National Council of Teachers of Mathematics,
Principles and Standards for School Mathematics, Grades 3-5
Correlated to
Academic Language Notebooks™: The Language of Math, Level E/Grade 5

Numbers and Operations Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—	**In grades 3–5 all students should—**	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals;	**Module 1: Place Value of Whole Numbers and Decimals** **Module 2: Compare and Order Whole Numbers and Decimals**
	Recognize equivalent representations for the same number and generate them by decomposing and composing numbers;	**Module 12: Equivalent Fractions and Simplest Form**
	Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers;	**Module 11: Fractions and Mixed Number Concepts**
	Use models, benchmarks, and equivalent forms to judge the size of fractions;	**Module 12: Equivalent Fractions and Simplest Form** **Module 13: Compare and Order Fractions**
	Recognize and generate equivalent forms of commonly used fractions, decimals, and percents;	**Module 12: Equivalent Fractions and Simplest Form** **Module 27: Percent**
	Explore numbers less than 0 by extending the number line and through familiar applications;	
	Describe classes of numbers according to characteristics such as the nature of their factors.	**Module 9: Factors and divisibility** **Module 10: Common Factors and Common Multiples**
Understand meanings of operations and how they relate to one another	Understand various meanings of multiplication and division;	**Module 6: Patterns and Estimation in Multiplication** **Module 7: Properties of Multiplication** **Module 8: Patterns and Estimation in Division**
	Understand the effects of multiplying and dividing whole numbers;	**Module 7: Properties of Multiplication** **Module 9: Factors and divisibility**
	Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems;	**Module 8: Patterns and Estimation in Division**
	Understand and use properties of operations, such as the distributivity of multiplication over addition.	**Module 7: Properties of Multiplication**
Compute fluently and make reasonable estimates	Develop fluency with basic number combinations for multiplication and division and use these combinations to mentally compute related problems, such as 30 x 50;	**Module 8: Patterns and Estimation in Division**

	Develop fluency in adding, subtracting, multiplying, and dividing whole numbers;	
	Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results;	**Module 4: Properties of Addition** **Module 6: Patterns and Estimation in Multiplication** **Module 7: Properties of Multiplication** **Module 8: Patterns and Estimation in Division**
	Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience;	
	Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals;	**Module 14: Ad and Subtract Fractions with Unlike Denominators**
	Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tools.	**Module 4: Properties of Addition** **Module 5: Estimate Whole Numbers and Decimals** **Module 6: Patterns and Estimation in Multiplication** **Module 7: Properties of Multiplication** **Module 8: Patterns and Estimation in Division**

Algebra Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—	**In grades 3–5 all students should—**	
Understand patterns, relations, and functions	Describe, extend, and make generalizations about geometric and numeric patterns;	**Module 6: Patterns and Estimation in Multiplication** **Module 8: Patterns and Estimation in Division**
	Represent and analyze patterns and functions, using words, tables, and graphs.	**Module 6: Patterns and Estimation in Multiplication** **Module 8: Patterns and Estimation in Division**
Represent and analyze mathematical situations and structures using algebraic symbols	Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers;	**Module 4: Properties of Addition** **Module 7: Properties of Multiplication**
	Represent the idea of a variable as an unknown quantity using a letter or a symbol;	**Module 29: Write and Solve Equations** **Module 30: Functions and Ordered Pairs**
	Express mathematical relationships using equations.	**Module 29: Write and Solve Equations**
Use mathematical models to represent and understand quantitative relationships	Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions.	**Module 24: Make and Read Graphs** **Module 25: Statistics and Data Analysis** **Module 30: Functions and Ordered Pairs**
Analyze change in various contexts	Investigate how a change in one variable relates to a change in a second variable;	
	Identify and describe situations with constant or varying rates of change and compare them.	

Geometry Standard for Grades 3–5		Level E/Grade 5 Module Name and Number
Instructional programs from prekindergarten through grade 12 should enable all students to—	**In grades 3–5 all students should—**	
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes;	**Module 20: Solid Figures**
	Classify two- and three-dimensional shapes according to their properties and develop definitions of classes of shapes such as triangles and pyramids;	**Module 20: Solid Figures**
	Investigate, describe, and reason about the results of subdividing, combining, and transforming shapes;	**Module 18: Congruence, Transformations, and Symmetry**
	Explore congruence and similarity;	**Module 18: Congruence, Transformations, and Symmetry**
	Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions.	**Module 18: Congruence, Transformations, and Symmetry**
Specify locations and describe spatial relationships using coordinate geometry and other representational systems	Describe location and movement using common language and geometric vocabulary;	
	Make and use coordinate systems to specify locations and to describe paths;	
	Find the distance between points along horizontal and vertical lines of a coordinate system.	
Apply transformations and use symmetry to analyze mathematical situations	Predict and describe the results of sliding, flipping, and turning two-dimensional shapes;	**Module 18: Congruence, Transformations, and Symmetry**
	Describe a motion or a series of motions that will show that two shapes are congruent;	**Module 18: Congruence, Transformations, and Symmetry**
	Identify and describe line and rotational symmetry in two- and three-dimensional shapes and designs.	**Module 18: Congruence, Transformations, and Symmetry**
Use visualization, spatial reasoning, and geometric modeling to solve problems	Build and draw geometric objects;	
	Create and describe mental images of objects, patterns, and paths;	**Module 18: Congruence, Transformations, and Symmetry**
	Identify and build a three-dimensional object from two-dimensional representations of that object;	

