

National MSMS Course 1
2020-2021 MATHia Enhancements



	Module	Textbook Topic	MATHia Unit	Workspace	Description	Enhancements
1	Composing and Decomposing	Factors and Area	Writing Equivalent Expressions Using the Distributive Property	Commutative and Associative Properties	Students follow worked examples to rewrite expressions using the commutative and associative properties of addition and multiplication.	NEW UNIT NAME: Formerly, <i>Number Properties</i> . CONTENT CHANGE: Removed Identifying Greatest Common Factors and Least Common Multiple.
			Area of Triangles and Quadrilaterals	Calculating Area of Rectangles	Students calculate the areas of rectangles and squares in mathematical and real-world situations.	SPLIT UNIT: This unit, formerly called <i>Area</i> , was split into two units, <i>Area of Triangles and Quadrilaterals</i> and <i>Composite Figures</i> .
			Common Factors and Common Multiples	Prime Factorization	Students create a factor tree to show the prime factorization of a number less than 100. They use the factor tree to evaluate the validity of statements about the multiplicative structure of the number.	NEW UNIT for 2020-2021 NEW Mastery Workspace for 2020-2021
				Determining the LCM or GCF of Two Numbers	Students use given factor trees to determine the least common multiple of two numbers less than or equal to 12 or the greatest common factor of two numbers less than or equal to 100. For the LCM, students identify the shared and non-shared prime factors and calculate the product. For the GCM, students identify the shared prime factors and calculate the product. They then use the non-shared	NEW Mastery Workspace for 2020-2021

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					prime factors to determine the quotient of each number divided by the GCF.	
			Least Common Multiple and Greatest Common Factor	Using the GCF to Rewrite the Sum of Two Numbers	Students use an Explore Tool to think about the decomposition of the sum of two numbers into a product of a factor and a sum. They review the Distributive Property and GCF and analyze worked examples that show them how to rewrite the sum of two whole numbers using the Distributive Property and any common factor, and using the Distributive Property and the GCF. Students rewrite the sum of two whole numbers using the Distributive Property and the GCF.	NEW UNIT for 2020-2021 NEW Concept Builder Workspace for 2020-2021
		Positive Rational Numbers	Fraction by Fraction Division	Representing Fraction Division	Students watch an animation and answer questions about modeling fraction division.	NEW UNIT NAME: Formerly, <i>Fraction Division</i>
		Decimals and Volume	Decimal Operations	Converting Fractions to Decimals	Students write decimal equivalents to fractional values.	For 20-21, the unit names in this textbook topic will not follow the same pattern as the other topics.
				Solving Real-World Problems Using Decimal Operations	Students choose the operation and solve decimal addition, subtraction, multiplication, and division problems in context. Two-step problems (e.g., adding and then dividing).	NEW Mastery workspace for 2020-2021

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			Volume and Surface Area of Rectangular Prisms	Determining Volume Using Unit Fraction Cubes	Students watch an animation, which provides an example of how to determine the unit fraction dimensions of a cube to fill a rectangular prism with fractional edge lengths. Students determine the volumes of various rectangular prisms with different fractional edge lengths.	NEW UNIT NAME: Formerly, <i>Volume and Surface Area</i>
				Calculating Surface Area of Prisms and Pyramids Using Nets	Students identify the number of unique shapes that make up the net of a prism or pyramid. They use the shapes to determine the surface area of the solid.	NEW Mastery Workspace for 2020-21. This replaces the former workspace Calculating Surface Area of Right Prisms.
2	Relating Quantities	Ratios	Introduction to Ratio and Rate Reasoning	Understanding Ratio Relationships	Students develop conceptual understanding of ratio, the multiplicative nature of ratios, the different notation used for ratio, and part-to-part versus part-to-whole ratios.	SPLIT UNIT: This unit, formerly called <i>Ratio Reasoning</i> , was split into two units, <i>Introduction to Ratio and Ratio Reasoning</i> and <i>Determining Equivalent Ratios</i> .
			Determining Equivalent Ratios	Equivalent Ratios	Students use a double number line to determine equivalent ratios. Then, they move to tables and scaling up and down to determine equivalent ratios.	NEW UNIT for 2020-21.
			Using Tables to Represent Equivalent Ratios	Problem Solving with Equivalent Ratios and Rates using Tables	Students use a table to solve problems involving equivalent ratios and rates.	SPLIT UNIT: This unit, formerly called <i>Problem Solving Using Ratio and Rate Reasoning</i> , was split into two units, <i>Using Tables to Represent Equivalent Ratios</i> and <i>Graphs of Ratios</i> . CONTENT CHANGE: The workspace Problem Solving with Equivalent

