

1 Composing and Decomposing		Strategies													
		Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example				
MATHia Unit	MATHia Workspace	Overview	CCSS	Concept Builder	Mastery										

Factors and Area															
Number Properties	Commutative and Associative Properties	Students follow worked examples to rewrite expressions using the commutative and associative properties of addition and multiplication.	6.EE.3	✓											•
	Exploring the Distributive Property with Numeric Expressions	Students explore modeling the Distributive Property of multiplication over addition with numeric expressions using an interactive grid.	6.EE.3	✓			•	•							
	Using the Distributive Property with Numeric Expressions	Students practice applying different distributive properties (multiplication over addition, division over addition) to rewrite numeric expressions and calculate efficiently.	6.EE.3	✓			•								
	Identifying Greatest Common Factors and Least Common Multiples	Students use tables of factors and multiples to determine common multiples and factors. From this, they can identify the least common multiple and greatest common factor.	6.NS.4	✓										•	•
Area	Calculating Area of Rectangles	Students calculate the areas of rectangles and squares in mathematical and real-world situations.	6.G.1		✓									•	•
	Developing Area Formulas	Students watch animations and answer questions to derive the formulas used to calculate the areas of parallelograms, triangles, and trapezoids. They use the formulas to represent area problems as equations using given dimensions in real-world scenarios.	6.G.1	✓		•								•	
	Calculating Area of Various Figures	Students calculate the areas of parallelograms, trapezoids, and triangles in mathematical and real-world situations.	6.G.1		✓									•	•
	Solving Area Problems	Students use the areas of rectangles and triangles to solve area problems with composite figures.	6.G.1 7.G.6	✓											
	Calculating Area of Composite Figures	Students practice calculating the area of various mathematical and real-world composite figures.	6.G.1 7.G.6		✓									•	

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Positive Rational Numbers																			
Fraction Division	Representing Fraction Division	Students watch an animation and answer questions about modeling fraction division.	6.NS.1	✓		•													
	Interpreting Remainders Using Models	Students solve real-world fraction division problems using models and relate fraction division to fraction multiplication number sentences.	6.NS.1		✓												•		
	Developing the Fraction Division Algorithm	Students develop an understanding of the algorithm for fraction division through worked examples and the completion of partial worked examples.	6.NS.1	✓															•
	Multiplying and Dividing Rational Numbers	Students calculate products and quotients of fractions, including mixed numbers and improper fractions.	6.NS.1		✓													•	

Decimals and Volume																			
Decimal Operations	Converting Fractions to Decimals	Students write decimal equivalents to fractional values.	6.NS.3		✓														
	Adding and Subtracting Decimals	Students review adding and subtracting multi-digit decimals by examining worked examples, completing partially-completed worked examples, and solving problems.	6.NS.3	✓															•
	Decimal Sums and Differences	Students practice adding and subtracting multi-digit decimals using the standard algorithm.	6.NS.3		✓														
	Exploring Decimal Facts	Students use an interactive grid to explore multiplying and dividing with decimals less than 1 to the tenths place.	6.NS.3	✓				•											
	Patterns with Products and Quotients	From a given product, students use patterns to compute additional related products and quotients.	6.NS.3		✓														

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Decimal Operations (continued)	Multiplying Decimals	Students investigate multiplying multi-digit decimals by following worked examples, completing partially-completed worked examples, and solving problems.	6.NS.3	✓													•	
	Decimal Products	Students practice multiplying multi-digit decimals using the standard algorithm.	6.NS.3		✓													
	Dividing Decimals	Students investigate dividing multi-digit whole numbers and decimals by following worked examples, completing partially-completed worked examples, and solving problems.	6.NS.2 6.NS.3	✓														•
	Whole Number and Decimal Quotients	Students practice dividing whole numbers and decimals using the standard algorithm.	6.NS.2 6.NS.3		✓													
Volume and Surface Area	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.	6.GM.2	✓		•												
	Calculating Volume of Right Prisms	Students determine the volume of right prisms.	6.GM.2		✓										•	•		
	Determining Surface Area Using Nets	Students watch an animation showing how real-world objects can be represented by three-dimensional solid figures and how solid figures can be taken apart to create two-dimensional nets. Students use nets to determine the surface areas of right rectangular prisms and square pyramids, and they identify faces, edges, and vertices of solid figures.	6.GM.4	✓		•									•			
	Calculating Surface Area of Right Prisms	Students determine the surface area of right prisms by determining the areas of the faces of the prisms.	6.GM.4		✓										•			

