Moonachie School District Mathematics Curriculum: Grade 3

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The following maps outline the New Jersey Student Learning Standards for grade three 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 (ex. Study Island)
Homework Review	Group & Cooperative Work
Summative Assessment	TenMarks

Resources:

Counters (variety)	Protractors	Tangrams
Flashcards	Ten Frame	Geometric Shapes
Math Word Wall	Blocks	Geo-Board
Connecting Cubes	Calendar	Textbooks
Number Line	100 Chart	Attribute Blocks
Work Mats	Math Songs/Poems	Craft Sticks
Computer Software	Calculators	Wiki-Sticks
Interactive White Board	Money/Coins	Pattern Blocks
Flannel Board	Measurement Tools	Three Dimensional Shapes
Center Games	Judy Clock	Fraction Tiles
Concrete Objects	Small Student Clocks	Bar Models
Mini White Boards	Time Bingo	Base Ten Blocks
Manipulatives	Digital Clock	Math Journals
Math/Pocket Charts	Analog Clock	

Websites:

www.ixl.com   www.Envision 2020.com   www.xtramath.com
www.aplusmath.com   www.tenmarks.com   www.superteacherworksheets.com
www.brainpop.com   www.commoncoresheets.com   www.mrnussbaum.com
www.brainpopjr.com   www.fun4thebrain.com   www.learnzillion.com
www.funbrain.com   www.math-play.com   www.k6.thinkcentral.com
www.mathplayground.com   www.smartexchange.com   www. interactivesites.weebly.com/math.html
www.sheppardssoftware.com   http://www.k-5mathteachingresources.com
www.songsforteaching.com

References:

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/

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

Topic and Length of Time: Topics 1 - 6 - 71 days

Cluster Heading
3.OA.A: Represent and solve problems involving multiplication and division.

Performance Indicators
3.OA.A.1   Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 x 7.

3.OA.A.2   Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

3.OA.A.3   Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 🌱

3.OA.A.4   Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations, 8 x ? = 48, 5= ? ÷ 3, 6 x 6 = ?

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Represent and solve problems involving multiplication and division.	Multiply Divide Whole numbers Unknown Equation Array Expression	- Worksheets - Flashcards - Whole group - Guided practice - Independent practice - Write the room - Task cards

Cluster Heading
3.OA.B: Understand properties of multiplication and the relationship between multiplication and division.

Performance Indicators
3.OA.B.5   Apply properties of operations as strategies to multiply and divide. Examples: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. 3 x 5 x 2 (Commutative property of multiplication) can be found by 3 x 5 = 15 then 15 x 2 = 30 or by 5 x 2 = 10 then 3 x 10 = 30.

(Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 46 . (Distributive property.){Clarification: Students need not use formal terms for these properties}.

3.OA.B.6   Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Understand properties of multiplication and the relationship between multiplication and division.	Multiplication Division Operation Strategies Unknown Associative Property Distributive Property Commutative Property	- Worksheets - Flashcards - Small groups - Independent practice - Task Cards - Use counters to build arrays to represent equations

Cluster Heading
3.OA.C: Multiply and divide within 100.

Performance Indicators

3.OA.C.7   With accuracy and efficiency, multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to - Multiply and divide within 100.	Multiply Divide Operation Property Fact family	- Play Multiplication or division scoot game - Skip count on a number line or practice with a song

	Accuracy Efficiency Strategy	- Solve multiplication puzzles by matching up fact families - Solve mystery pictures/Color by multiplication or division fact - Use playing cards to play game - multiple numbers on each playing card

Cluster Heading

3.OA.D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Performance Indicators

3.OA.D.8   Solve two-step word problems, including problems involving money, using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (Clarification: This standard is limited to problems posed with whole numbers and having whole number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order) (Order of Operations). 🌱

3.OA.D.9   Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities

Students will be able to
- Solve two-step word problems.
- Develop and solve equations presented in word problems.
- Identify arithmetic patterns.
	Word Problems
	Money
	Operations
	  - Addition
	  - Subtraction
	  - Multiplication
	  - Division
	Order of Operations
		- Model thinking-aloud when reading and determining how to solve word problems.
		- Provide examples of arithmetic patterns.
		- Worksheets
		- Flashcards
		- Small groups

	- PEMDAS Patterns	- Independent practice - Task Cards

MATHEMATICS: GRADE 3
DOMAIN: NUMBER AND OPERATION IN BASE TEN

Topic and Length of Time: Topics 8 - 11 - 42 days

Cluster Heading
3.NBT.A **: Use place value understanding and properties of operations to perform multi-digit arithmetic. (Clarification: A range of algorithms may be used)**

