

<div style="background-color: black; color: white; padding: 10px; font-size: 2em; font-weight: bold; display: inline-block;">1</div> <div style="background-color: #00AEEF; color: white; padding: 10px; font-size: 2em; font-weight: bold; display: inline-block;">Thinking Proportionally</div>						Strategies												
						Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example			
MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery													

Topic 1: Circles and Ratio																		
Exploring the Ratio of Circle Circumference to Diameter	Investigating Circles	Students identify parts of a circle, analyze the ratio of circumference to diameter of various circles, and then define pi.	7.5B 7.8C 7.9B	✓														•
	Solving Area and Circumference Problems	Developing the Area Formula for Circles	Students informally derive the area of a circle by investigating the relationship between circumference and area. They calculate the area of a circle given different measurements for a radius or diameter.	7.9B	✓													
Calculating Circumference and Area of Circles		Students determine the circumference and area of circles using diagrams and real-world objects. Students work strategically to identify measurements and use the formula for circumference and area to solve problems.	7.9B		✓													•

Topic 2: Fractional Rates																		
Ratio Representations and Conversions	Recognizing Proportional Relationships	Students review proportional relationships by recognizing proportions in ratios, tables, and graphs.	7.4A	✓														•
	Determining Characteristics of Graphs of Proportional Relationships	Given graphs, students determine if the graph represents a proportional relationship.	7.4A	✓														•
	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.	7.4E	✓														•
Ratios of Fractions	Fractional Rates	Students write fractional unit rates for ratios given as integer quantities. They use models to compute unit rates for ratios with fractions. Students use proportions to compute unit rates for ratios written as complex fractions.	7.4B	✓														•
	Determining and Comparing Unit Rates	Students develop fluency in determining and comparing unit rates.	7.4B		✓													•

1 Thinking Proportionally						Strategies										
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Ratios of Fractions (continued)	Solving Proportions Using Equivalent Ratios	Students calculate unknown values in a given scenario using equivalent ratios.	7.4D		✓											•
Using Means and Extremes to Solve Proportions	Rewriting Proportions as Products	Students notice patterns in proportions written in the form $a : b = c : d$. They rewrite proportions as the product of the means equal to the product of the extremes. Students isolate the variable in proportions with an unknown quantity. They solve problems using proportions and the means and extremes method.	7.4D	✓											•	•
	Solving Proportions Using Means and Extremes	Students calculate unknown values in a given scenario using the means and extremes method.	7.4D		✓											•

Topic 3: Proportionality																	
Defining Proportional Relationships	Exploring Proportions	Given a scenario, students define the varying quantities, write proportions, and determine the common ratio between the two variables. They then use the proportions to write direct variation equations and solve problems.	7.4C 7.4D	✓												•	•
Determining the Constant of Proportionality	Writing Proportional Relationships with Equations	Given a table, students determine a constant of proportionality, write an associated proportion, graph the points from the table, and write a direct variation equation for the table.	7.4A 7.4C		✓											•	
	Converting Between Forms of Proportional Relationships	Given a scenario, students define variables, determine a constant of proportionality, write a proportion, and write a specified direct variation equation.	7.4C		✓											•	
Constant of Proportionality in Multiple Representations	Modeling the Constant of Proportionality	Given a scenario, students complete a table of values, write a direct variation equation, plot values from the table, and draw the line representing the direct variation equation.	7.4A 7.4C		✓										•	•	

