**Moonachie School District**

**Mathematics Curriculum:**

**Kindergarten**

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**Board Approved: July 25, 2017**

**Re-Adopted: August 23, 2022**

**The following maps outline the New Jersey Student Learning Standards for Kindergarten mathematics determined by the State Standards Initiative. Below is a list of assessment tools that are recommended for tracking student progress in these areas. In addition, resources that can be used in conjunction with instruction of these standards are provided but not limited to the list below.**

**Assessment:**

Formative Assessment Class-Work Review

Open-Ended Problems Project-Based Assessment

Self-Assessment Timed Drills

Teacher Observation End of Year Assessment

Benchmark Assessment Math Software (Envision 2020)

Homework Review Group & Cooperative Work

Summative Assessment

**Resources:** \_

Counters (variety)

Flashcards Ten Frame

Work mats Craft Sticks

Math Word Wall Blocks

Connecting Cubes Calendar

Number Line 100 Chart

Work Mats Math Songs/Poems

Computer Software Pattern Blocks

Interactive White Board Measurement Tools

Center Games Tangrams

Concrete Objects Geometric Shapes

Workbooks Three Dimensional Shapes

Mini White Boards Attribute Blocks

Manipulatives

Math/Pocket Charts

**Websites:**

[www.ixl.com](http://www.ixl.com) \_ [www.Envision 2020.com](http://www.envision.com) [www.xtramath.com](http://www.xtramath.com)

www.aplusmath.com [www.superteacherworksheets.com](http://www.superteacherworksheets.com)

[www.brainpop.com](http://www.brainpop.com) [www.commoncoresheets.com](http://www.commoncoresheets.com) [www.mrnussbaum.com](http://www.mrnussbaum.com)

[www.brainpopjr.com](http://www.brainpopjr.com) [www.fun4thebrain.com](http://www.fun4thebrain.com) [www.learnzillion.com](http://www.learnzillion.com)

[www.funbrain.com](http://www.funbrain.com) [www.math-play.com](http://www.math-play.com) [www.k6.thinkcentral.com](http://www.k6.thinkcentral.com)

[www.mathplayground.com](http://www.mathplayground.com) [www.smartexchange.com](http://www.smartexchange.com) [www. interactivesites.weebly.com/math.html](http://interactivesites.weebly.com/math.html)

[www.sheppardssoftware.com](http://www.sheppardssoftware.com) <http://www.k-5mathteachingresources.com>

[www.songsforteaching.com](http://www.songsforteaching.com)

www.abcya.com

**References:**

[**http://www.state.nj.us/education/aps/cccs/math/**](http://www.state.nj.us/education/aps/cccs/math/)

NJ Technology Standards**:** <http://www.state.nj.us/education/cccs/2014/tech/8.pdf>

NJ Career Ready Practices: <http://www.state.nj.us/education/aps/cccs/career/>

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

| **Standards for Mathematical Practice** |
| --- |
| **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** |

| **Curriculum Details** **Mathematics - Kindergarten** |
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| **Core Materials**  | Envision 2020 Math, Numbers World |
| **Interdisciplinary Connections**  | **ELA:**RL.K.10 Actively engage in group reading activities with purpose and understandingRL.K.4 With prompting and support, ask and answer questions about unknown words in a textWL.K.1 Participate in collaborative conversations with diverse partners about Kindergarten topics and texts with peers and adults in small and larger groupsNJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasivelyNJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate**Science**K-LS1-1 Use Observations to describe patterns of what plants and animals (including humans) need to surviveK-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem**Social Studies**6.1.2.EconET.1: Explain the difference between needs and wants.6.1.2.EconET.3: Describe how supply and demand influence price and output of products.6.1.2.EconET.4: Explain the impact that decisions about savings, debt, and investment can have on individual’s lives. |
| **Career Ready Practices** | CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP12. Work productively in teams while using cultural global competence.  |
| **Career Readiness, Life Literacies, and Key Skills** | 9.1.2.FI.1: Differentiate the various forms of money and how they are used (e.g. coins, bills, checks, debit and credit cards)9.1.2.PB.2: Explain why an individual would choose to save money. |
| **Computer Science and Design Thinking** | 8.1.2.CS.2: Explain the functions of common software and hardware components of computing systems.8.1.2.DA.3: Identify and describe patterns in data visualizations.8.1.2.DA.4: Make predictions based on data using charts or graphs. |

**Math Curriculum: Kindergarten**

**Counting and Cardinality**

**Math Standard K.CC.A**

| **Essential Question(s):** How does counting help us in our everyday lives? |
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|  **Vocabulary:** Numbers, more/less, same/different, left/right, sequence, first, second, third, etc. before/after, number vocabulary |
| **Content:** Counting and Cardinality  |
| **Anchor Standard:** A. Know number names and the count sequence. |
| **NJSLSA Standards:**K.CC. A.1, K.CC.A.2, K.CC.A.3 |
| **Standards for Mathematical Practice:** MP 2, MP 7, MP 8 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 1. Count to 100 by ones and by tens. **(MP. 7, MP. 8)** | Model counting using decoding words with and without pictures. \*Counting with manipulatives \*Clapping out numbers \*Calendar | The emphasis of this standard is on the counting sequence.When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is “ten more” (or one more group of ten).Instruction on the counting sequence should be scaffolded (e.g., 1-10, then 1-20, etc.).Counting should be reinforced throughout the day, not in isolation.Examples:* Count the number of chairs of the students who are absent.
* Count the number of stairs, shoes, etc.
* Counting groups of ten such as “fingers in the classroom” (ten fingers per student).

