



CCSS Math & Geometry



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Math Cluster Overview Chart

Domain	Cluster Objectives
Counting and Cardinality	Know number names and the count sequence.
	Count to tell the number of objects.
	Compare numbers.
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
	Represent and solve problems involving addition and subtraction.
	Understand and apply properties of operations and the relationship between addition and subtraction.
	Add and subtract within 20.
	Work with addition and subtraction equations.
	Work with equal groups of objects to gain foundations for multiplication.
	Represent and solve problems involving multiplication and division.
	Understand properties of multiplication and the relationship between multiplication and division.
	Multiply and divide within 100.
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
	Use the four operations with whole numbers to solve problems.
	Gain familiarity with factors and multiples.
	Generate and analyze patterns.
	Write and interpret numerical expressions.
Analyze patterns and relationships.	
Number and Operations in Base 10	Work with numbers 11–19 to gain foundations for place value.
	Extend the counting sequence.
	Understand place value.
	Use place value understanding and properties of operations to add and subtract
	Use place value understanding and properties of operations to perform multi-digit arithmetic.
	Generalize place value understanding for multi-digit whole numbers.
	Understand the place value system.
	Perform operations with multi-digit whole numbers and with decimals to hundredths.
Measurement and Data	Describe and compare measurable attributes.
	Classify objects and count the number of objects in each category.
	Measure lengths indirectly and by iterating length units.
	Tell and write time.
	Represent and interpret data.
	Measure and estimate lengths in standard units.
	Relate addition and subtraction to length.
	Work with time and money.
	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
	Geometric measurement: understand concepts of angle and measure angles.
	Convert like measurement units within a given measurement system.
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	
Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
	Analyze, compare, create, and compose shapes.
	Reason with shapes and their attributes.
	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.
	Graph points on the coordinate plane to solve real-world and mathematical problems.
	Classify two-dimensional figures into categories based on their properties.
	Solve real-world and mathematical problems involving area, surface area, and volume.
	Draw, construct, and describe geometrical figures and describe the relationships between them.
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
	Understand congruence and similarity using physical models, transparencies, or geometry software.
	Understand and apply the Pythagorean Theorem.
	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
Number and Operations—Fractions	Develop understanding of fractions as numbers.
	Extend understanding of fraction equivalence and ordering.
	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
	Understand decimal notation for fractions, and compare decimal fractions.
	Use equivalent fractions as a strategy to add and subtract fractions.
	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.
	Analyze proportional relationships and use them to solve real-world and mathematical problems.
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
	Compute fluently with multi-digit numbers and find common factors and multiples.
	Apply and extend previous understandings of numbers to the system of rational numbers.
	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
	Know that there are numbers that are not rational, and approximate them by rational numbers.
Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.
	Reason about and solve one-variable equations and inequalities.
	Represent and analyze quantitative relationships between dependent and independent variables.
	Use properties of operations to generate equivalent expressions.
	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
	Work with radicals and integer exponents.

	Understand the connections between proportional relationships, lines, and linear equations.
	Analyze and solve linear equations and pairs of simultaneous linear equations.
Statistics and Probability	Develop understanding of statistical variability.
	Summarize and describe distributions.
	Use random sampling to draw inferences about a population.
	Draw informal comparative inferences about two populations.
	Investigate chance processes and develop, use, and evaluate probability models.
	Investigate patterns of association in bivariate data.
Functions	Define, evaluate, and compare functions.
	Use functions to model relationships between quantities.