Performance Indicators

3.NBT.A.1   Use place value understanding to round whole numbers to the nearest 10 or 100.
3.NBT.A.2   With accuracy and efficiency, add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3.NBT.A.3   Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g. 9 x 80, 5 x 60) using strategies based on place value and properties of operations.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Use place value understanding and properties of operations to perform multi-digit arithmetic.	Place value Whole numbers Accuracy Subtract Strategies Algorithms Properties Operations Multiply	- Use of base ten blocks to represent place value - Use of base ten blocks to represent rounding up or down - Use of open number lines for subtraction or addition - Use of partial sums for addition and subtraction - Use of base ten blocks for multiples of 10

MATHEMATICS: GRADE 3
DOMAIN: NUMBER AND OPERATIONS - FRACTIONS

Topic and Length of Time: Topics 12 -13 - 27 days

Cluster Heading
3.NF.A: Develop understanding of fractions as numbers.
Performance Indicators

3.NF.A.1   Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a part of size 1/b. For example: If a rectangle (i.e. the whole) is partitioned into 3 equal parts, each part is 1/3. Two of those parts would be 2/3.
 	
3.NF.A.2   Understand a fraction as a number on the number line; represent fractions on a number line diagram.
    - 3.NF.A.2.a: Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. For example, partition the number line from 0 to 1 into 3 equal parts, represent 1/3 on the number line and show that each part has a size 1/3.
    - 3.NF.A.2.b: Represent a fraction a/b on a number line diagram by marking off lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
 	
3.NF.A.3   Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
    - 3.NF.A.3.a: Understand two fractions as equivalent (equal) if they are the same size. Understand two fractions as equivalent if they are located at the same point on a number line.
    - 3.NF.A.3.b: Recognize and generate simple equivalent fractions by reasoning about their size, (e.g. 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent with the support of a visual fraction model.
    - 3.NF.A.3.c: Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point on a number line diagram.
    - 3.NF.A.3.d: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions with the support of a visual fraction model.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities	Evidence of Learning (Assessment)	Resources/Materials
Students will be able to: - Develop understanding of fractions as numbers.	Fraction Whole Partitioned Equal parts Number line	• Use fraction pieces to identify parts of a whole	Formative and Summative Assessments Benchmarks (If applicable) Conferencing Center Activities	Fraction Pieces Number lines Rulers Markers White boards

	Interval Equivalent Numerator Denominator Unit fractions Equivalent fractions	• Use fractions pieces to identify fraction equivalence • Use fraction pieces to compare fractions with like numerators and like denominators • Use fractions on a number line to compare • Draw and model fractions		Grid paper Crayons Google Suite Pattern blocks IXL Prodigy Boddle

MATHEMATICS: GRADE 3
DOMAIN: MEASUREMENT

Topic and Length of Time: Topic 14 - 14 days

Cluster Heading
3.M.A: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

Performance Indicators

3.M.A.1   Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.M.A.2   Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Clarification: "Measure and estimate liquid volumes and masses" excludes compound units such as cm3 and finding the geometric volume of a container. "Multiplying to solve one-step word problems" excludes multiplicative comparison problems (problems involving "times as much"; See Glossary, Tables 2a-2d))

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities	Evidence of Learning (Assessment)	Resources/Materials

Students will be able to:	Nearest minute	- Use analog clocks to determine time to the minute - Use clocks and number lines to solve elapsed time - Use scales to measure mass of objects - Use containers to measure liquid volume - Use of open number lines to problem solve measurement	Formative and Summative Assessments Benchmarks (If Applicable) Conferencing Center Activities	Clocks
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	Time interval Liquid volume Gram Kilogram Liter Mass Estimate			Cylinders of different sizes Objects to measure Markers Whiteboards IXL Prodigy

Cluster Heading
3.M.B: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Performance Indicators
3.M.B.3   **Recognize area as an attribute of plane figures and understand concepts of area measurement.** 　　- 3.M.B.3.a: A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. 　　- 3.M.B.3.b: A plane figure which can be covered without gaps or overlaps by unit squares is said to have an area of square units. 3.M.B.4   Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units). **3.M.B.5**   **Relate area to the operations of multiplication and addition.** 　　- 3.M.B.5.a: Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths. 　　- 3.M.B.5.b: Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

- 3.M.B.5.c: Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths and is the sum of and. Use area models to represent the distributive property in mathematical reasoning.
- 3.M.B.5.d: Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities	Evidence of Learning (Assessment)	Resources/Materials
Students will be able to: - Understand concepts of area and relate area to multiplication and to addition	Attribute Plane figures Measurement Area Unit square One square unit Non standard unit Multiplication Division Distributive property Decompose rectilinear figures	- Use of tiles to create area - Count the tiles to represent area - Connect rectangles to multiplication equation - Use of tiles and grid paper for rectilinear area	Formative and Summative Assessment Benchmark (If Applicable) Center Activities Conferencing	Tiles Grid paper Crayons / markers Whiteboards Google Suite IXL Prodigy Boddle

Cluster Heading
3.M.C: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Performance Indicators

3.M.C.6   Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. 🌱

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to:	Perimeter Polygon	- Measure shapes to determine perimeter

- Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	Side lengths Area	- Compare rectangles with same perimeter and different area - Compare rectangles with same area different perimeter - Use addition and subtraction strategies to determine missing side length - Use multiplication strategies to determine the side lengths of squares

MATHEMATICS: GRADE 3
DOMAIN: DATA LITERACY

Topic and Length of Time: Topic 7 - 10 days

Cluster Heading
3.DL.A: Understand data-based questions and data collection.