When counting orally, students should recognize the patterns that exist from 1 to 100. They should also recognize the patterns that exist when counting by 10s.  |  Music: Dr. Jean Songs Literature: Reese's Pieces Count by Tens by: Jerry Pallotta. |
| 2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). | * \*Ask children to finish sequence when starting with a random number.
 | The emphasis of this standard is on the counting sequence to 100. Students should be able to count forward from any number, 1-99. | File folder Games Math StoriesCenters  |
| 3. 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).**(MP. 2, MP. 7)** | \*Write numbers for a purpose (Such as taking the lunch count.) \*Students will write/form written numerals 0-20 \*Students illustrate objects based on that number * \*Count to tell number of objects
 | Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity. Once this is established, students begin to read and write numerals (numerals are the symbols for the quantities). The emphasis should first be on quantity and then connecting quantities to the written symbols.* A sample unit sequence might include:
	1. Counting up to 20 objects in many settings and situations over several weeks.
	2. Beginning to recognize, identify, and read the written numerals, and match the numerals to given sets of objects.
	3. Writing the numerals to represent counted objects.

Since the teen numbers are not written as they are said, teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represents each teen number. For example, when focusing on the number “14,” students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten and four extra ones. Students should connect the representation to the symbol “14.” | Songs & number writing poems- <http://www.canteach.ca/elementary/>songspoems72.html  Art Center activity:make a number book and illustrate  Science:Counting nature objects, pinecones, seeds, etc.  |
| **Differentiation/Modifications/Accommodations** |
| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| * Envision 2020 advanced/enrichment practice
* Count to 100 by 2’s, 5’s, and other denominations
* Begin counting at numbers beyond 10, 20, 30 etc. according to student level
* Write and display numbers beyond 20
* Encourage the students to draw or create sets of objects to match larger written quantities
 | * Using pictures and graphic organizers
* Envision 2020 ELL activities
* Use a number line
* Pre-teach number vocabulary
* Use manipulatives and/or an abacus
* Count in unison with a peer
* Provide continued practice using Ipad Apps and computer software
* Provide opportunities to match numbers to sets using flash cards
* Use multisensory materials for the student to count and/or manipulatives
* For more, see <http://www.state.nj.us/education/modelcurriculum/ela/ellscaffolding/3u1.pdf>
 | * Worksheets
* Extended time
* Modified assignments
* Small group, alternate location
* Modeling
* Manipulatives
* Video tutorials
* Color coding methods
* Refer to each student’s IEP for more specific modifications
* Use a number line
* Use manipulatives and/or abacus
* Use calculator to show skip counting
* Use task anaylyis to break down larger concept
* Provide continued practice using Ipad Apps and computer software
* Organize objects into rows on a page for students to count
* Provide opportunities to trace
* Provide opportunities to match numbers to sets using flash cards
* Limit visual distractions on the table or page or highlight areas
 | * Using manipulatives
* Using small group interactions and peer questioning
* Using pictures and graphic organizers
* Morning tutoring
* Parental contact
* Use a number line to highlight starting point
* Use manipulatives and/or abacus
* Count in unison with a peer
* Provide continued practice using Ipad Apps and computer software
* Organize objects into rows on a page for students to count
* Provide opportunities to trace
* Provide opportunities to match numbers to sets using flash cards
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**Math Curriculum: Kindergarten**

**Counting and Cardinality**

**Math Standard K.CC.B**

| **Essential Question(s):** What are ways to count objects to tell how many? |
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| **Vocabulary:** Numbers, more/less, same/different, left/right, sequence, first, second, third, etc. before/after, number vocabulary |
| **Content:** Counting and Cardinality |
| **Anchor Standard:** B. Count to tell number of objects. |
| **NSLS Standards: K.CC.B.4a, K.CC.B.4b, K.CC.B.4c, K.CC.B.5** |
| **Standards for Mathematical Practice:** MP 2, MP 7, MP 8  |

| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| --- | --- | --- | --- |
| 4. 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.
* 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.
* Understand that each successive number name refers to a quantity that is one larger.

(**MP 2, MP 7, MP8)** | \*Connect counting to cardinality \*Pairing objects with number name * \*Understanding each successive number name refers to a quantity that is one larger
 | This standard focuses on one-to-one correspondence and how cardinality connects with quantity.* For example, when counting three bears, the student should use the counting sequence, “1-2-3,” to count the bears and recognize that “three” represents the group of bears, not just the third bear. A student may use an interactive whiteboard to count objects, cluster the objects, and state, “This is three”.

 In order to understand that each successive number name refers to a quantity that is one larger, students should have experience counting objects, placing one more object in the group at a time.* For example, using cubes, the student should count the existing group, and then place another cube in the set. Some students may need to re-count from one, but the goal is that they would count on from the existing number of cubes. S/he should continue placing one more cube at a time and identify the total number in order to see that the counting sequence results in a quantity that is one larger each time one more cube is placed in the group.