Representative AMI Math Curriculum

Content Strand	Material	Presentations/Activities
Great story of mathematics/history		
	Charts/story	The story of our numerals
		Making charts/making models
		Making timelines
		Research: number systems, cultural history, decimal system
The decimal system, categories and place value		
	Golden beads & presentation tray	Introduce decimal/whole number categories
	Golden beads & decimal cards	Association of symbol & quantity 1, 10, 100, 1000's
	Decimal cards	Understanding zero
	Golden beads & trays	Forming numbers using concrete quantities of beads
	Golden beads & decimal cards	Forming numbers w/decimal cards, hiding zeroes
	Golden beads, decimal cards & trays	Creating quantities w/symbols up to 9,999
	Wooden hierarchical material	Introduction to quantity & language, up to million
		Geometric shape and families to millions
	Number cards 1, 10, 100... 1,000,000	Introduction to symbol to millions
	Whm & number cards	Symbol and quantity into millions
	Golden beads, decimal cards	Expanded notation/decomposing numbers
	Sbf/lbf & sbf/lbf paper	Expanded notation/decomposing numbers
	Bank game	Expanded notation (along w/multiplication)
Quantity & symbol: whole numbers: numeration		
	Spindle boxes (0 - 9), bead stair (1 - 9)	Introduce/review numbers 1 - 10
	Snake game (1-10), memory games	Introduce/review numbers 1 - 10
	Cards & counters	Introduce odd/even numbers
	Golden beads	Counting and numbers 1 – 10
	Golden beads	Exchange/change game across categories
	Teen boards, bead bars	Introduce/review counting 11 - 20
	Ten boards & bead bars	Introduce/review counting 1 - 100
	Golden beads, base board	Decimal system (numbers to thousands using base board in base 10)
	Small bead frame	Counting to 1000
	Hundred & thousand chain & labels	Counting to 1000
	Short/square bead chains & labels	Linear & skip counting
	Long/cube bead chains & labels	Linear & skip counting
	Large bead frame	Counting to millions
	Sbf/lbf and sbf/lbf paper	Presentation of symbol up to millions
Whole numbers: addition		
	Golden beads	Concept of static addition with whole numbers
	Golden beads & decimal cards	Static addition (no carrying)
	Large bead frame	Static addition (no carrying)
	Stamp game	Static addition (no carrying)
	Stamp game w/square paper	Static addition w/recording
	Golden beads & decimal cards	Dynamic addition (w/carrying)
	Large bead frame	Dynamic addition (w/carrying)
	Dot game	Dynamic addition (w/carrying)
	Stamp game	Dynamic addition (w/carrying)
	Lbf and lbf paper	Dynamic addition w/recording
	Stamp game w/square paper	Dynamic addition w/recording
	Golden beads & decimal cards	Special cases, using zero in all terms of equation
	Lbf, stamp game w/paper	Introduce/consolidate algorithm
	Golden beads	Addition word problems, problem solving
	Bead bar material and pencil/paper	Addition word problems, problem solving
	Bead bar material and pencil/paper	Commutative law of addition
	Bead bar material and pencil/paper	Associative property of addition

Content Strand	Material	Presentations/Activities
Memorization of addition facts	Addition strip board	Addition math facts, memorization
	Addition practice/finger charts	Addition math facts, memorization
	Addition snake game	Addition math facts, memorization
	Bead bar material and pencil/paper	Memorization of facts (addition)
Whole numbers: subtraction		
	Golden beads	Concept of static subtraction with whole numbers
	Golden beads & decimal cards	Static subtraction (no borrowing)
	Large bead frame	Static subtraction (no borrowing)
	Stamp game	Static subtraction (no borrowing)
	Stamp game w/square paper	Static addition w/recording
	Golden beads & decimal cards	Dynamic subtraction (w/borrowing)
	Large bead frame	Dynamic subtraction (w/borrowing)
	Dot game	Dynamic subtraction (w/borrowing)
	Stamp game	Dynamic subtraction (w/borrowing)
	Lbf and lbf paper	Dynamic subtraction (w/borrowing)
	Stamp game w/square paper	Dynamic subtraction (w/borrowing)
	Golden beads & decimal cards	Special cases, using zero in all terms of equation
	Lbf, stamp game w/paper	Introduce/consolidate algorithm
	Golden beads	Subtraction word problems, problem solving
	Bead bar material and pencil/paper	Subtraction word problems, problem solving
Memorization of subtraction facts	Subtraction strip board	Subtraction math facts, memorization
	Subtraction practice/finger charts	Subtraction math facts, memorization
	Subtraction snake game	Subtraction math facts, memorization
	Bead bar material and pencil/paper	Memorization of facts (subtraction)
Laws of multiplication		
	Golden beads w/decimal cards	Introduce multiplication
	Bead bars	Concept of simple multiplication (facts)
	Bead bars	Build the decanomial w/bead bars
	Practice charts, bead bars, booklets	Memorization of multiplication facts
	Bead chains	Skip counting, memorization of facts
Commutative law of multiplication		
	Bead bars and cards	Concept and language of commutative law
Distributive law of multiplication		
	Bead bars, cards, parentheses, envelopes	Concept and language of distributive law
	Bead bars	Sensorial exploration
		Passage to more symbolic representations with beads
		Passage to more symbolic representations without beads
		Passage to more symbolic representations on paper
	Golden beads & decimal cards	Extension to the decimal system: multiplication of composite numbers
		Extension to the decimal system: multiplication of composite numbers and passage to more symbolic representation with number cards
	Paper	Extension to the decimal system: multiplication of composite numbers and passage to more symbolic representation on paper
Long multiplication		
Checkerboard		
	Checkerboard & bead bars	Introduction to the checkerboard
	Checkerboard & bead bars & number tickets	Multiplication by a one-digit multiplier
	Checkerboard & bead bars & number tickets	Multiplication by a multi-digit multiplier (using bead bars, no facts)
	Checkerboard & bead bars & number tickets	Multiplication by a multi-digit multiplier (using bead bars, some facts)
	Checkerboard, bead bars, no. Tickets, paper	Multiplication by a multi-digit multiplier (using all facts, recording problem and final product)