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						Ratios and Rates using Double Number Lines was moved to <i>Determining Equivalent Ratios</i> .
		Percents	Percent, Fraction, and Decimal Equivalence	Percent Models	Students watch animations and answer questions about percent models. They write fractional and decimal equivalents of percent models. Students estimate percents using models. They relate benchmark percents and fractions.	SPLIT UNIT: This unit, formerly called <i>Introduction to Percent</i> , was split into two units, <i>Percent, Fraction, and Decimal Equivalence</i> and <i>Determining the Part and the Whole in Percent Problems</i> .
		Unit Rates and Conversions	Using Ratio Reasoning to Convert Units	Converting Within Systems	Students use ratios and dimensional analysis to perform one-step measurement conversions within the Customary and metric measurement systems.	NEW UNIT NAME: Formerly <i>Ratio Reasoning to Convert Units</i> This unit was transposed with <i>Introduction to Unit Rates</i> .
			Introduction to Unit Rates	Understanding Unit Rates	Students sort rates by whether or not they are unit rates. They use models to estimate unit rates before determining the actual unit rate. Students write two different unit rates for situations relating quantities.	NEW UNIT NAME: Formerly <i>Rate Reasoning</i> NEW Content Builder workspace for 2020-21
3	Determining Unknown Quantities	Expressions	Evaluating Numeric Expressions	Writing and Evaluating Exponent Expressions	Students watch an animation showing how an expression with an exponent can be rewritten as a product. Students identify the base and exponent and describe their meaning in exponent expressions. Students rewrite exponent expressions as single values and rewrite products as exponent expressions.	NEW UNIT NAME: Formerly <i>Numeric Expressions</i> . CONTENT CHANGE: Evaluating One-Step Expressions with Whole Numbers and Evaluating Two-Step Expressions with Whole Numbers workspaces were moved to the <i>Introduction to Algebraic Expressions</i> unit.

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			Introduction to Algebraic Expressions	Identifying Parts of Simple Algebraic Expressions	Students identify the parts of simple algebraic expressions, including terms, coefficients, sums, factors, products, differences, and quotients.	NEW UNIT NAME: Formerly, <i>Algebraic Expressions</i>
			Using Algebraic Expressions to Analyze and Solve Problems	Using Picture Algebra with Addition, Subtraction, and Multiplication	Students use pictures to represent relationships between two quantities. The relationships may involve addition, subtraction, or multiplication.	NEW UNIT NAME: Formerly, <i>Reasoning with Expressions and Equations</i>
		Equations	Reasoning with Algebraic Expressions	Using Substitution to Identify Solutions to Equations	Students determine which given values for a variable are solutions to an equation.	NEW UNIT for 2020-21
			Solving One-Step Addition and Subtraction Equations	Solving One-Step Equations with a Balance	Students use an interactive balance to explore representing and solving one-step addition and multiplication equations. Students are encouraged to determine solutions using the interactive model.	SPLIT UNIT: This unit, formerly called <i>Solving One-Step Equations</i> , was split into two units, <i>Solving One-Step Addition Equations</i> and <i>Solving One Step Multiplication Equations</i> .
		Graphing Quantitative Relationships	Independent and Dependent Variables	Modeling Scenarios with Equations	Students interpret the model of a one-step linear equation in the context of a scenario. They identify independent and dependent quantities and units from scenarios, tables, and graphs.	SPLIT UNIT: This unit, formerly called <i>Problem Solving with One-Step Equations</i> , was split into two units, <i>Independent and Dependent Variables</i> and <i>Multiple Representations of Equations</i> .
4	Moving Beyond	Signed Numbers	Introduction to Negative Numbers	Introduction to Negative	Students learn about numbers and their opposites by watching an animation and	NEW UNIT NAME: Formerly, Integers The Using Absolute Value

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	Positive Quantities			Numbers	answering questions.	workspace was relocated to its own unit that follows.
			Absolute Value	Using Absolute Value	Students develop an understanding of absolute value as the distance of a number from 0 by watching an animation and answering questions. Students explore this concept in mathematical and real-world situations.	NEW Unit for 2020-21
			Rational Number System	Classifying Rational Numbers	Students write numbers in the form a/b to explore rational numbers. They interpret a Venn diagram showing the relationship of rational numbers, integers, and whole numbers. Finally, students classify rational numbers using the Venn diagram.	NEW Unit and Concept Builder workspace for 2020-21
		The Four Quadrants	Extending the Coordinate Plane	Exploring Symmetry on the Coordinate Plane	Students reflect points across the x-axis, across the y-axis, and across both axes using an interactive grapher and consider the impact on the ordered pairs.	SPLIT UNIT: This unit, formerly called <i>The Coordinate Plane</i> , was split into two units, <i>Extending the Coordinate Plane</i> and <i>Graphing Geometric Figures</i> .
			Problem Solving on the Coordinate Plane	Writing an Expression from a Scenario, Table, or Graph	Students match a scenario to an expression that represents the dependent quantity. They complete a table of values given a scenario. Given a table of values, students identify the relationship between the quantities and write an expression to model the independent quantity. Students analyze the relationships in a graph. They use the relationship between the quantities in a graph to write an expression to model the	NEW UNIT NAME: Formerly, <i>Multiple Representations</i>