A student may use a clicker (electronic response system) to communicate his/her count to the teacher. | Science Center: Collecting and counting leaves or other objects from nature  Physical Education: Counting jumping jacks, sit ups, etc. |
| 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(**MP 2, MP 7, MP8)**. | \*Provide opportunities to look at a group of items to determine the quantity * \*Classify/ sorting objects and then counting
 | Students should develop counting strategies to help them organize the counting process to avoid re-counting or skipping objects.Examples:* If items are placed in a circle, the student may mark or identify the starting object.
* If items are in a scattered configuration, the student may move the objects into an organized pattern.
* Some students may choose to use grouping strategies such as placing objects in twos, fives, or tens (note: this is not a kindergarten expectation).
* Counting up to 20 objects should be reinforced when collecting data to create charts and graphs.

A student may use a clicker (electronic response system) to communicate his/her count to the teacher. | World Languages: Saying numbers in different languages  Science: Classifying and sorting objects from nature ex. Leaves, sea shell, etc. |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| * Envision 2020 advanced/enrichment practice
* Begin counting at numbers beyond 10, 20, 30 etc. according to student level
* Have student draw or create sets of objects matching numbers that challenge their math abilities
* Allow the student to functionally count and provide sets of objects for everyday purpose (for example: encourage the student to count and hand out papers etc. to classmates)
* Provide opportunities to count larger quantities and sets
 | * Using manipulatives
* Using small group interactions and peer questioning
* Envision 2020 ELL activities
* Use number line to highlight starting point
* Count in unison with a peer
* Provide opportunities to match numbers to sets using flash cards
* Use multisensory materials and manipulatives for the students to match numbers and quantities
* Provide continued practice using Ipad Apps and computer software
* Use a grid or large graph paper to separate items for counting to illustrate one item for each number name
* For more, see <http://www.state.nj.us/education/modelcurriculum/ela/ellscaffolding/3u1.pdf>
 | * Extended time
* Modified assignments
* Small group, alternate location
* Modeling
* Manipulatives
* Video tutorials
* Use task analysis to break task down into smaller increments
* Use multisensory materials for the student to count and/or manipulatives
* Organize objects into rows on a page for students to count
* Provide opportunities to trace
* Provide opportunities to match numbers to sets using flash cards
* Limit visual distractions on the table or page or highlight areas
* Provide continued practice using Ipad Apps and computer software
* Use number line to highlight starting point
* Refer to each student’s IEP for more specific modifications
* Use examples and nonexamples to show quantities
* Use self-correcting puzzles and materials to practice matching sets to quantities
* Use a grid or large graph paper to separate items for counting to illustrate one item for each number
* Use a pointer to point to and count objects
* Count in unison with a peer
 | * Using small group interactions and peer questioning
* Envision 2020 ELL activities
* Morning tutoring
* Parental contact
* Use multisensory materials for the student to count and/ or manipulatives
* Organize objects into rows on a page for students to count
* Provide opportunities to trace
* Provide opportunities to match numbers to sets using flash cards
* Provide continued practice using Ipad Apps and computer software
* Use examples and nonexamples to show quantities
* Use self-correcting puzzles and materials to practice matching sets to quantities
* Use pointers to point to objects while counting
* Use a grid or large graph paper to separate items for counting to illustrate one item for each number
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**Math Curriculum: Kindergarten**

**Counting and Cardinality**

**Math Standard K.CC.C**

| **Essential Question(s):** How can we compare and contrast numbers? |
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| **Vocabulary:** Numbers, more/less, same/different, left/right, sequence, first, second, third, etc. before/after, number vocabulary |
| **Content:** Counting and Cardinality |
| **Anchor Standard:** C. Compare Numbers  |
| **NJSLS Standards:** K.CC.C.6, K.CC.C.7 |
| **Standards for Mathematical Practice:** MP 2, MP 7, MP 8 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 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.**(MP 2, MP 7, MP 8)** |  \*Graphing objects to compare numbers \*Sorting and comparing objects to determine the relationship between the two | Students should develop a strong sense of the relationship between quantities and numerals before they begin comparing numbers.Other strategies:* Matching: Students use one-to-one correspondence, repeatedly matching one object from one set with one object from the other set to determine which set has more objects.
* Counting: Students count the objects in each set, and then identify which set has more, less, or an equal number of objects.
* Observation: Students may use observation to compare two quantities (e.g., by looking at two sets of objects, they may be able to tell which set has more or less without counting).
* Observations in comparing two quantities can be accomplished through daily routines of collecting and organizing data in displays. Students create object graphs and pictographs using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students.
* Benchmark Numbers: This would be the appropriate time to introduce the use of 0, 5 and 10 as benchmark numbers to help students further develop their sense of quantity as well as their ability to compare numbers.