Performance Indicators

3.DL.A.1   Develop data-based questions and decide what data will answer the question. (e.g. "What size shoe does a 3rd grader wear?", "How many books does a 3rd grader read?")

3.DL.A.2   Collect student-centered data (e.g. collect data on students' favorite ice cream flavor) or use existing data to answer data-based questions.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Understand data-based questions and data collection	Data Survey	- Students create survey to collect data - Students survey peers and families (if applicable) - Create tally chart and frequency table to represent collected data

Cluster Heading
3.DL.B: Represent and interpret data.

Performance Indicators

3.DL.B.3   Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more"and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

3.DL.B.4   Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Represent and interpret data.	Scaled picture graph Data Bar graph Measurement data	- Create picture graphs and bar graphs on collected data - Measure items for line plot data - Create line plot on collected data - Use of addition and subtraction strategies to solve word problems

MATHEMATICS: GRADE 3
DOMAIN: GEOMETRY

Topic and Length of Time: Topics 15 - 16 - 19 days

Cluster Heading
3.G.A: Reason with shapes and their attributes.

Performance Indicators

3.G.A.1   Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

3.G.A.2   Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

Student Learning Objectives	Key Vocabulary	Suggested Tasks/Activities
Students will be able to: - Reason with shapes and their attributes.	Rhombus Rectangle Attributes	- Use pattern blocks to describe shape attributes

	Quadrilaterals Partition shapes Equal areas Equal parts Area	- Use pegboards to manipulate geometric shapes - Use rules to determine parallel lines - Classify shapes in to subcategories - Use shapes as a whole to partition into equal parts

INTERDISCIPLINARY CONNECTIONS	
Other Core Content Areas	**English Language Arts** - L.RD.3.4.A: Read grade-level text with purpose and understanding. - L.KL.3.1.A: Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases. - L.VI.3.3.B: Identify real-life connections between words and their use. - RI.CR.3.1: Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers. **Science** - 3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. - 3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **Social Studies** - 6.1.5.GeoSV.1: Identify the maps or types of maps most appropriate for specific purposes, (e.g., to locate physical and/or human features in a community, to determine the shortest route from one town to another town, to compare the number of people living at two or more locations). - 6.1.5.GeoSV.2: Use maps to explain the impact of location and place on the relationships between places in New Jersey, the United States and other countries. - 6.1.5.GeoSV.3: Demonstrate how to use digital geographic tools, maps and globes to measure distances and determine time zones, and locations using latitude and longitude. - 6.1.5.GeoSV.3: Demonstrate how to use digital geographic tools, maps and globes to measure distances and determine time zones, and locations using latitude and longitude. - 6.1.5.EconET.2: Use quantitative data to engage in cost benefit analyses of decisions that impact the individual and/or community.

	- 6.3.5.CivicsPD.3: Propose a solution to a local issue after considering evidence and the perspectives of different groups, including community members and local officials. - 6.3.5.GeoGI.1: Use technology to collaborate with others who have different perspectives to examine global issues, including climate change and propose possible solutions.
Career Readiness, Life Literacies and Key Skills	- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process. - 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global. - 9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data. - 9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.
Computer Science and Design Thinking	- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. - 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data. - 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

MODIFICATIONS				
English Language Learners	**Special Education**	**At-Risk**	**Gifted and Talented**	**504**
Scaffolding Word walls Sentence/paragraph frames Bilingual dictionaries/translation Think Alouds Read Alouds Highlight key vocabulary Annotation guides Think-pair-share Visual aides Modeling	Word walls Visual aides Graphic organizers Multimedia Leveled-readers Assistive technology Notes/summaries Extended time Answer masking Answer eliminator Highlighter Color Contrast	Teacher tutoring Peer tutoring Study guides Graphic organizers Extended time Parent communication Modified assignments Counseling	Curriculum compacting Challenge assignments Enrichment activities Tiered activities Independent research/inquiry Collaborative teamwork Higher level questioning Critical/Analytical thinking tasks Self-directed activities	Word walls Visual aides Graphic organizers Multimedia Leveled readers Assistive technology Notes/summaries Extended time Answer masking Answer eliminator Highlighter Color contrast Parent communication Modified assignments

Cognates				Counseling