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					independent quantity.	
5	Describing Variability of Quantities	The Statistical Process	Understanding the Statistical Process	Analyzing Distributions with Shape, Center, and Spread	Students watch an animation which describes what a statistical question is and how to analyze data sets according to their center, spread, and overall shape. Students learn about gaps, clusters, peaks, and skew and use these terms to analyze a data set.	SPLIT UNIT: This unit, formerly called <i>Displays of Numerical Data</i> , was split into three units, <i>Understanding the Statistical Process</i> , <i>Analyzing Numerical Data Displays</i> , and <i>Using Histograms to Display Data</i> . DELETION: Creating and Interpreting Stem Plots was removed from the C1 sequence.
			Analyzing Numerical Data Displays	Creating Dot Plots	Given a data set in context, students construct a dot plot. First, they select a title based on the description of the data. They identify the least and greatest data values, while the bounds on the number line are provided. Students then use a tool to plot each data value to create the dot plot.	NEW Mastery workspace for 2020-21.
				Interpreting Dot Plots	Students interpret, create, and analyze dot plots as they learn about the features of the plot type. Students summarize and describe the displays according to shape and numerical summaries.	UPDATED CONTENT: This Concept Builder, formerly <i>Creating and Interpreting Dot Plots</i> , was adjusted to better support the <i>Creating Dot Plots</i> Mastery workspace.
			Using Histograms to Display Data	Introduction to Histograms	Students watch an animation as they learn how to create a histogram. They interpret the data displayed in a histogram, determining which values or characteristics can be read directly from the graph.	UPDATED CONTENT: This Concept Builder, formerly <i>Creating and Interpreting Histograms</i> , was split into two workspace Introduction to Histograms and Exploring Histograms to better support the <i>Creating Histograms</i> Mastery workspace.

				Creating Histograms	Given a data set in context, students construct a histogram. First, they select a title and label the axes based on the description of the data. Students then create a scale for the horizontal axis, while the scale for the vertical axis is provided. Next, they use a tool to graph each bin; as students select the data that belongs in each bin, the tool graphs each bin to the appropriate height based on the number of data values and the scale on the vertical axis. Data sets contain no more than 30 values, and histograms have a range of 4 to 6 bins. Data is limited to integer values.	NEW Mastery workspace for 2020-21.
				Exploring Histograms	Students use an Explore Tool to determine the effect of changing the bin size of a histogram. They summarize and describe the displays according to shape. Students answer questions about the data displayed in a given histogram.	UPDATED CONTENT: This Concept Builder, formerly <i>Creating and Interpreting Histograms</i> , was split into two workspace Introduction to Histograms and Exploring Histograms to better support the <i>Creating Histograms</i> Mastery workspace.
		Numerical Summaries of Data	Analyzing Data Using Measures of Center	Calculating Mean, Median, Mode, and Range	Students calculate the mean, median, mode, and range from data sets.	NEW UNIT NAME: Formerly, <i>Measures of Central Tendency</i>
			Displaying the Five-Number Summary	Introduction to Box Plots	Students are introduced to how the five-number summary of a data set is displayed in a box-and-whisker plot. They use the characteristics of a box plot to answer questions about a data set.	NEW UNIT NAME: Formerly, <i>Box Plots</i> New Concept Builder Workspace for 2020-2021

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				Creating Box Plots	Given a scenario and a corresponding data set, students determine the five-number summary. As they place their responses in a framework which visually supports the order of the values on a number line, a box plot is constructed for them using their responses. Students then select an appropriate title for their box plot. The data sets do not contain any outliers. Additionally, a tool is provided to help students determine the median, Q1, and Q3 in an efficient manner.	NEW Mastery workspace for 2020-21.
				Exploring Box Plots	Students use an Explore Tool to change the values of data points within a set and explore how the changes affect the five-number summary. They interpret the shape and spread of different box-and-whisker plots. Students sort box-and-whisker plots by their shape.	UPDATED CONTENT: The Concept Builder, formerly <i>Constructing Box Plots</i> , was adjusted to better support the new <i>Creating Box Plots</i> Mastery workspace.
			Mean Absolute Deviation	Calculating Mean Absolute Deviation	Students develop an understanding of mean absolute deviation and practice calculating with small data sets.	NEW LOCATION: This unit was swapped with the <i>Displaying the Five-Number Summary</i> (formerly, <i>Box Plots</i>) unit
			Choosing Appropriate Measures	Choosing Appropriate Measures	Students relate the choice of measures of center and variability to the shape of the data distribution. They compare data sets using the appropriate measures of center and variability.	NEW Unit for 2020-21