Students state whether the number of objects in a set is more, less, or equal to a set that has to 0, 5, or 10 objects. |  Science: Comparing quantities of objects from nature |
| 7. Compare two numbers between 1 and 10 presented as written numerals.**(MP 2)** | \* Students use number lines to determine numerals and quantity | Given two numerals, students should determine which is greater or less than the other. | Social Studies:Comparing family members/family tree |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| * Envision 2020 advanced/enrichment practice
* Have students create and display examples of more than, less than, or equal to and present them to peers
* Incorporate money concepts for enrichment to practice the concept of quantity
 | * Using manipulatives
* Using small group interactions and peer questioning
* explicitly teach vocabulary including the terms more, less, equal
* use visuals to show examples and non-examples
* use food and/or tangible objects to demonstrate the concept of more or less
* Envision 2020 ELL activities
* For more, see <http://www.state.nj.us/education/modelcurriculum/ela/ellscaffolding/3u1.pdf>
 | * Extended time
* Modified assignments
* Small group, alternate location
* Modeling
* explicitly teach vocabulary including the terms more, less, equal
* use visuals to show examples and non-examples
* use a t-chart to have children compare groups of objects
* use manipulatives
* use two different types of manipulatives (examples: Red chips and blue chips) to help students distinguish two separate groups
* use food and/or tangible objects to demonstrate the concept of more or less
* Refer to each student’s IEP for more specific modifications
 | * Using small group interactions and peer questioning
* Using pictures and graphic organizers
* Envision 2020 ELL activities
* Morning tutoring
* Parental contact
* explicitly teach vocabulary including the terms more, less, equal
* use visuals to show examples and non-examples
* use manipulatives
* use two different types of manipulatives (examples: Red chips and blue chips) to help students distinguish two separate groups
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**Math Curriculum: Kindergarten**

**Operations and Algebraic Thinking**

**Math Standard K.OA**

| **Essential Question(s):** How can you use objects to solve joining and separating problems? |
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| **Vocabulary:**  Total, in all, how many, together, add, subtract, difference, what’s left, plus, minus, is equal to, one more/less, take away, what remains, have enough, still remaining, |
| **Content:** Operations & Algebraic Thinking |
| **Anchor Standards:** A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. |
| **NJSLS Standards:** K.OA.A.1, K.OA.A.2, K.OA.A.3, K.OA.A.4, K.OA.A.5 |
| **Standards for Mathematical Practice:** MP 1, MP 2, MP 4, MP 5, MP 7, MP 8 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 1. Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.**(MP 1, MP 2, MP 4, MP 7, MP 8)**  | \* Parts to Whole: Take two groups and make them into one whether adding or subtracting by exploring the combinations of numbers | Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract. Students should use objects, fingers, mental images, drawing, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include “+,” “–,” and “=”.· Addition terminology: add, join, put together, plus, combine, sum· Subtraction terminology: minus, take away, separate, difference, compare Students may use document cameras or interactive whiteboards to represent the concept of addition or subtraction. This gives them the opportunity to communicate their thinking. | Literature: Domino Addition by: Lynette Long  Elevator Magic by: Stuart J. Murphy  Language Arts:Write a sentence about the number sentence. Dramatic Play:Act out addition and subtraction problems |
| 2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. **(MP 1, MP 2, MP 4, MP5)** | \* Model addition and subtraction stories using real objects, next play objects, then counters, and lastly numbers. | Using a word problem context allows students to develop their understanding about what it means to add and subtract.Sample learning sequence:· Students make sense of a word problem, such as, “Mia had 3 apples. Her friend gave her 2 more. How many does she have now?”o A student’s “think aloud” of this problem might be, “I know that Mia has some apples and she’s getting some more. So she’s going to end up with more apples than she started with.”· Students develop the concept of addition/subtraction by modeling the actions in the word problem using:Objects, fingers, mental images, drawings, sound, acting out situations, and/or verbal explanations. Students may use different representations based· Students connect their conceptual representations of the situation using symbols, expressions, and/or equations.· Students may represent addition/subtraction equations with word problems.o For example, given the equation 8 – 2 = 6, a student makes up a word problem such as, “José had 8 markers and he gave 2 away. How many does he have now?” Note that in context, there are two types of subtraction problems: separate (take-away) and compare. These two types are very different when modeled.· Example: 8 – 2 = 6o Separate (take-away) example: “José had 8 markers and he gave 2 away. How many does he have now?” When modeled, a student would begin with 8 objects and remove two to get the result.o Comparison example: “José had 8 marbles and Zia had 2. How many more marbles does José have than Zia?” When modeled, a student would make a set of 8 objects and a set of 2 objects and compare the two sets. Students may use an interactive whiteboard to demonstrate addition or subtraction strategies. This gives them the opportunity to communicate and justify their thinking.  | Language Arts:Students write their own math story.  Art:Students illustrate their math story |
| 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). **(MP 1, MP 2, MP 4, MP 7, MP 8)** | \* Whole to part: Recognize 2 groups of numbers that will equal 10. Provide students with a total of 10 objects to be broken into 2 groups. | This standard focuses on number pairs, which add to a specified total, 1-10. These number pairs may be examined either in or out of context. Students may use objects such as cubes, two-color counters, square tiles, etc. to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc. Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.  Sample unit sequence:· A contextual problem (word problem) is presented to the students such as, “Mia goes to Nan’s house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each can she take?”· Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences, preferences, etc.· Students write equations such as:o Equations that equal 5:· 5=4+1· 3+2=5· 2+3=4+1This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0+5, 1+4, 2+3, 3+2, 4+1, and 5+0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one than the previous addend. | Science:Classify number groups of scientific items by their characteristics (e.g. Group of bugs into spiders and butterflies) |
| 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. **(MP 1, MP 2, MP 4, MP 7, MP 8)** | \* Whole to part: Provide students with a number group of objects to be broken into 2 groups (# 2-10) | The number pairs that total ten are foundational for students’ ability to work fluently within base-ten numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten. Example 1:Students place three objects on a ten frame and then determine how many more are needed to “make a ten.”Students may use electronic versions of ten frames to develop this skill.  Example 2:The student snaps ten cubes together to make a “train.”* Student breaks the “train” into two parts. S/he counts how many are in each part and record the associated equation (10 = \_\_\_ + \_\_\_).
* Student breaks the “train into two parts. S/he counts how many are in one part and determines how many are in the other part without directly counting that part. Then s/he records the associated equation (if the counted part has 4 cubes, the equation would be 10 = 4 + \_\_\_).
* Student covers up part of the train, without counting the covered part. S/he counts the cubes that are showing and determines how many are covered up. Then s/he records the associated equation (if the counted part has 7 cubes, the equation would be 10 = 7 + \_\_\_).

