The Spring School

Excellent Montessori Education since 1970

GRADE LEVEL MATHEMATICS CURRICULUM

Each child's work is designed for that child as an individual.
These are our general expectations for each grade level.

Established Standards (Public, private, and parochial)	The Spring School
KINDERGARTEN	
Count **1 to 10**	Count to **9,999** Four digit place value (units, tens, hundreds, thousands) Processes of addition and subtraction, 4 digit numbers Begin to memorize +, - facts
FIRST GRADE	
Count to **100**	Regrouping in + and –
Processes of +, - with one digit ***(3 + 2 = 5)***	Regrouping when subtracting from zero ***(3,504 – 2,845 = 659)***
Begin to memorize +, - facts	Begin multiplication
SECOND GRADE	
Add two digit numbers ***(24 + 35 = 59)***	Begin memorizing multiplication facts
Begin regrouping in +, - ***(12 + 58 = 70)***	Concepts of multiple digit multiplication ***(1,234 x 25 = 30,850)*** Begin division Fraction concepts
THIRD GRADE	
Begin multiplication and division **(3 x 5 = 15)**	Master multiplication, multiple digits **(4,545 x 186 = 845,370)**
Master regrouping in +, -	Long division
Four digit place value	Add and subtract fractions, like denominators Add and subtract fractions, unlike denominators Change fractions to mixed numbers Multiples, primes, factors Decimals to thousandths; add and subtract Simplify fractions Exponents Order of Operations

67 North Summit Street Tenafly, New Jersey 07670 (201) 541-5780 Fax 541-5782

Math 4th Grade

New Jersey Standard	The Spring School Syllabus
Number Sense	**Number Sense**
Place Value of Large Numbers to Thousands	Place Value of Very Large Numbers to Trillions
Simple Fractions	Prime and Composite Numbers
Adding and Subtracting Simple Fractions	Rounding Large Numbers to Trillions
Decimals	**Fractions**
Decimals and Fractions	Adding and Subtracting Simple with Like and Unlike Denominators
Comparing and Ordering Decimals	Adding and Subtracting Mixed Numbers with like and Unlike Denominators
Rounding and Ordering Decimals	Multiplying and Dividing Simple Fractions
Adding and Subtracting Decimals	**Decimals**
Operations	Place Value of Decimals
Multiplying and Dividing with Two Digit Factors, Divisors and Dividends	Comparing and Ordering Decimals
Geometry	Rounding and Estimating Decimals
Lines, Angles, and Circles	Adding and Subtracting Decimals
Transformations, Congruent Shapes, Lines of Symmetry	Multiplying and Dividing Decimals
Translations	**Operations**
Identifying 3-D figures	Multiplying with Multi Digit Multipliers and Multi Digit Multiplicands
Introduction of Coordinate Grid	Dividing with Multi Digit Divisors and Multi Digit Dividends
	Divisibility Rules of 2,3,4,5,6,8,9,and 10
	Factor Tree of Prime and Composite Numbers
	Factors and Multiples
	Geometry
	Lines, Angles, Planes
	Congruent and Similar Figures
	Classifying Shapes by their Sides and Angles
	Transformations, Translation, and Lines of Symmetry
	Identifying Solids and their parts
	Graphing on Coordinate Grid
Measurements	**Measurements**
Length, Area, and Perimeter	Linear, Mass and Capacity Measurements in both Metric and US Customary Measures with Hands on
Volume, Weight, Capacity, Elapsed Time, Calendar Time	Experience
Word Problems	Perimeter, Area, and Volume
	Elapsed Time, Adding and Subtracting Time, and Calendar Time in Word Problems

Math 4th Grade	
New Jersey Standard	**The Spring School Syllabus**
Data Analysis	
Line Graph, Pictograph, and Bar Graph	**Data Analysis**
Line Plots	Reading and Constructing Line Graph, Pictograph, Bar Graph, Double Line Graph, Circle Graphs
Mean, Median,and Mode.	Mean, Mode, Median, and Average
Probability,	Probability with, Marbles, Dice, Plaring Cards,Venn Diagram
Number Patterns	Introduction to Combination and Permutation
Change Over Time	**Patterns and Pre Algebra**
	Number Patterns, Input and Output Tables
	Ordering, Adding and Subtracting Integers
	Introduction of Sets and their Elements