Content Strand	Material	Presentations/Activities
	Checkerboard, bead bars, no. Tickets, paper	Multiplication by a multi-digit multiplier (using facts, recording problem, partial products, and final product)
		Multiplication by a multi-digit multiplier (no beads, using facts, recoding problem and final product)
Large bead frame		
	Large bead frame & lbf paper	Multiplication by a one-digit multiplier
	Large bead frame & lbf paper	Multi-digit multiplier
	Large bead frame & lbf paper	Multi-digit multiplier (recording partial products, adding partial products, checking)
Bank game		
	Bank game	Multiplication by a one-digit multiplier
	Bank game	Two-digit multiplier
	Bank game	Three-digit multiplier
Flat bead frame		
	Flat/gold bead frame & paper	Multiplication by a two-to four-digit multiplier (writing final product only)
	Flat/gold bead frame & paper	Multiplication by a two-to four-digit multiplier (writing partial products)
Geometric form of multiplication		
	Graph paper, colored pencils	Geometric form of multiplication
Multiplication summary		
	Paper/pencil	Consolidate multiplication fact memorization
	Paper/pencil & appropriate material	Traditional multiplication algorithm
	Paper/pencil	Multiplication word problems
Long division		
Division with boards, racks, and tubes		
	Racks & tubes materials	Division by a one-digit divisor
	Racks & tubes materials	Division by a multi-digit divisor
	Racks & tubes and paper/pencil	Recording intermediate remainders, quotient, final remainder
	Racks & tubes and paper/pencil	Recording what has been used, intermediate remainders, quotient, final remainder
	Racks & tubes and paper/pencil	Special cases
Division with stamps		
	Stamp game	Division with stamps
Division summary		
	Pencil/paper	Traditional division algorithm
	Pencil/paper	Division word problems
Multiples, factors, and primes		
Multiples		
	Short bead chains $1^2 - 10^2$	Concept and language of multiple using short chains
	Bead bars	Further investigation of multiples using bead bars (one-and two-digit numbers)
	Multiples of numbers paper	Further investigation of multiples using multiples of numbers paper
	Tables A & B	Calculation of multiples using table A and table B
	Bead bars & paper/pencil	Concept and language of common multiple
	Multiples of numbers paper	Investigation of common multiple using multiples of numbers paper
	Table C	Investigation of numbers using table C (leading to concept and language of prime number)
	Bead bars & paper/pencil	Concept, language, and notation for least common multiple (lcm)
Factors		
	Pegs and pegboard	Concept and language of factor using pegs/pegboard
	Pegs & pegboard with white strips	Concept and language of common factor
	Table C	Concept and language for prime factor using table C
	Pegs & pegboard	Calculation of prime factors using pegboard