 Example 3:The student tosses ten two-color counters on the table and records how many of each color is facing up. | Art:Make a flower fact family.  |
| 5. Demonstrate fluency for addition and subtraction within 5. **(MP 7, MP 8)** | \* Frequently ask students questions throughout the day that foster addition and subtraction. | This standard focuses on students being able to add and subtract numbers within 5. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Strategies students may use to attain fluency include:* Counting on (e.g., for 3+2, students will state, “3,” and then count on two more, “4, 5,” and state the solution is “5”)
* Counting back (e.g., for 4-3, students will state, “4,” and then count back three, “3, 2, 1” and state the solution is “1”)
* Counting up to subtract (e.g., for 5-3, students will say, “3,” and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is “2”)
* Using doubles (e.g., for 2+3, students may say, “I know that 2+2 is 4, and 1 more is 5”)
* Using commutative property (e.g., students may say, “I know that 2+1=3, so 1+2=3”)
* Using fact families (e.g., students may say, “I know that 2+3=5, so 5-3=2”)

 Students may use electronic versions of five frames to develop fluency of these facts. | Music:Ex. 5 Little Monkeys Ask a question during each subject/period or classroom activity. (e.g.)John needs three pencils he only has two how many more does he still need.) |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Allow children to work with numbers beyond 19· Allow children to begin to use the concept of hundreds, tens, and ones· Have students challenge one another to create numbers with manipulatives in a timed race· Have students use reciprocal teaching and model numbers on the Elmo projector for classmates· Incorporate Ipad technology such as Base Ten Blocks Math app including first and second grade levels to challenge students | · Use base ten blocks and other manipulatives to show numbers· Work with a higher peer model who can show a number with base ten blocks or manipulatives for the student to emulate· Use the Elmo projector to model numbers with base ten blocks· Highlight key numbers or place value spots· Incorporate Ipad technology such as Base Ten Blocks Math app | · Use base ten blocks and other manipulatives to show numbers. Show mastery of single digit numbers first· Work with a higher peer model who can show a number with base ten blocks or manipulatives for the student to emulate· Have students place base ten blocks on work mats that illustrate each number with pre-made outlines of base ten blocks· Use the Elmo projector to model numbers with base ten blocks· Highlight key numbers or place value spots· Incorporate Ipad technology such as Base Ten Blocks Math app | · Use base ten blocks and other manipulatives to show numbers· Work with a higher peer model who can show a number with base ten blocks or manipulatives for the student to emulate· Use the Elmo projector to model numbers with base ten blocks· Incorporate Ipad technology such as Base Ten Blocks Math app |

**Math Curriculum: Kindergarten**

**Number and Operations in Base Ten**

**Math Standard K. NBT**

| **Essential Question(s): How can we show numbers 11 to 19 with objects?**  |
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| **Vocabulary:** Place value chart, regroup, add, subtract, compare, doubles, estimate, difference, sum |
| **Content:** Number and Operations in Base Ten |
| **Anchor Standards:** A. Work with numbers 11-19 to gain foundations for place value. |
| **NJSLS Standards:** K.NBT.A.1 |
| **Standards for Mathematical Practice:** MP 1, MP 2, MP 4, MP 7, MP 8 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 1. 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 (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. **(MP 1, MP 2, MP 4, MP 7, MP 8)** | \* Provide students with objects that represent ones and tens.  · \*Have students display numbers 11 to 19 using objects. Can use one block and ten frames as well. | Special attention needs to be paid to this set of numbers, as they do not follow a consistent pattern in the verbal counting sequence.* Eleven and twelve are special number words.
* “Teen” means one “ten” plus ones.
* The verbal counting sequence for teen numbers is backwards – we say the ones digit before the tens digit. For example “27” reads tens to ones (twenty-seven), but 17 reads ones to tens (seven-teen).
* In order for students to interpret the meaning of written teen numbers, they should read the number as well as describe the quantity. For example, for 15, the students should read “fifteen” and state that it is one group of ten *and* five ones and record that 15 = 10 + 5.

 Teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represent each teen number. For example, when focusing on the number “14,” students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten ones and four additional ones. Students should connect the representation to the symbol “14.” Students should recognize the pattern that exists in the teen numbers; every teen number is written with a 1 (representing one ten) and ends with the digit that is first stated.Associative Property: Recognizing that the associative property does not work for subtraction is difficult for students to consider at this grade level as it is challenging to determine all the possibilities.  | Chart the days in school and/or days in the month |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Use complex categories (e.g.: instead of sorting vehicle manipulatives by color, sort by vehicles that fly or vehicles with wheels before counting to stimulate higher level thinking)· - Sort into multiple categories- 3 or 4 total as opposed to 2 | · Have students match object to object into categories· Label categories in native language and English· Base categories on non-language based concepts such as size, shape, and color | · Have students match object to object into categories· Use a sorting tray to mark categories· Use a chart labeled with totals to help sort categories by count· Base categories on non-language based concepts such as size, shape, and color· Use a pointer to assist with accurate counting | · Use base ten blocks and other manipulatives to show numbers· Work with a higher peer model who can show a number with base ten blocks or manipulatives for the student to emulate· Use the Elmo projector to model numbers with base ten blocks· Incorporate Ipad technology such as Base Ten Blocks Math app |

**Math Curriculum: Kindergarten**

**Measurement and Data**

**Math Standard K.MD**

| **Essential Question(s): How is measurement used in the real world?** |
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| **Vocabulary:** Long, short, heavy, light, tall, small, big, little, heavier, shorter, taller, lighter, smaller than, taller than, bigger than, same size, different size |
| **Content:** Measurement and Data |
| **Anchor Standards: K.MD.A.** Describe and compare measurable attributes. |
| **NJSLS Standards:** K.MD.A.1 K.MD.A.2 |
| **Standards for Mathematical Practice:** MP 6, MP7 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.**(MP 7)** | \*Provide opportunities for children to measure objects e.g.Using measuring cups, rulers, scales, etc. and non-standard units of measurement  \*Develop a background for measurement by using standard and non-standard units of measurement | In order to describe attributes such as length and weight, students must have many opportunities to informally explore these attributes.· Students should compare objects verbally and then focus on specific attributes when making verbal comparisons for K.MD.2. They may identify measurable attributes such as length, width, height, and weight. For example, when describing a soda can, a student may talk about how tall, how wide, how heavy, or how much liquid can fit inside. These are all measurable attributes. Non-measurable attributes include: words on the object, colors, pictures, etc. An interactive whiteboard may be used to model objects with measurable attributes. |  Literature:Inchworm and a Half by: Elinor J. Pinczes  How Big is a Foot by: Joan Sweeny  |
| 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. For example, directly compare the heights of two children and describe one child as taller/shorter*.***(MP 6, MP 7)** | \* Encourage children to measure and compare objects e.g. Which container can hold more water for watering the plants in the classroom?  \*Compare lengths and heights using non-standard units. E.g. \*Measure Hunt- Give students a piece of yarn cut to the length of an object in the classroom and students need to find the item in the classroom that has the same length as the yarn. |  When making direct comparisons for length, students must attend to the “starting point” of each object. For example, the ends need to be lined up at the same point, or students need to compensate when the starting points are not lined up (conservation of length includes understanding that if an object is moved, its length does not change; an important concept when comparing the lengths of two objects). Language plays an important role in this standard as students describe the similarities and differences of measurable attributes of objects (e.g., shorter than, taller than, lighter than, the same as, etc.). An interactive whiteboard may be used to compare objects with measurable attributes. | Literature:Three Little Bears Social Studies:Compare the sizes of cities or states on a map Science:Compare the heights of trees outside Social Studies:Walking tour outside to compare the size of buildings and cars |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Allow students to try a range of tools for measurement- balance and digital scales, different types of rulers and tape measures to determine length, weight, or height· Have students play “Who am I?” and create clues for classmates to guess measurable objects or people (example “I am 4 feet tall and 50 pounds with brown hair and glasses. Who am I? ”)· Have students create their own original measurement tool and name it as an enrichment activity. Have them compare several objects in the room using this tool | · Pre-teach vocabulary for measurement- (tall, short, long, heavy, light) with flash cards· Provide examples and non-examples of thing that are tall, short, heavy, light, long· Provide visuals on sorting mats to help students to sort and compare items. For example- provide a photo of a mouse and a snake. Ask students to tell- are the item short like a mouse or long like a snake? | · Pre-teach vocabulary for measurement- (tall, short, long, heavy, light) with flash cards· Pre-teach the concept of measurement by using non-standard tools of measurement (gummy worms, crayons, etc.) to show students how to measure· Review concept of opposites- if something is not heavy, it is light. If something is not tall, it is short.· Provide examples and non-examples of thing that are tall, short, heavy, light, long. Have students create posters or books of things that are tall, short, heavy, light, or long· Provide visuals on sorting mats to help students to sort and compare items. For example- provide a photo of a mouse and a snake. Ask a student to tell- is the item short like a mouse or long like a snake? | · Pre-teach vocabulary for measurement- (tall, short, long, heavy, light) with flash cards· Pre-teach the concept of measurement by using non-standard tools of measurement (gummy worms, crayons, etc.) to show students how to measure· Provide examples and non-examples of thing that are tall, short, heavy, light, long. Have students create posters of things that are tall, short, heavy, light, or long· Have students play “Who am I?” and create clues for classmates to guess measurable objects or people (example “I am 4 feet tall and 50 pounds with brown hair and glasses. Who am I? ”) |