Math 5th Grade

New Jersey Standard	The Spring School Syllabus
Number Sense	**Number Sense**
Place Value of Large Numbers to Millions	Place Value of Large Numbers to Trillions
Simple Fractions	Rounding Large Numbers to Trillions
Adding and Subtracting Simple and Complex Fractions	Prime and Composite Numbers
Multiplying and Dividing Simple Fractions	Factors and Multiples
Factors and Multiples	Prime Factorization Using Factor Tree
GCF and LCM	Finding GCF and LCM Using Prime Factorization
Decimals	Perfect Squares and Square Roots
Decimals and Fractions	**Fractions**
Adding and Subtracting Decimals	Adding and Subtracting Complex Fractions
Multiplying and Dividing Decimals	Adding and Subtracting Mixed Numbers with Like and Unlike Denominators
Rounding Decimal Digits	Multiplying and Dividing Simple Fractions to Mixed Numbers
Operations	**Decimals**
Multiplying and Dividing Large Numbers with Three Digit Factors	Place Value of Decimals
Geometry	Comparing and Ordering Decimals
Lines, Angles, and Circles	Rounding and Estimating Decimals
Transformations, Congruent Shapes, Lines of Symmetry	Adding and Subtracting Decimals
Translations	Multiplying Decimals with Multi Digit Factors
3-D Figures	Dividing Decimals with Multi Digit Divisors and Multi Digit Dividends
The Coordinate Grid	**Percents**
Measurements	Understanding and Exploring Percents
Length, Area, and Perimeter	Converting Percents to Decimals to Fractions and vice versa
Volume, Weight, Capacity, Elapsed Time, Calendar Time	Solving Percents Word Problems Using Proportions and Equations
Word Problems	**Ratios and Proportions**
Data Analysis	Comparing and Identifying Equivalent Ratios
Line Graph, Pictograph, and Bar Graph	Writing and Identifying Proportional Relationships
Line Plots	Solving Proportions Word Problems
Mean, Median, and Mode	**Measurements**
Probability	Estimating and Measuring Metric and US Cutomary Measures of Length, Mass, and Capacity
Venn Diagrams	Converting Larger Metric and US Customary Units of Length, Mass, and Capacity to Smaller and vice versa
Patterns	Adding and Subtracting Metric and US Customary Measures
Number Patterns	Adding and Subtracting Temperature Word Problems
Change Over Time	

Math 5th Grade	
New Jersey Standard	**The Spring School Syllabus**
	Geometry
	Identifying Lines, Angles, Planes, and Various Shapes
	Lines of Symmetry, Similarity, and Congruency
	Vertices, Edges, and Faces of Solid Figures
	Proving Congruency of Triangles Using Sides and Angles
	Finding Distance Between Two Points
	Perimeter and Area of Polygons
	Volume of Cubes and Rectangular Solids
	Constructive Geometry
	Constructing Arcs, Circles, Segments, Equilateral Triangles, Perpendicular Lines and Angle Bisectors
	Measuring and Drawing Angles
	Data Analysis and Probability
	Learning to Analyse and Draw Double Bar Graphs, Double Line Graphs, Circle Graphs,
	Stem and Leaf Plots, and Frequency Table
	Choosing the Appropriate Graph for the given Data
	Mean, Mode, Median, and Range
	Probability with Marbles, Dice, Coins, and Playing Cards
	Sets and Venn Diagrams
	Introduction to Combinations
	Patterns and Algebra
	Number Patterns
	Input and Output Tables
	Adding, Subtracting, Multiplying, and Dividing Integers
	Order of Operations