2 Applying Proportionality		Strategies													
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Topic 1: Proportional Relationships																
Introducing Proportions to Solve Percent Problems	Using Proportions to Solve Percent Problems	Students examine partial worked examples to solve for the part, percent, or whole in percent problems using equivalent fractions and proportions.	7.4D	✓											•	•
	Solving Simple Percent Problems	Students practice problems in which they solve for the part, the percent, or whole in percent problems using proportions.	7.4D	✓											•	
Calculating Sales Tax and Discounts	Calculating Sales Tax or Discounts	Students solve personal finance problems involving either sales tax or discounts.	7.4D 7.13A 7.13F		✓										•	
	Solving Problems with Both Sales Tax and Discounts	Students solve personal finance problems involving both sales tax and discounts.	7.4D 7.13A 7.13F		✓										•	
	Analyzing Different Forms of Expressions	Students follow worked examples that show that expressions can be rewritten to describe sales tax and discount situations in many ways. Students rewrite expressions describing situations and interpret the rewritten expressions to highlight the different ways the expressions reveal different aspects of the situations.	7.4D 7.13A	✓											•	
Percent Increase and Percent Decrease	Calculating Percent Change and Final Amounts	Students determine the percent increase or decrease or the final amount in a percent change problem using equivalent ratios or means and extremes.	7.4D		✓										•	
	Using Percents and Percent Change	Students will use proportions to solve a variety of percent equations from given scenarios.	7.4D		✓										•	
Scale and Scale Drawings	Critical Attributes of Similar Figures	Students watch an animation which uses an eclipse as a context to explain similarity. Students learn that the corresponding angles of similar figures are congruent and the corresponding side lengths are proportional. They use these attributes--corresponding angles and proportional side lengths--to identify similar figures and to show that congruent figures are also similar.	7.5A	✓										•		

2		Applying Proportionality				Strategies										
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Scale and Scale Drawings (continued)	Using Scale Drawings	Students are introduced to scale and similar figures. They analyze models to determine whether they are scaled drawings of larger objects. Students use proportions to determine lengths and areas of scaled figures.	7.5C	✓		•	•								•	•
	Calculating Measurements Using a Scale	Students use scale factors to determine unknown measures in real-life scenarios.	7.5C		✓										•	
Income Tax	Working Students and Taxes	Students analyze scenarios or images of paystubs to calculate gross and net pay, as well as tax rates and withholding amounts for various kinds of income taxes.	7.13A		✓											
	Calculating Federal Income Taxes	Students calculate the federal income tax owed given taxable income and a table of marginal tax rates.	7.13A		✓											
Simple and Compound Interest	Calculating Simple Interest	Students will use what they know about proportional reasoning and solving linear equations to compute the amount of interest earned on an investment as well as the final value of the account.	7.13E		✓											
	Calculating Compound Interest	Students solve for an unknown quantity using a worksheet and the formula for compound interest. The unknown quantity can be the balance of an account after a given amount of time. More difficult problems will include calculating the principle given the future balance.	7.13E		✓											

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Topic 1: Operating with Rational Numbers																	
Quotients of Integers	Converting Rational Numbers to Decimals	Students divide fractions to determine if the resulting equivalent decimal is terminating or repeating.	7.3A 7.3B		✓	•											•
	Rewriting Numeric Expressions	Operating with Numeric Expressions	Students recall the Order of Operations and use the Order of Operations to add, subtract, multiply, and divide with rational numbers and powers. They determine the terms in a numeric expression and combine like terms.	7.3A 7.3B	✓												
Evaluating Simple Numeric Expressions with Integers		Students practice evaluating two-step numeric expressions that contain integer values.	7.3A 7.3B		✓												•
Evaluating Numeric Expressions Involving Integers with Parentheses and Exponents		Students practice evaluating numeric expressions that contain integer values, parentheses, and exponents.	7.3A 7.3B		✓												•
Evaluating Simple Numeric Expressions with Rational Numbers		Students practice evaluating a variety of simple numeric expressions that contain integer values.	7.3A 7.3B		✓												•
Evaluating Complex Numeric Expressions with Rational Numbers		Students practice evaluating a variety of complex numeric expressions that contain integer values.	7.3A 7.3B		✓												•

Topic 2: Algebraic Expressions																	
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.	7.2A	✓		•											•

3 Reasoning Algebraically		Strategies													
		Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example				
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Rewriting Variable Expressions Using the Distributive Property	Factoring Linear Expressions	Students model the product of two factors and explore different factors of expressions through the use of an interactive tool. They use the Distributive Property in reverse to factor expressions.	7.3A	✓				•							

