

1		Thinking Proportionally			Problem Solving	Animation	Worked Examples	Classification Tools	Explore
Textbook Topic	MATHia Unit	MATHia Workspace	Overview	CCSS					
CIRCLES AND RATIOS	Circles	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.G.B.4	•				
FRACTIONAL RATES	Ratio and Rate Reasoning	Fractional Rates	Students consider three different scenarios in which rates that use decimals are misinterpreted.	7.RP.A.1			•		
		Comparing Rates	Students develop fluency in determining and comparing unit rates.	7.RP.A.1	•				
	Proportional Reasoning	Solving Proportions using Equivalent Ratios	Students calculate unknown values in a given scenario using equivalent ratios.	7.RP.A.2.c	•				
		Solving Proportions using Means and Extremes	Students calculate unknown values in a given scenario using the means and extremes method.	7.RP.A.2.c	•				
PROPORTIONALITY	Representing Proportional Relationships by Equations	Introduction to Direct Variation	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.RP.A.2.a 7.RP.A.2.b			•		
		Writing Direct Variation 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.RP.A.2.b 7.RP.A.2.c	•				
		Converting Between Proportions and Direct Variation Equations	Given a scenario, students define variables, determine a constant of proportionality, write a proportion, and write a specified direct variation equation.	7.RP.A.2.b 7.RP.A.2.c	•				
		Modeling Direct Variation	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.RP.A.2.b 7.RP.A.2.d	•				
		Determining Characteristics of Direct Variation Graphs	Given graphs, students determine if the graph represents a direct variation equation.	7.RP.A.2.a				•	

*Indicates practice problems

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PROPORTIONAL RELATIONSHIPS	Percent Conversions	Fractional Percent Models	Students extend their understanding of percent models to models that include fractional percents and percents less than 1. Students watch an animation and answer questions to deepen their understanding of conversions.	7.RP.A.3		●			
		Converting with Fractional Percents*	Students practice converting between fractions, decimals, and percents.	7.RP.A.3					
	Proportional Reasoning and Percents	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.RP.A.3			●		
		Solving Simple Percent Problems*	Students practice problems in which they solve for the part, the percent, or whole in percent problems using proportions.	7.RP.A.3					
	Problem Solving with Percents using Proportional Relationships	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.RP.A.3	●				
		Using Percents and Percent Change	Students will use proportions to solve a variety of percent equations from given scenarios.	7.RP.A.3	●				
	Scale Drawings	Using Scale Drawings	Students analyze models to determine if they are scale drawings of larger objects. They use scale factors and proportions to determine lengths and areas of scaled figures.	7.G.A.1	●				
		Using Scale Factor	Students use scale factors to determine unknown measures in real-life scenarios.	7.G.A.1	●				

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2		Operating with Signed Numbers			Problem Solving	Animation	Worked Examples	Classification Tools	Explore
Textbook Topic	MATHia Unit	MATHia Workspace	Overview	CCSS					
ADDING AND SUBTRACTING RATIONAL NUMBERS	Adding and Subtracting Integers	Adding and Subtracting Negative Integers	Students use an interactive number line to add and subtract negative numbers.	7.NS.A.1					•
		Using Number Lines to Add and Subtract Integers	Students practice adding and subtracting on number lines using a similar model to the one they used on the interactive number line.	7.NS.A.1	•				
MULTIPLYING AND DIVIDING RATIONAL NUMBERS	Integer Operations	Multiplying and Dividing Integers	Students model problems involving the multiplication of integers and use fact families to explore dividing integers.	7.NS.A.2			•		
		Using Order of Operations to Simplify Numeric Expressions (No Type In)	Students practice simplifying a variety of numeric expressions.	7.NS.A.3	•				
		Using Order of Operations to Simplify Numeric Expressions (Type In)	Students practice simplifying a variety of numeric expressions.	7.NS.A.3	•				