Content Strand	Material	Presentations/Activities
	Pegs & pegboard, pencil/paper	Using prime factors to find the least common multiple (lcm) of numbers
	Pegs & pegboard, pencil/paper	Concept, language, and notation for greatest common factor (gcf)
	Sieve of eratosthenes	Handout: sieve of eratosthenes
Divisibility		
	Gold beads and paper tickets	Divisibility by 2, 5, and 25
	Gold beads and paper tickets	Divisibility by 4 and 8
	Gold beads, paper tickets, pencil/paper	Divisibility chart
	Gold beads and paper tickets	Divisibility by 3 and 9
	Gold beads and paper tickets	Divisibility by 11
Fractions		
Introduction and equivalence		
	Red metal fraction insets	Fractions: quantity and language
	Fraction insets & labels	Fractions: symbol, notation, further language
		Fractions: other representations
	Fraction insets	Equivalence: sensorial
Operations: simple cases		
	Fraction insets and paper tickets	Simple addition (denominators common, reduction)
	Fraction insets and paper tickets	Simple subtraction (denominators common, reduction)
	Fraction insets and paper tickets	Simple multiplication (by single-digit whole number, reduction)
	Fraction insets and paper tickets	Simple division (by single-digit whole number, reduction)
Operations: beyond simple cases		
	Fraction insets and paper tickets	Addition/subtraction: uncommon denominators
	Fraction insets and paper tickets	Multiplication by a fraction less than one
	Fraction insets and paper tickets	Division by a fraction less than one (measurement/group)
	Fraction insets, paper tickets, lg. Skittles	Division by a fraction less than one (partitive / sharing)
Operations: passages to abstraction		
	Transparencies prepared with fraction lines	Addition/subtraction: finding a common denominator using transparencies
	Pencil/paper	Addition/subtraction: finding a common denominator by multiplying the denominators
	Pencil/paper	Addition/subtraction: known denominator, finding the numerators by raising or reducing a fraction
	Pencil/paper	Addition/Subtraction: Finding the Least Common Denominator (LCD)
	Pencil/paper	Abstraction of the rules for operations with fractions
Applications with Fractions		
Decimal Fractions		
Introduction to Decimal Fractions		
	Decimal cubes and beads	Decimals: quantity and language
	Label strip for decimal board	Decimals: symbol
	Decimal board (yellow board) & cubes/beads	Decimals: formation and reading
Operations: Simple Cases		
	Decimal board (yellow board) & cubes/beads	Addition and subtraction using the decimal board
	Pencil/paper	Algorithm for addition and subtraction of decimals
	Decimal board (yellow board) & cubes/beads	Multiplication by a unit multiplier
	Decimal cubes and skittles	Division by a unit divisor
Multiplication with Decimals: Beyond Simple Cases		
	Decimal checkerboard	Multiplication by a fraction using the decimal checkerboard
	Felt squares for decimal checkerboard	Category multiplication in the decimal system (whole and decimal numbers, using felt squares)

Content Strand	Material	Presentations/Activities
	Decimal checkerboard and beads	Multiplication of a fraction by a fraction using the decimal board
	Pencil/paper	Algorithm for multiplication of decimals
Division with decimals: beyond simple cases		
	Decimal beads and skittles	Division by a mixed number or by a decimal using skittles
	Pencil/paper	Algorithm for division of decimals
Introduction to percentage with the centesimal frame		
	Centesimal frame	Concept, language, and notation of percentage
	Red fraction insets and centesimal frame	Conversion of fraction insets to percentage using the centesimal frame
Special topics extending the exploration of decimals		
	Pencil/paper	Relative size of terms when multiplying and dividing (positive) numbers
	Pencil/paper	Rounding of decimal fractions
	Pencil/paper	Conversion of common to decimal fractions (and vice versa)
Squares and cubes of numbers		
Squares		
	Bead squares and short chains	Concept and notation of the square of a number
	Bead squares and short chains	Exploring squares of numbers 1 – 10
	Numerical (paper) decanomial	Numerical decanomial
Cubes		
	Bead cubes and long chains	Concept and notation of the cube of a number
	Bead cubes and long chains	Exploring cubes of numbers 1 – 10
	Bead cubes and long chains	Building the tower of jewels
Operations with squares and cubes		
	Bead squares and cubes and paper tickets	Operations with numbers written as squares and cubes
Squaring		
Squaring: arithmetic passages		
	Gold square of 10 & rubber bands & tickets	Transformation of the square of 10 into a binomial
	Gold square of 10 & rubber bands & tickets	Transformation of the square of 10 into a trinomial, quadranomial, polynomial
	Bead squares and bead bars and tickets	Exploring the binomial: building a larger square from a smaller square
	Bead squares and bead bars and tickets	Exploring a polynomial: squaring a sum (one-digit terms)
	Golden beads and tickets	Application to decimal numbers: squaring a binomial using golden beads (whole numbers ≤ 99)
	Pegboard & pegs, guide square & tickets	Application to decimal numbers: squaring a binomial using hierarchical pegs (whole numbers) and introduction to guide squares
	Guide squares and paper/pencil	Guide squares: deriving the decimal formula for the square of a polynomial
Squaring: algebraic passages		
	Gold bead squares, rubber bands, bi-cube lid	Squaring a binomial, algebraic
	Gold bead squares, rubber bands, tri-cube lid	Squaring a trinomial, algebraic
Cubing		
Cubing: arithmetic passages		
	Wooden cubing material	Transformation of a given cube into a cube of a binomial
	Wooden cubing material	Building from a cube to a larger cube with wooden cubing material
		Cubing a binomial, numeric, starting from the square
		Cubing a binomial, numeric, starting from the cube of the first term
		Cubing a trinomial, numeric, starting from the square