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Ratios																			
Ratio 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.	6.RP.1	✓															
	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.	6.RP.3b	✓															
	Multiple Representations of Ratios	Students add to their list of strategies for determining equivalent ratios by examining equivalent ratios on a coordinate grid. A key understanding in this section is that either quantity can be graphed on either axis; neither quantity is dependent on the other.	6.RP.3b	✓															
Problem Solving Using Ratio and Rate Reasoning	Problem Solving with Equivalent Ratios and Rates using Tables	Students use a table to solve problems involving equivalent ratios and rates.	6.RP.3.a		✓														
	Problem Solving with Equivalent Ratios and Rates using Double Number Lines	Students use a double number line to solve problems involving equivalent ratios and rates.	6.RP.3.a		✓														
	Problem Solving with Equivalent Ratios and Rates using Graphs	Students use a graph to solve problems involving equivalent ratios and rates.	6.RP.3.a		✓														

Percents																			
Introduction to Percent	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.	6.RP.3.c	✓															

2		Relating Quantities				Strategies											
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Introduction to Percent (continued)	Fraction, Decimal, Percent Conversions	Students convert between fractions, decimals, and percents. They use the equivalent representations to answer comparison questions.	6.RP.3.c	✓													
	Determining a Part Given a Percent and a Whole	Students solve real-world percent problems by using bar models, using equivalent fractions, and determining a fraction of a quantity. The problems involve determining a part given the whole and a percent.	6.RP.3.c	✓													
	Determining a Whole Given a Percent and a Part	Students solve real-world ratio problems using equivalent fractions and models. The problems involve determining the whole given a part and a percent.	6.RP.3.c	✓													

Unit Rates and Conversions																	
Rate Reasoning	Determining and Comparing Unit Rates	Students develop fluency in determining and comparing unit rates.	6.RP.3.b		✓												
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.	6.RP.3d	✓													
	Converting Between Systems	Students use ratios and dimensional analysis to perform one-step and multi-step measurement conversions. Students convert between Customary and metric units.	6.RP.3d	✓													

3		Determining Unknown Quantities				Strategies										
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Expressions																	
Numeric Expressions	Evaluating One-Step Expressions with Whole Numbers	Students determine relevant information from scenarios and use this information to evaluate algebraic expressions with a single operation.	6.EE.2		✓												
	Evaluating Two-Step Expressions with Whole Numbers	Students determine relevant information from scenarios and use this information to evaluate algebraic expressions with two operations.	6.EE.2		✓												
	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.	6.EE.1	✓			•	•									
	Order of Operations	Students learn about the precedence of different operations through manipulating spacing within expressions.	6.EE.1	✓			•										•
	Applying the Order of Operations	Students practice rewriting expressions using the Order of Operations. Students sort the steps of rewriting numeric expressions.	6.EE.1	✓				•									
	Using Order of Operations to Evaluate Simple Numeric Expressions	Students practice evaluating two-step numeric expressions.	6.EE.1		✓												•
	Using Order of Operations to Evaluate Numeric Expressions with Four Operations	Students practice evaluating multi-step numeric expressions.	6.EE.1		✓												•
	Using Order of Operations to Evaluate Numeric Expressions with Parentheses and Exponents	Students practice evaluating numeric expressions that contain parentheses and exponents.	6.EE.1		✓												•
	Using Order of Operations to Evaluate Numeric Expressions	Students practice evaluating a variety of numeric expressions.	6.EE.1		✓												•