	Identify and draw a two-dimensional representation of a three-dimensional object;	
	Use geometric models to solve problems in other areas of mathematics, such as number and measurement;	**Module 22: Perimeter and Circumference** **Module 23: Area, Surface Area, and Volume**
	Recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.	**Module 22: Perimeter and Circumference** **Module 23: Area, Surface Area, and Volume**

Measurement Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—	**In grades 3–5 all students should—**	
Understand measurable attributes of objects and the units, systems, and processes of measurement	Understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute;	**Module 16: Points, Lines, Rays, and Angles** **Module 21: Customary and Metric Measurement of Length, Weight/Mass, and Capacity** **Module 23: Area, Surface Area, and Volume**
	Understand the need for measuring with standard units and become familiar with standard units in the customary and metric systems;	**Module 21: Customary and Metric Measurement of Length, Weight/Mass, and Capacity** **Module 22: Perimeter and Circumference** **Module 23: Area, Surface Area, and Volume**
	Carry out simple unit conversions, such as from centimeters to meters, within a system of measurement;	**Module 21: Customary and Metric Measurement of Length, Weight/Mass, and Capacity**
	Understand that measurements are approximations and how differences in units affect precision;	
	Understand that measurements are approximations and how differences in units affect precision;	
	Explore what happens to measurements of a two-dimensional shape such as its perimeter and area when the shape is changed in some way.	
Apply appropriate techniques, tools, and formulas to determine measurements	Develop strategies for estimating the perimeters, areas, and volumes of irregular shapes;	
	Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles;	**Module 16: Points, Lines, Rays, and Angles** **Module 23: Area, Surface Area, and Volume**
	Select and use benchmarks to estimate measurements;	
	Develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms;	
	Develop strategies to determine the surface areas and volumes of rectangular solids.	**Module 23: Area, Surface Area, and Volume**

Data Analysis and Probability Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—	**In grades 3–5 all students should—**	
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	Design investigations to address a question and consider how data-collection methods affect the nature of the data set;	
	Collect data using observations, surveys, and experiments;	
	Represent data using tables and graphs such as line plots, bar graphs, and line graphs;	**Module 24: Make and Read Graphs**
	Recognize the differences in representing categorical and numerical data.	
Select and use appropriate statistical methods to analyze data	Describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed;	**Module 25: Statistics and Data Analysis**
	Use measures of center, focusing on the median, and understand what each does and does not indicate about the data set;	
	Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.	**Module 25: Statistics and Data Analysis**
Develop and evaluate inferences and predictions that are based on data	Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.	**Module 24: Make and Read Graphs**
Understand and apply basic concepts of probability	Describe events as likely or unlikely and discuss the degree of likelihood using such words as *certain, equally likely,* and *impossible;*	**Module 28: Probability**
	Predict the probability of outcomes of simple experiments and test the predictions;	**Module 28: Probability**
	Understand that the measure of the likelihood of an event can be represented by a number from 0 to 1.	**Module 28: Probability**

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Problem Solving Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—		
	Build new mathematical knowledge through problem solving;	**Academic Language Notebooks: The Language of Math, Level E**
	Solve problems that arise in mathematics and in other contexts;	**Academic Language Notebooks: The Language of Math, Level E**
	Apply and adapt a variety of appropriate strategies to solve problems;	**Academic Language Notebooks: The Language of Math, Level E**
	Monitor and reflect on the process of mathematical problem solving.	**Academic Language Notebooks: The Language of Math, Level E**

Reasoning and Proof Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—		
	Recognize reasoning and proof as fundamental aspects of mathematics;	**Academic Language Notebooks: The Language of Math, Level E**
	Make and investigate mathematical conjectures;	**Academic Language Notebooks: The Language of Math, Level E**
	Develop and evaluate mathematical arguments and proofs;	**Academic Language Notebooks: The Language of Math, Level E**
	Select and use various types of reasoning and methods of proof.	**Academic Language Notebooks: The Language of Math, Level E**

Communication Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—		
	Organize and consolidate their mathematical thinking through communication;	**Academic Language Notebooks: The Language of Math, Level E**
	Communicate their mathematical thinking coherently and clearly to peers, teachers, and others;	**Academic Language Notebooks: The Language of Math, Level E**
	Analyze and evaluate the mathematical thinking and strategies of others;	**Academic Language Notebooks: The Language of Math, Level E**
	Use the language of mathematics to express mathematical ideas precisely.	**Academic Language Notebooks: The Language of Math, Level E**

Connections Standard for Grades 3–5		**Level E/Grade 5 Module Name and Number**
Instructional programs from prekindergarten through grade 12 should enable all students to—		
	Recognize and use connections among mathematical ideas;	**Academic Language Notebooks: The Language of Math, Level E**
	Understand how mathematical ideas interconnect and build on one another to produce a coherent whole;	**Academic Language Notebooks: The Language of Math, Level E**
	Recognize and apply mathematics in contexts outside of mathematics.	**Academic Language Notebooks: The Language of Math, Level E**

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Representation Standard for Grades 3–5		Level E/Grade 5 Module Name and Number
Instructional programs from prekindergarten through grade 12 should enable all students to—		
	Create and use representations to organize, record, and communicate mathematical ideas;	**Academic Language Notebooks: The Language of Math, Level E**
	Select, apply, and translate among mathematical representations to solve problems;	**Academic Language Notebooks: The Language of Math, Level E**
	Use representations to model and interpret physical, social, and mathematical phenomena.	**Academic Language Notebooks: The Language of Math, Level E**