth* by K. Lasky
- *Inch by Inch* by L. Lionni
- *Frog and Toad are Friends* by A. Lobel
- *Domino Addition* by L. Long
- *Eating Fractions* by B. McMillan
- *How Big is a Foot?* By R. Myller
- *One Hundred Hungry Ants* by E. Princes
- *If You Made a Million* by D. Schwartz
- *Giraffe and a Half* by S. Silverstein
- *Alexander Who Used to be Rich Last Sunday* by J. Viorst
- *Happy Birthday Moon* by Frank Asch
- *The Mitten* by Jan Brett
- *Pancakes, Pancakes!* By Eric Carle

Additional Math Games

- **Sneaky, Sneaky Squirrel Game** (Educational Insights)
- **Sorting Shapes Cupcakes** (Smart Snacks)
- **Rainbow Color Cones** (Smart Snacks)
- **Number Hunt** (Educational Insights)
- **Chutes and Ladders** (Milton Bradley)
- **Numbers Match Up** (Peaceable Kingdom)
- **Monopoly Junior** (Hasbro)
- **Cootie** (Hasbro)
- **Pop for Numbers** (Barns and Noble)

Additional Software Suggestions:

Math Seeds

Scholastic

Sheppard's Software Online

School Zone: Alphabet and Numbers 1-100

School Zone: Colors, Shapes, and More

School Zone: On Track Thinking Skills