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3 Reasoning Algebraically					Problem Solving	Animation	Worked Examples	Classification Tools	Explore
Textbook Topic	MATHia Unit	MATHia Workspace	Overview	CCSS					
ALGEBRAIC EXPRESSIONS	Variable Expressions	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.EE.A.1					●
		Using Order of Operations to Simplify Algebraic Expressions (No Type In)	Students simplify variable expressions by combining like terms, by using number properties, and by using the order of operations.	7.EE.A.1	●				
		Using Order of Operations to Simplify Algebraic Expressions (Type In)	Students simplify variable expressions by combining like terms, by using number properties, and by using the order of operations.	7.EE.A.1	●				
TWO-STEP EQUATIONS AND INEQUALITIES	Modeling Two-Step Expressions and Equations	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.EE.B.4	●				
		Modeling Two-Step Equations	From given scenarios, students determine unknown values and enter values into tables to recognize patterns. Students express these patterns in two-step expressions and use the solver tool to solve two-step equations.	7.EE.B.4	●				
	Solving Two-Step Equations	Checking Solutions to Linear Equations	Students substitute given values into two-step equations to determine the values are solutions to the equations.	7.EE.B.4.a	●				
		Solving with Multiplication (No Type In)	Students solve two-step equations involving multiplication using the solver.	7.EE.B.4.a	●				
		Solving with Multiplication (Type In)	Students solve two-step equations involving multiplication.	7.EE.B.4.a	●				
		Solving with Division (No Type In)	Students solve two-step equations involving division using the solver.	7.EE.B.4.a	●				
		Solving with Division (Type In)	Students solve two-step equations involving division using the solver.	7.EE.B.4.a	●				
Solving Two-Step Equations	Students solve two-step equations involving all four operations.	7.EE.B.4.a	●						

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TWO-STEP EQUATIONS AND INEQUALITIES	Solving Linear Equations with Similar Terms	Solving by Combining Like variable Terms and a Constant with Integers (No Type In)	Students combine like terms and then solve for a variable given an equation with integer coefficients and constants.	7.EE.B.4.a	•				
		Solving by Combining Like variable Terms and a Constant with Integers (Type In)	Students combine like terms and then solve for a variable given an equation with integer coefficients and constants.	7.EE.B.4.a	•				
		Solving by Combining Like Variable Terms and a Constant with Decimals (No Type In)	Students combine like terms and then solve for a variable given an equation with decimal coefficients and constants.	7.EE.B.4.a	•				
		Solving by Combining Like Variable Terms and a Constant with Decimals (Type In)	Students combine like terms and then solve for a variable given an equation with decimal coefficients and constants.	7.EE.B.4.a	•				
	Solving Two-Step Inequalities	Graphing Inequalities with Rational Numbers	Students graph simple inequalities involving rational numbers on a number line.	7.EE.B.4.b	•				
		Solving Two-Step Linear Inequalities	Students solve two-step linear inequalities.	7.EE.B.4.b	•				
MULTIPLE REPRESENTATIONS OF EQUATIONS	Problem Solving with Two-Step Equations and Inequalities	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.EE.B.3 7.EE.B.4	•				
		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.EE.B.3 7.EE.B.4.a	•				
		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.EE.B.3 7.EE.B.4.a	•				
	The Coordinate Plane and Two-Step Equations	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.EE.B.4.a			•		
		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.EE.B.4.a		•			

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4 Analyzing Populations and Probabilities					Problem Solving	Animation	Worked Examples	Classification Tools	Explore
Textbook Topic	MATHia Unit	MATHia Workspace	Overview	CCSS					
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.SP.C.5 7.SP.C.7.a			•		
		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.SP.C.6 7.SP.C.7.b		•			
COMPOUND PROBABILITY	Compound Probability	Calculating Compound Probabilities	Students use simulation, tree diagrams, organized lists, and tables to determine compound probabilities.	7.SP.C.8		•			
DRAWING INFERENCES	Numerical Data Displays Comparisons	Comparing Characteristics of Data Displays	Students compare the characteristics of data displays, specifying which numerical characteristics can be determined from each display.	7.SP.B.3			•		
		Comparing Populations using Data Displays	Students use data displays to compare populations by determining the visual overlap and describing the difference between the measures of centers in terms of measures of variability.	7.SP.B.3			•		

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5		Constructing and Measuring			Problem Solving	Animation	Worked Examples	Classification Tools	Explore
Textbook Topic	MATHia Unit	MATHia Workspace	Overview	CCSS					
ANGLES AND TRIANGLES	Angle Properties	Calculating Angles	Students use an interactive circular protractor to measure angles and determine angle sums.	7.G.B.5					•
		Classifying Angles and Determining Unknown Measures	Students identify complementary, supplementary, and vertical angles. They write and solve equations to solve for unknown angle measures.	7.G.B.5			•	•	
THREE-DIMENSIONAL FIGURES	Volume of Pyramids	Calculating Volume of Pyramids	Students calculate the volume of pyramids in mathematical and real-world contexts using given measurements.	7.G.B.6	•				
		Using Volume of Pyramids	Students apply their reasoning to determine volume of pyramids and solve volume problems.	7.G.B.6					

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