Topic 3: Two-Step Equations and Inequalities															
Modeling Equations by Equal Expressions	Using Picture Algebra with Equations	Students will create visual models for given scenarios, write two-step expressions and equations, and then use mental math to solve for unknown values.	7.11A		✓									•	
	Identifying Attributes of Linear Relationships	Students identify attributes of linear relationships from a scenario and from a graph by determining whether the starting value is positive or negative and whether the rate of change is positive or negative. They interpret the model of a two-step linear equation.	7.11A	✓			•			•			•		•
	Analyzing Models of Two-Step Linear Relationships	Students analyze scenarios of two-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.	7.10A 7.11A		✓			•						•	
	Modeling Two-Step Expressions	From given scenarios, students determine unknown values and enter values into tables to recognize patterns. Students express these patterns in two-step expressions.	7.10A 7.11A		✓					•			•		
	Checking Solutions to Linear Equations	Students substitute given values into two-step equations to determine the values are solutions to the equations.	7.11B		✓										•
Using Inverse Operations to Solve Equations	Exploring Two-Step Equations	Students use a balance tool to explore two-step equations. They use a general strategy to solve any two-step equation.	7.11A	✓			•	•							•

3 Reasoning Algebraically		Strategies													
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Using Inverse Operations to Solve Equations (continued)	Solving with Multiplication (No Type In)	Students solve two-step equations involving multiplication using the solver.	7.11A		✓										•
	Solving with Multiplication (Type In)	Students solve two-step equations involving multiplication.	7.11A		✓										•
	Solving with Division (No Type In)	Students solve two-step equations involving division using the solver.	7.11A		✓										•
	Solving with Division (Type In)	Students solve two-step equations involving division using the solver.	7.11A		✓										•
	Solving Two-Step Equations	Students solve two-step equations involving all four operations.	7.11A		✓										•
Solving Inequalities with Inverse Operations	Graphing Inequalities with Rational Numbers	Students graph simple inequalities involving rational numbers on a number line.	6.9A 6.9B 6.10B		✓				•						
	Solving One-Step Linear Inequalities	Students solve one-step inequalities algebraically. The inequalities include all four operations but are restricted to positive integers.	6.9.B		✓				•						•
	Solving Two-Step Linear Inequalities	Students solve two-step linear inequalities.	7.10B 7.11B		✓				•						•

Topic 4: Multiple Representations of Equations															
Representing Equations with Tables and Graphs	Graphs of Equations	Students model and analyze the graphs of linear equations. Students identify key characteristics of the graphs and use them to interpret problem situations.	7.7A 7.11A	✓								•		•	•
	Using Graphs to Solve Equations	Students watch an animation as they learn how to model the solution of a linear equation graphically. Students practice solving problems by modeling linear equations.	7.7A 7.11A	✓					•					•	
Building Inequalities and Equations to Solve Problems	Determining the Value of an Independent Variable	Students start with a scenario, a table, and a graph to determine the value of an independent variable given the value of the dependent variable.	7.10A	✓								•		•	•

3 Reasoning Algebraically		Strategies													
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Building Inequalities and Equations to Solve Problems (continued)	Writing Linear Equations and Inequalities from a Scenario	Students translate between verbal phrases in scenarios to statements using mathematical symbols. They write inequalities to model scenarios.	7.10A	✓											
	Using Linear Equations and Inequalities	Students write equations and inequalities to represent problem situations. Students solve and interpret the solutions to the equations and inequalities in the context of the problem.	7.10A 7.10B 7.11A		✓										
	Solving Problems with Integers	Students write algebraic expressions involving integers to represent problem scenarios and to determine output values. Students solve equations to determine input values.	7.10A 7.11A		✓										
	Solving Problems with Decimals and Fractions	Students write algebraic expressions involving decimals and fractions to represent problem scenarios and to determine output values. Students solve equations to determine input values.	7.10A 7.11A		✓										