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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.	6.EE.2b	✓			•									•	
	Evaluating Multi-Step Expressions	Students determine relevant information from scenarios and use this information to evaluate algebraic expressions with one or more than one operation.	6.EE.2c		✓									•	•		
	Evaluating Expressions with Multiple Variables	Students determine relevant information from scenarios and use this information to evaluate algebraic expressions with multiple variables.	6.EE.2c		✓									•	•		
Equivalent Algebraic Expressions	Modeling Equivalent Algebraic Expressions	Students use an explore tool to model algebraic expressions. They use the interactive tool to create and identify equivalent expressions.	6.EE.3 6.EE.4	✓			•	•						•			
	Exploring the Distributive Property with Algebraic Expressions	Students use an interactive tool to explore the Distributive Property with algebraic expressions. They apply the properties of operations to generate equivalent expressions.	6.EE.3	✓				•									
	Using Order of Operations to Rewrite Simple Algebraic Expressions	Students rewrite algebraic expressions by combining like terms, using number properties, and applying the Order of Operations.	6.EE.3		✓											•	
	Using Order of Operations to Rewrite Algebraic Expressions with Four Operations	Students rewrite multi-step algebraic expressions by combining like terms, using number properties, and applying the Order of Operations.	6.EE.3		✓											•	
	Using Order of Operations to Rewrite Algebraic Expressions with Parentheses and Exponents	Students rewrite algebraic expressions involving parentheses and exponents by combining like terms, using number properties, and applying the Order of Operations.	6.EE.3		✓											•	
	Using Order of Operations to Rewrite Algebraic Expressions	Students rewrite a variety of algebraic expressions by combining like terms, using number properties, and applying the Order of Operations.	6.EE.3		✓											•	

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Reasoning with Expressions and Equations	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.	6.EE.7		✓											•	
	Using Picture Algebra with Multiplication, Total Given	Students use pictures to represent multiplicative relationships between two quantities.	6.EE.7		✓											•	
	Using Picture Algebra with Addition and Subtraction, Total Given	Students use pictures to represent additive relationships between two quantities.	6.EE.7		✓											•	
	Patterns and One-Step Expressions	Students make tables of values by determining outputs from given inputs. They will use the tables to determine algebraic expressions for the relationships between two quantities.	6.EE.6 6.EE.C.9		✓											•	

Equations																	
Solving One-Step Equations	Using Substitution to Identify Solutions to Equations	Students determine which given values for a variable are solutions to an equation.	6.EE.5	✓		•										•	•
	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.	6.EE.7	✓				•									
	Representing One-Step Equations	Students examine worked examples and answer questions about using inverse operations to solve one-step addition and multiplication equations.	6.EE.7	✓			•										•
	Solving with Addition and Subtraction (No Type In)	Students use an equation solver to solve one-step equations involving addition and subtraction.	6.EE.7		✓												•
	Solving with Multiplication and Division (No Type In)	Students use an equation solver and inverse operations to solve one-step equations involving multiplication and division.	6.EE.7		✓												•

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Solving One-Step Equations (continued)	Solving One-Step Equations (Type In)	Students use an equation solver and inverse operations to solve a variety of one-step equations.	6.EE.7		✓											•
Solving One-Step Inequalities	Graphing Inequalities with Positive Rational Numbers	Given simple verbal inequality statements, students represent the inequalities in symbols and on number lines. They will determine if given values are solutions to the inequalities.	6.EE.8		✓				•							
	Using Substitution to Identify Solutions to Inequalities	Students determine which given values for a variable are solutions to an inequality.	6.EE.5	✓		•										•

Graphing Quantitative Relationships																
Problem Solving with One-Step Equations	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.	6.EE.9	✓											•	•
	Analyzing Models of One-Step Linear Relationships	Students analyze scenarios of one-step linear relationships. They are given an equation that models the scenario. Students then match the different expressions in the equation to verbal descriptions of these quantities in the context of the scenario.	6.EE.9		✓		•								•	
	Patterns and One-Step Equations	Students make tables of values by determining inputs and outputs from given values. They use the tables to determine algebraic expressions for the relationships between two quantities.	6.EE.6 6.EE.7		✓										•	
	Problem Solving Using Multiple Representations in the First Quadrant	Students create tables of values, write and use algebraic expressions with one operation, and create graphs to represent problem scenarios.	6.EE.6 6.EE.7		✓				•						•	
	Problem Solving with Decimals	Students create tables of values, write and use algebraic expressions with decimals, and create graphs to represent problem scenarios.	6.EE.6 6.EE.7		✓				•						•	