**Math Curriculum: Kindergarten**

**Math Standard K.MD.B**

| **Essential Question(s): How can measurement relate to addition and subtraction?** |
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| **Vocabulary:** Classify objects and count the number of objects in each category. |
| **Content:** Measurement and Data |
| **Anchor Standard:** K.MD.B Classify objects and count the number of objects in each category. |
| **NJSLS Standards:** K.MD.B.3 |
| **Standards for Mathematical Practice:** MP 2, MP 7 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.(**(MP 2, MP 7)** | \*Ask children to classify within the daily routine (e.g. child is responsible for creating a chart each day with different lunch options listed.)  \*Create a picture graph using results from data collected to record, count and compare columns.  \*Sort and classify objects using 1 or 2 attributes | Possible objects to sort include buttons, shells, shapes, beans, etc. After sorting and counting, it is important for students to:* Explain how they sorted the objects;
* Label each set with a category;
* Answer a variety of counting questions that ask, “How many …”; and

Compare sorted groups using words such as, “most”, “least”, “alike” and “different”.  | Social Studies: Chart members of the family. |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Use complex categories (e.g.: instead of sorting vehicle manipulatives by color, sort by vehicles that fly or vehicles with wheels before counting to stimulate higher level thinking)· Sort into multiple categories- 3 or 4 total as opposed to 2 | · Have students match object to object into categories· Label categories in native language and English· Base categories on non-language based concepts such as size, shape, and color | · Have students match object to object into categories· Use a sorting tray to mark categories· Use a chart labeled with totals to help sort categories by count· Base categories on non-language based concepts such as size, shape, and color· Use a pointer to assist with accurate counting | · Use a sorting tray to mark categories-use a chart labeled with totals to help sort categories by count· Base categories on student interest (example sort real-life objects like toy cars or animals)· Use a pointer to assist with accurate counting |

**Math Curriculum: Kindergarten**

**Geometry**

**Math Standard K.G**

| **Essential Question(s): How do we describe and manipulate the shapes we find as we investigate our environment?** |
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| **Vocabulary:** Square, circle, triangle, hexagon, cubes, cones, cylinders, spheres, above, below, besides, in front of, next to, corner, edge, sides, two dimensional shapes, three dimensional shapes |
| **Content:** Geometry |
| **Anchor Standard:** KG.A Identify and describe shapes (square, circles, rectangles, hexagons, cubes, cones, cylinders and spheres). |
| **NJSLS Standards:** K.G.A.1, K.G.A.2, K.G.A.3 |
| **Standards for Mathematical Practice:** MP 7  |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 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*.(**MP 7)** | \* Walk and identify shapes in the school and the community  \*Create a classroom map and ask the students to describe where items are in relation to other items  \*Create obstacle course and have children crawl under, step over, walk on, etc.  |   Examples of environments in which students would be encouraged to identify shapes would include nature, buildings, and the classroom using positional words in their descriptions. Teachers should work with children and pose four mathematical questions: Which way? How far? Where? And what objects? To answer these questions, children develop a variety of important skills contributing to their spatial thinking. Examples:· Teacher holds up an object such as an ice cream cone, a number cube, ball, etc. and asks students to identify the shape. Teacher holds up a can of soup and asks,” What shape is this can?” Students respond “cylinder!”· Teacher places an object next to, behind, above, below, beside, or in front of another object and asks positional questions. Where is the water bottle? (Water bottle is placed behind a book) Students say, “The water bottle is behind the book.” Students should have multiple opportunities to identify shapes; these may be displayed as photographs, or pictures using the interactive whiteboard. | Literature:Shapes, Shapes, Shapes by: Tana Hoban  Art: Construction Paper shapes  Physical Education: Obstacle course  Social Studies:Create a classroom map |
| 2. Correctly name shapes regardless of their orientations or overall size. **(MP 7)**   | \* Take photos and let children explain the position and shape in photo \*Use pattern blocks and maneuver orientation | Students should be exposed to many types of triangles in many different orientations in order to eliminate the misconception that a triangle is always right side up and equilateral.

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   Students should also be exposed to many shapes in many different sizes.Examples:* Teacher makes pairs of paper shapes that are different sizes. Each student is given one shape and the objective is to find the partner who has the same shape.
* Teacher brings in a variety of spheres (tennis ball, basketball, globe, ping pong ball, etc.) to demonstrate that size doesn’t change the name of a shape.
 | Social Studies:Identify the shapes in the community |
| 3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).**(MP 7)** | \*Make flat shape pictures (drawing)  \* Build three-dimensional art with recyclable shapes  | Student should be able to differentiate between two- dimensional and three -dimensional shapes.* Student identifies a picture of a shape as two -dimensional because it is flat and can be measured in only two ways (length and width).

Student identifies an object as three- dimensional because it is not flat (it is a solid object/shape) and can be measured in three different ways (length, width, height/depth).           |                 |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Have students play “I Spy” and describe objects to classmates using positional words (e.g.: “I spy something red behind the table that is next to the easel”)· Have students build models of 2D and 3D shapes using a variety of materials. Challenge children to use a certain number or 2D shapes and a certain number of 3D shapes in their construction· Use a shape scavenger hunt to challenge children to find an applicable or extensive number of items of a given 2D or 3D shape within the classroom· Have students create books to illustrate items in their environment of given 2-D and 3-D shapes | · Have students sort items by those that are a given shape and those that are not to show examples and non-examples of shapes· Sort environmental objects by shape onto a sorting mat· Teach/reteach positional words and concepts through drill, repetition, and hands-on activities· Teach/reteach shape vocabulary through drill, repetition, and hands-on activities· Use a T-chart to sort 2-D and 3-D shapes | · Have students sort items by those that are a given shape and those that are not to show examples and non-examples of shapes· Sort environmental objects by shape onto a sorting mat· Have students participate in a shape scavenger hunt and find a limited number of each type of 2D or 3D shape within the classroom· Teach/reteach shape vocabulary through drill and repetition· Teach/reteach through drill, repetition, and hands-on activities positional words and concepts· Use a T-chart to sort 2-D and 3-D shapes and match shape to shape if needed | · Sort environmental objects by shape onto a sorting mat· Have students participate in a shape scavenger hunt and find an applicable number each type of 2D or 3D shape within the classroom· Teach/reteach shape vocabulary through drill and repetition· Teach/reteach through drill, repetition, and hands-on activities positional words and concepts· Use a T-chart to sort 2-D and 3-D shapes and real-life objects and match shape to shape if needed |