Content Strand	Material	Presentations/Activities
		Cubing a trinomial, numeric, starting from the cube of the first term
Cubing: algebraic passages		
		Cubing a binomial, algebraic
		Cubing a trinomial, algebraic
Cubing: application to decimal numbers		
	Trinomial & hierarchical cubes & tickets	Cubing a decimal number (three-digit) using the hierarchical cube
Square root		
Square root: sensorial passages		
	Bead squares 1-10, paper/pencil	Concept, language, and notation for square root
	Bead squares 1-10, paper/pencil	Introduction: one-digit roots
	Gold bead material, paper/pencil	Two-digit roots: using golden bead material
	Gold bead material, $n-n^2$ chart	Two-digit roots: observing the $n - n^2$ chart
	Pegboard/pegs, $n-n^2$ chart, guide squares	Two-digit roots: using pegboard (writing results only)
	Pegboard/pegs, $n-n^2$ chart, guide squares	Two-digit roots: writing
	Pegboard/pegs, $n-n^2$ chart, guide squares	Two-digit roots: four-digit numbers
	Pegboard/pegs, $n-n^2$ chart, guide squares	Three-digit roots and beyond: three-digit roots
	Pegboard/pegs, $n-n^2$ chart, guide squares	Three-digit roots and beyond: zero in the root
	Pegboard/pegs, $n-n^2$ chart, guide squares	Three-digit roots and beyond: zero at the end of the root
	Pegboard/pegs, $n-n^2$ chart, guide squares	Three-digit roots and beyond: four-digit roots, writing
Square root: passages to abstraction		
	Pegboard/pegs, $n-n^2$ chart, guide squares	Leading to abstraction: using more than one category at a time
	Pegboard/pegs, $n-n^2$ chart, guide squares	Leading to abstraction: calculating the next root digit
	Paper/pencil, guide squares	Calculating square root on paper
	Paper/pencil	Rule for extraction of square root
Cube root		
Cube root: sensorial passages		
	Bead cubes 1-10, tickets	Concept, geometric representation, language, and notation for cube root
	White 2cm cubes	Extracting a cube root using 2cm cubes (for numbers less than 250)
	Wooden cubing material	Extracting a cube root for four- to six-digit numbers using chart and wooden cubing material (by category)
Cube root: passages to abstraction		
	Wooden cubing material, $n-n^3$ chart	Extracting a cube root of four- to six-digit numbers using wooden cubing material: consolidation of the calculations of identical groups of prisms
	Hierarchical cube, $n-n^3$ chart	Extracting a cube root of seven- to nine-digit numbers using the hierarchical/decimal trinomial: writing the calculations from the decimal values of the cubes and prisms
	Paper/pencil	Rule for extraction of cube root
Signed numbers		
	Elementary/negative snake game	Introduction to signed numbers
	Elementary/negative snake game	Addition of signed numbers
	Elementary/negative snake game	Multiplication of signed numbers
	Elementary/negative snake game	Subtraction of signed numbers
	Elementary/negative snake game	Division of signed numbers
	Paper/pencil	Word problems using signed numbers
Powers of Numbers		
	Box of 1cm cubes, powers of two material	Factors of the same number for the power of that number