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Signed Numbers																	
Integers	Introduction to Negative Numbers	Students learn about numbers and their opposites by watching an animation and answering questions.	6.NS.C.5 6.NS.C.6	✓		•										•	•
	Representing Integers on Number Lines	Students explore integer opposites and inequality statements and relationships involving integers through an interactive tool.	6.NS.C.6a 6.NS.C.7a	✓			•	•									
	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.	6.NS.C.7b 6.NS.C.7c 6.NS.C.7d	✓		•										•	•
	Graphing Inequalities with Rational Numbers	Students graph simple inequalities involving rational numbers on a number line.	6.EE.8		✓					•							

The Four Quadrants																	
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.	6.NS.C.6b 6.NS.C.6c	✓			•	•									
	Identifying and Interpreting Ordered Pairs	Students analyze worked examples and answer questions about points on the coordinate plane in mathematical and real-world contexts.	6.NS.C.6c	✓												•	•
	Plotting Points	Students identify the coordinates of plotted points and sort the points according to their quadrant location.	6.NS.C.6c	✓			•										
	Drawing Polygons on the Coordinate Plane	Students use the interactive grapher to identify vertices of polygons on the coordinate plane and write the coordinates. They determine the horizontal or vertical side lengths of polygons on the coordinate plane.	6.NS.C.8 6.G.3	✓						•						•	•

4		Moving Beyond Positive Quantities				Strategies									
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MATHia Unit	MATHia Workspace	Overview	CCSS	Concept Builder	Mastery										
Multiple Representations	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 independent quantity.	6.EE.9	✓			•						•		•
	Solving One-Step Equations Using Multiple Representations in Four Quadrants	Students will create tables of values, write algebraic expressions with one operation, and create graphs to represent and answer questions about problem scenarios.	6.EE.C.9		✓				•				•		

5		Describing Variability of Quantities				Strategies											
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The Statistical Process																	
Displays of Numerical Data	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.	6.DS.1	✓													
	Creating and Interpreting Stem Plots	Students interpret, create, and analyze stem-and-leaf plots as they learn about the features of the plot type. Students summarize and describe the displays according to shape and numerical summaries.	6.SP.4 6.SP.5a 6.SP.5b	✓													
	Creating and 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.	6.SP.4 6.SP.5a 6.SP.5b	✓													
	Creating and Interpreting Histograms	Students watch an animation as they learn how to create a histogram. They also engage with an Explore tool to determine the effect of changing the bin size of a histogram. Students summarize and describe the displays according to shape.	6.SP.4 6.SP.5a 6.SP.5b	✓													

Numerical Summaries of Data																	
Measures of Central Tendency	Calculating Mean, Median, Mode, and Range	Students calculate the mean, median, mode, and range from data sets.	6.SP.5.c	✓													
	Determining Measures of Center	Students use their understanding of mean, median, and mode to determine which was used as the measure of central tendency.	6.SP.5c	✓													
	Measuring the Effects of Changing Data Sets	Students calculate mean and median, with and without an additional data value, and compare the original and adjusted measures.	6.SP.5.c	✓													

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Mean Absolute Deviation	Calculating Mean Absolute Deviation	Students develop an understanding of mean absolute deviation and practice calculating with small data sets.	6.SP.3 6.SP.5.c	✓												
	Using Mean Absolute Deviation	Students compare the mean absolute deviations and spread of similar data sets.	6.SP.3 6.SP.5.c	✓			•								•	•
Box Plots	Constructing Box Plots	Students examine how to construct box-and-whisker plots and connect the plot to the five-number summary. They use an Explore Tool to construct their own box-and-whisker plots and answer questions about the plots.	6.SP.4 6.SP.5	✓				•	•						•	
	Interpreting Box Plots	Students analyze vertical and horizontal box-and-whisker plots to understand the relationship between the shape of the display and the spread of the data set.	6.SP.4 6.SP.5	✓				•							•	
	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.	6.SP.5d	✓											•	•