**Math Curriculum: Kindergarten**

**Math Standards K.G.B**

| **Essential Question(s): How do we analyze, compare, model, and compose shapes in our environment?** |
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| **Vocabulary:** Corners, rolls, vertices, slanted, edges, number of sides, shape, squares (cubes), circles (sphere), triangle, rectangles (rectangle prism), hexagons, Cylinders, slide, roll, stack |
| **Content:** Geometry |
| **Anchor Standard:** K.G.B. Analyze, compare, create, and compose shapes. |
| **NJSLS Standards:** K.G.B.4, K.G.B.5, K.G.B.6 |
| **Standards for Mathematical Practice:** MP 1, MP 4, MP 7 |
| **Skills** | **Instructional Procedures** | **Explanations and Examples** | **Interdisciplinary Connections** |
| 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).**(MP 7)** | \*Explore two & three dimensional shapes Using pictures and actual objects to question the dimensionality | Students analyze and compare two- and three-dimensional shapes by observations. Their visual thinking enables them to determine if things are like or different based on the appearance of the shape. Students sort objects based on appearance. Even in early explorations of geometric properties, they are introduced to how categories of shapes are subsumed within other categories. For instance, they will recognize that a square is a special type of rectangle. Students should be exposed to triangles, rectangles, and hexagons whose sides are not all congruent. They first begin to describe these shapes using everyday language and then refine their vocabulary to include sides and vertices/corners. Opportunities to work with pictorial representations, concrete objects, as well as technology helps student develop their understanding and descriptive vocabulary for both two- and three- dimensional shapes. | Science:· Shapes around the us· Students analyze the different shapes outside and indoors |
| 5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.**(MP 1, MP 4, MP 7)** | \* Modeling the construction of shapes  \*Use shapes to create a picture | Because two-dimensional shapes are flat and three-dimensional shapes are solid, students should draw two-dimensional shapes and build three-dimensional shapes. Shapes may be built using materials such as clay, toothpicks, marshmallows, gumdrops, straws, etc.  |   |
| 6. Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”* **(MP 1, MP 4, MP 7)** | \*Compose simple shapes to form larger shapes | Students use pattern blocks, tiles, or paper shapes and technology to make new two- and three-dimensional shapes. Their investigations allow them to determine what kinds of shapes they can join to create new shapes. They answer questions such as “What shapes can you use to make a square, rectangle, circle, triangle? …Etc.” Students may use an interactive whiteboard to copy shapes and compose new shapes. They should describe and name the new shape.    | Art-Use basic shapes to create larger shapes  Literature:Not Enough Room! By: Joanne Rocklin |

| **Differentiation/Modifications/Accommodations** |
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| **Gifted and Talented** | **English Language Learners** | **Students with Disabilities** | **Students At Risk of School Failure** |
| · Envision 2020 advanced/enrichment practice· Have students play “Who am I?” and describe attributes of a shape to classmates for them to guess· Have students build shapes using art materials. Challenge children to build complex shapes· Teach children to use Venn diagrams to sort and classify shapes into different categories. Students can read or listen to descriptions and place shapes onto the diagram | · Have students describe and sort shapes by attribute into sorting trays. Label trays with native language and English terms or photos so students can easily sort by size, number of sides, etc.· Teach/reteach shape vocabulary using drill, repetition, and hands-on activities· Use mats and pattern blocks to have children build big shapes with smaller ones. Highlight the outline to encourage children to stay within a given area as they make their final product· Use a math reference book or poster to help reinforce the names of shapes· Have students “act out” shapes and work with classmates to stand in a circle formation, stand in a square formation, etc. | · Have students describe and sort shapes by attribute into sorting trays. Label trays words or photos so students can easily sort by size, number of sides, etc.· Teach/reteach shape vocabulary using drill, repetition, and hands-on activities· Use mats and pattern blocks to have children build big shapes with smaller ones. Highlight the outline and inner shapes to encourage children to match shape to shape to assist with their final product· Use a math reference book or poster to help reinforce the names of shapes | · Have students describe and sort shapes by attribute into sorting trays. Label trays with photos so students can easily sort by size, number of sides, etc.· Teach/reteach shape vocabulary using drill, repetition, and hands-on activities· Use mats and pattern blocks to have children build big shapes with smaller ones. Highlight the outline to encourage children to stay within a given area as they make their final product· Use a math reference book or poster to help reinforce the names of shapes· Have students “act out” shapes and work with classmates to stand in a circle formation, stand in a square formation, etc. |