Content Strand	Material	Presentations/Activities
	Powers of two material	Unit can be any physical size
	Wooden cubing material	Any number has powers
	Wooden cubing material, pencil/paper	Special case: multiplication or division of powers of numbers having the same base
	Decimal board & reciprocal strip	Negative exponents for base 10
	Paper/pencil	Operations with numbers written in exponential notation
	Paper/pencil	Operations: numbers written in expanded power notation
Non-decimal bases		
	Number base board & gold beads	Counting in a non-decimal base
	Number base board & gold beads	Operations in different bases
	Number base board, gold beads, bead bars	Conversion of notation from one base to another using bead material
	Number base board, gold beads, bead bars	Conversion from notation of any base to base 10 using expanded power notation
	Paper/pencil	Algorithm for conversion of notation from one base to another
Ratio and proportion		
Ratio	Objects from environment, paper/pencil	Concept, language, and notation for ratio
	Paper/pencil	Ratio can be expressed as a fraction
	Pegboard & pegs, paper/pencil	Ratios are equal if they are equivalent fractions
	Paper/pencil, objects from environment	Problem-solving using ratio
Proportion		
	Metal inset material, powers of two	Concept, language, and notation for proportion
	Paper/pencil, objects from environment	Solving equations with proportion
	Paper/pencil	Cross multiplication
Word problems	Paper/pencil, objects from environment	Word problems with ratio and proportion
Introduction to algebra		
	Bead bars, number & operations tickets	Concept of an equation and balancing an equation using the laws of equivalence
	Bead bars, number & operations tickets	Order of operations
	Bead bars, number & operations tickets	Solving an equation for one unknown using the laws of inverse operations
	Bead bars, number & operations tickets	Solving for one unknown using more than one operation
	Paper/pencil	Solving equations having fractional coefficients
	Paper/pencil	Translating verbal problems into equations
	Paper/pencil	Solving for two unknowns when there is a pair of equations
	Paper/pencil	Solving for two unknowns
	Paper/pencil, prepared word problems	Algebraic word problems
Graphing		
	Graph examples, paper/pencils	Introduce graphing (interpreting & constructing graphs)
	Graph paper/pencils	Types of graphs
Statistics & probability		
	Graph paper/pencil	Introduce statistics
	Graph paper/pencil	Statistic concepts: range, median, mode, mean
	Bead bars, objects from the environment	Probability, estimation
Word problems		
Solving for distance, time, and speed		
	Group of children	Preliminary: run a race
	Gold beads & word problem labels	Solving for distance

Content Strand	Material	Presentations/Activities
	Gold beads & word problem labels	Solving for time
	Gold beads & word problem labels	Solving for speed
Solving for principal, time, interest, and rate		
		Preliminary: discuss banking
	Gold beads & word problem labels	Solving for interest
	Gold beads & word problem labels	Solving for rate
	Gold beads & word problem labels	Solving for principal
	Gold beads & word problem labels	Solving for time
Measurement		
	Objects from environment, e.G. Paperclips	Concept of measurement: non-standard unit of measurement for length
	Measuring tools	Concept of measurement: standard unit for measurement for length
	Measuring tools	Introduction to the customary/english system
Metric system	Decimal board & handmade cards	Introduction to the metric system
	Card material	Metric system abbreviations
		Metric system conversions: how many smaller units are in a larger unit?
		Metric system conversions: how many larger units are in a smaller unit?
Other measurements		Volume
		Weight
		Area
		Temperature
Geometry		
The history of geometry		
Stories for geometry	Rope for the story (3-4-5)	The story of how geometry got its name
		Thales of Miletus
		Pythagoras of croton
		Plato of Athens
		Euclid of Alexandria
Congruency, similarity, and equivalence		
	Red metal inset material	Concept, language, and notation for congruent geometric figures
	Red metal inset material	Concept, language, and notation for similar geometric figures
	Red metal inset material	Concept, language, and notation for equivalent geometric figures
	Constructive triangles	Further investigation of congruent, similar, and equivalent figures using constructive triangles
Geometry nomenclature		
	Geometry nomenclature material	Introduction to the material
	Geometry nomenclature material	Activity one
	Geometry nomenclature material	Activity two
	Geometry nomenclature material	Activity three
	Geometry nomenclature material	Activity four
Lines		
	String	Types of lines
	String/scissors/marker	Parts of a straight line
	Box of geometry sticks	Positions of a straight line
	Box of geometry sticks	Positions of two straight lines
Angles		
	Box of geometry sticks, right angle tool	Types of angles
	Box of geometry sticks	Parts of an angle
	Box of geometry sticks	Pairs of angles
	Box of geometry sticks	Angles formed by two lines cut by a transversal