Math 6th Grade

New Jersey Standard	The Spring School Syllabus
Number Sense	**Number Sense**
Fractions and Decimals	Fractions and Decimals
Equivalent Decimals and Fractions	Equivalent Decimals and Fractions
Integers	Integers
Ratios and Proportions	Ratios and Proportions
Percents	Percents
Factors and Prime	Factoring Large Numbers Using Exponents of Primes
Operations	Scientific Notation
Computing with Fractions	**Operations with Exponents and Square Roots**
Computing with Decimals and Money	Using Negative Exponents
Using Exponents	Using Square Roots and Cube Roots
Order of Operations	Properties of a Number
Properties of Operations	Order of Operations Using Exponents
Estimation	Properties of Equations
Estimating Amounts	Opening Algebraic Statements
Exact Answer or Estimate	**Geometry**
Estimating a Range of Values	Circles and Polygons
Geometry	Triangles and Quadrilaterals
Lines and Angles	Congruency, Similarity, and Congruency
Circles and Polygons	Transformation and Translation
Triangles and Quadrilaterals	Graphing on the Coordinate Grid
Congruency and Similarity	Introduction of Slopes
Transformation	Learning to Graph Linear Equations
Symmetry	
Solid Figures	
Graphing on the Coordinate Grid	

Math 6th Grade	
New Jersey Standard	**The Spring School Syllabus**
Measurements	**Measurements**
Converting Units of Measurements	Relating Systems of Measurements
Relating Systems of Measurements	Perimeter, Circumference, and Area
Measuring Angles	Surface Area and Volume of Triangular, Rectangular, and Circular Solids
Perimeter, Circumference, and Area	Scale Drawings
Surface Area and Volume	Approximating Measurements
Scale Drawings	**Patterns and Algebra**
Approximating Measurements	Reading, Writing, and Solving Algebraic Expressions, Equations, and Inequalities
Patterns and Algebra	Writing Equations
Algebraic Expressions, Equations, and Inqualities	Solving Equations with Variables on both sides of the Equation
Patterns and Algebra	**Data Analysis and Probability**
Graphing Equations	Displaying Frequency
Rates of Change	Reading Graphs Critically
Data Analysis and Probability	Stem and Leaf Plots
Surveys	Choosing an Appropriate Graph
Median, Mode, and Range	Theoretical and Experimental Probability
Displaying Data	Independent and Dependent Events
Probability	Combinations
Pairs of Events	Conducting a Survey
Possible Outcomes	
Fairness	

Math 7th Grade	**Comparable to 9th Grade Honors**
New Jersey Standard	**The Spring School Syllabus**
Equivalent Forms	**Equivalent Forms**
Rations and Proportions	Ratios and Proportions Word Problems
Terminating and Repeating Decimals	Terminating and Repeating Decimals, Scientific Notations
Rational Numbers	Rational and Irrational Numbers
Operations	Converting Positive to Negative Exponents and vice versa
Adding and Subtracting Integers	**Operations**
Multiplying and Dividing Integers	Adding and Subtracting Radicals
Exponents	Multiplying and Dividing Radicals
Rational Numbers	Solving Expressions with Exponents
Percents	Order of Operations with Rational Expressions
Order of Operations	Solving and Graphing Linear Inequalities
Estimating	**Geometry**
Estimating with Whole Numbers	Constructing Angles and Lines
Estimating with Fractions	Proving Congruency of Triangles and Quadrilaterals
Estimating with Decimals	Introduction to Pythagoras' Theorem
Estimating with Percents	**Measurements**
Geometry	Converting Measurements with Two and Three Unit Multipliers
Polygons	**Trigonometry**
Similarity	Introduction of Sine, Cosine, and Tangent Ratios
Scale Drawings	Trigonometry of Right Triangles
Scale Factors	Finding the Slant Range from the Airplane to the Object
Conjectures	Finding Angle of Elevation and Angle of Depression
Transformations	
Measurements	
Computing with Measurements	
Precision	
Perimeter, Area, and Volume	