4 Analyzing Populations and Probabilities		Strategies													
		Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example				
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Topic 1: Introduction to Probability															
Introduction to Probability	Determining Probabilities	Students build probability models and determine probabilities of simple and disjoint events. They use proportions to make predictions based on samples and theoretical probabilities.	7.6D 7.6E	✓			•							•	•
	Modeling Simple Events	Students build a probability model and then use it to reason about the probability of a single event and its complement.	7.6D 7.6E		✓									•	•
	Comparing Experimental and Theoretical Probabilities	Students examine data from probability experiments and compare with theoretical probabilities. They use results of probability experiments to make conjectures about theoretical probabilities.	7.6C 7.6D 7.6I	✓			•								
	Simulating Simple Events	Students use simulations to model real-world scenarios.	7.6B	✓										•	•

Topic 2: Compound Probability															
Compound Probability	Introduction to Compound Events	Students will extend what they know about simple events to compound events in the context of the game "Rock, Paper, Scissors."	7.6A 7.6C 7.6D 7.6I	✓			•								
	Calculating Compound Probabilities	Students use simulation, tree diagrams, organized lists, and tables to determine compound probabilities.	7.6A 7.6C 7.6D 7.6I	✓			•							•	
	Simulating Compound Events	Students will use random number tables to simulate compound events and make inferences about those events.	7.6B	✓										•	•

4		Analyzing Populations and Probabilities				Strategies											
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Topic 3: Drawing Inferences																	
Using Data Displays to Compare Two Populations	Using Statistics to Draw Inferences About a Population	In this workspace, students will learn how to discriminate between scenarios that belong to a sample versus a population, understand that random sampling tends to produce valid inferences, develop an informal understanding of bias, and see how conclusions about a population are valid only if the sample is representative of that population.	7.6F 7.12B	✓													
	Comparing Characteristics of Data Displays	Students compare two data displays based in a context from among a dot plot, histogram, and boxplot. They determine whether they can identify several characteristics from the data displays and then provide either the response or reasoning why it is not possible. In addition, they sort all seven characteristics (the number of data values, mean, median, mode, range, IQR, and MAD) as to whether they can determine them from both data displays.	7.12B		✓												
	Using Random Samples to Compare Populations	Students use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	7.12B 7.12C	✓													

5		Constructing and Measuring				Strategies											
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Topic 1: Area and Surface Area																	
Composite Figures	Solving Area Problems	Students use the areas of rectangles and triangles to solve area problems with composite figures.	7.9C	✓													
	Calculating Area of Composite Figures	Students practice calculating the area of various mathematical and real-world composite figures.	7.9C		✓												
Surface Area	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.	7.9D	✓													
	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.	7.9D		✓												
Special Angle Relationships	Calculating Angles	Students use an interactive circular protractor to measure angles and determine angle sums.	7.11C	✓													
	Exploring Angle Relationships	Students use the definitions of complementary and supplementary angles to sort pairs of angles. They use the definition of adjacent angles, linear pairs, and vertical angles to determine whether given statements are true or false. Students use an explore tool to identify angle relationships created from two intersecting lines.	7.11C	✓													
	Solving for Angle Measures	Students write and solve equations to solve for unknown angle measures.	7.11C		✓												

5		Constructing and Measuring				Strategies											
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Three-Dimensional Figures																	
Volume of Prisms and Pyramids	Calculating Volume of Right Prisms	Students determine the volume of right prisms.	7.9A	✓													
	Understanding Volume Formulas for Right Prisms	Students relate the variables in the volume formula for a right prism to measurements shown in a diagram of a triangular prism. They map the parts of a triangular prism to the variables in the volume formula for a right prism. They then reason about how to determine an unknown measurement of a triangular prism given its volume.	7.9A	✓													
	Using Volume of Right Prisms	Students use the volume of right prisms to solve for unknown values.	7.9A	✓													
	Relating Volumes of Prisms and Pyramids	Students watch an animation that shows that a pyramid with the same base and height as a corresponding prism has one-third the volume. They relate the formula for the volume of a prism and the volume of a pyramid. Students identify and calculate the volumes of different prisms and pyramids given different measurements. Students then work backwards from the volume to determine unknown measures of different prisms and pyramids.	7.8A 7.8B	✓													
	Calculating Volume of Pyramids	Students calculate the volume of pyramids in mathematical and real-world contexts using given measurements.	7.9A	✓													