Content Strand	Material	Presentations/Activities
		Story of the Babylonians
	Montessori protractor	Measurement of an angle in degrees using the Montessori protractor
	Standard protractor	Measurement of an angle in degrees using the standard protractor
Polygons		
	Box of geometry sticks	Types of polygons, named by the number of sides
	Box of geometry sticks	Parts of a polygon
	Box of geometry sticks	Diagonals of a polygon related to the sum of interior angles of a polygon
	Box of geometry sticks	Regular and irregular polygons
	Box of geometry sticks	Parts of a regular polygon
Triangles	Box of geometry sticks	Parts of a triangle
	Box of geometry sticks	Types of triangles according to sides
	Box of geometry sticks, right angle tool	Types of triangles according to angles
	Pythagorean plate	The story of pythagoras
	Box of geometry sticks	Types of triangles according to sides and angles
Quadrilaterals	Box of geometry sticks	Types of quadrilaterals
	Box of geometry sticks	Parts of a quadrilateral
	Box of geometry sticks	Family tree of quadrilaterals
Circles		
	Lg. Paper/box of sticks/pencils/string	Parts of a circle
	Insets of polygons/circle, ruler, paper/pencil	Circumference
	Box of sticks w/curved lines or circle	Positions of a circle and a straight line
	Box of sticks w/curved lines or circle	Position of two circumferences
Equivalence with iron material		
	Red metal equivalence insets	Triangle equivalent to rectangle
	Red metal equivalence insets	Rhombus equivalent to rectangle
	Red metal equivalence insets	Trapezoid equivalent to rectangle
	Red metal equivalence insets	Decagon equivalent to rectangles i and ii
	Red metal equivalence insets	Equivalence of regular polygon to rectangle (example: pentagon)
Area		
Introduction to area	Yellow area material (w/grid lines)	Concept of measuring a surface with unit squares
	Yellow area material, rectangle	Concept of transforming a surface into a rectangle in order to measure area
	Yellow area material	Identifying base and height of rectangle, parallelogram, and triangles
Deriving area formulas using yellow area material		
	Yellow area material, paper/pencil	Deriving the formula for the area of a rectangle
	Yellow area material, paper/pencil	Deriving the formula for the area of a parallelogram
	Yellow area material, paper/pencil	Deriving the formula for the area of a triangle
Deriving area formulas using iron material		
	Red metal equivalence insets/iron material	Area of triangle
	Red metal equivalence insets/iron material	Area of rhombus
	Red metal equivalence insets/iron material	Area of trapezoid
	Red metal equivalence insets/iron material	Area of decagon: rectangle i
	Red metal equivalence insets/iron material	Area of decagon: rectangle ii
	Red metal equivalence insets/iron material	Area of regular polygon (example: pentagon)

Content Strand	Material	Presentations/Activities
Deriving area formulas using paper material		
	Prepared divided circles and rectangles	Area of circle
Pythagorean theorem		
Equivalence with iron material	Pythagorean plate i	Pythagorean theorem: plate i
	Pythagorean plate ii	Pythagorean theorem: plate ii
	Euclid's plate	Pythagorean theorem: plate iii (euclid's plate)
Volume		
	2Cm and 1cm white cube material	Concept of volume
	Rectangular prism, volume material, a 2cm cube	Volume of right prism
	Solid and divided prism materials	Volume of right prisms with non-rectangular bases
	Hollow prisms and sand	Volume of square pyramid
	Geometric solids and sand	Solids of rotation
	Geometric solid cylinder, paper/pencil	Volume of a cylinder
	Geometric solid cone, paper/pencil	Volume of a cone
	Geometric solid sphere, paper/pencil	Volume of a sphere
Surface area		
Lateral and total surface area:	Geometric solids, paper/pencil	Rectangular prism
Geometric design and construction		
Geometric design	Metal insets	Metal inset techniques
	Metal insets and paper/pencils	Designing using the metal insets
	Ruler, paper/pencil	Techniques using a straight-edge or ruler
	Compass, paper/pencil	Techniques using a compass
	Geometry tools, paper/pencil	Designing geometric figures/ designing with a straight-edge and compass
Geometric constructions	Straws/string, geometric solids, paper/pencil	Geometric constructions