Math 7th Grade	**Comparable to 9th Grade Honors**
New Jersey Standard	**The Spring School Syllabus**
Patterns and Pre-Algebra	**Word Problems and Algebra**
Using Number Line	Solving System of Equations Using Substitution, Elimination, and Graphing Methods
Solving Equations	Coin Problems
Algebraic Expressions	Consecutive Integer Problems
Algebraic Inequalities	Uniform Motion Problems
Data Analysis	Age Problems
Functions and Relationships	Perimeter and Area Word Problems
Data Analysis and Probability	Percent Change Problems
Measures of Central Tendency	**Statistics and Probability**
Data Displays	Histograms, Scatter Plots
Analyzing Data	Analyzing the Trend from Graphs
Listing and Counting	Making Predictions from Scatter Plots
Probability, Fairness, and Simulations	Box-and-Whiskers Plots
	Finding Probability Using Cards, Coins, and Dice
	Combinations and Permutations
	Counting Outcomes
	Algebraic Relationships
	Sequences
	Functions
	Graphing Linear Functions
	Graphing Non-Linear Functions
	Exploring Polynomials
	Adding, Subtracting, Multiplying, and Dividing Polynomials

Math 8th Grade	**Comparable to 10th-11th Grade Honors**
New Jersey Standard	**The Spring School Syllabus**
Exponents	**Algebra I**
Scientific Notation	Radical Expressions
Square Roots	Sets and Subsets of Real Numbers
Cube Roots	Polynomial Expressions
Absolute Value	Solving Multivariable Expressions
Irrational Numbers	Advanced Ratio Problems
Ratios and Proportions	Greatest Common Factor of Algebraic Expressions
Operations	Lowest Common Multiple of Algebraic Expressions
Computing with Integers, Decimals, and Fractions	**Algebraic Expressions and Equations**
Operations with Exponents	Using Product Rules of Exponents
Operations with Square Roots and Cube Roots	Algebraic Phrases and Decimal Parts of a Number
Percents and Proportions	Using all the Properties of an Equation to Solve Rational Expressions
Order of Operations	Solving Polynomial Equations
Estimation	Adding and Subtracting Algebraic Expressions with Negative and Fractional Exponents
Estimating Square and Cube Roots	Solving Simultaneous Equations by Substitution
Estimating with Decimals	Abstract Rational Equations
Estmating with Fractions	Direct and Inverse Variation
Estimating with Percents	Uniform Motion Problems
Geometry	Completing the Square
Pythagorean Theorem	Quadratic Equations
Angles	**Algebraic Geometry**
Bisectors	Angles and Triangles
Planes, Polygons	Pythagoras Theorem
Tessellations and Geometric Patterns	Graphical Solutions, Inconsistent Equations, and Dependent Equations
Similarity and Transformations	Graphing Parabolas, Absolute Equations, Quadratic Equations and
	Square Root Equations

Math 8th Grade	**Comparable to 10th-11th Grade Honors**
New Jersey Standard	**The Spring School Syllabus**
Measurements	**Algebra 2**
Calculating with Measures	Factoring Trinomials
Relating Units of Measure	Operations with Scientific Notation
Precision	Word Problems with Two Statements of Equality
Rate	Quotient Rule for Square Roots
Volume, Surface Area, Perimeter, and Area	Difference of Two Square Theorems
Patterns and Algebra	Real Numbers and the System of Complex Numbers
Writing Expressions, Equations, and Inequalities	Exponents and Logarithms
Solving Expressions	Solving Vectors
Sequences	**Statistics and Probability**
Functions and Relationships	The Summation Symbol
Data Analysis and Propability	Measures of Central Tendancy
Simple Probability	Measures of Disperssion
Compound Probability	Permutations and Combinations
Listing and Counting	*At Least* and *At Most*
Combinations and Permutations	**Matrices**
Measures of Central Tendency	Basic Properties of Matrices
Analyzing Data	Matrix Addition and Subtraction
Displaying Data	Multiplying a Real Number and a Matrix
	Geometry
	Postulates and Theorems
	Learning to Write Two-Column Proofs