1 Transforming Geometric Objects with Readiness

Strategies

MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
Topic 1: Rigid Motion Transformations															
Rigid Motions on the Coordinate Plane	Experimenting with Rigid Motions	Students use an interactive Explore Tool to perform translations, reflections, and rotations. Students also identify vertical and horizontal symmetry and describe sequences of rigid motions that map one figure onto a congruent figure. Students observe that, after rigid motions, parallel lines remain parallel and angle measures and line segments do not change their measure.	8.10A 8.10C	✔				•							
	Translating Plane Figures	Students will select translations that match a pre-image to a target image figure, given a reference point.	8.10A 8.10C		✔				•						
	Reflecting Plane Figures	Students will select reflections over lines that match a pre-image to target image figure, given a reference point.	8.10A 8.10C		✔				•						
	Rotating Plane Figures	Students will select rotations that match a pre-image to a target image figure, given a reference point. Rotations are limited to 90-degree increments.	8.10A 8.10C		✔				•						
	Describing Rigid Motions Using Coordinates	Students watch an animation showing how rigid motions--translations, reflections, and rotations--are defined on the coordinate plane using algebraic notation. Students identify and produce rigid motions of shapes using coordinates and the coordinate plane.	8.10A 8.10C	✔			•								

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Readiness for Similarity

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	✔		•									
	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		✔								•		

Topic 2: Similarity

| **Dilating Figures on the Coordinate Plane** | Defining Similarity | Students watch an animation showing how similar figures can be created by drawing and measuring lines from a point of dilation. Students distinguish between enlargement and reduction dilations and use the corresponding side length ratios to determine the scale factors of dilations. Students learn that shapes created by dilations are similar figures, which have congruent corresponding angle measures and proportional corresponding side lengths. | 8.3A 8.3B | ✔ | | • | | | | | • | | | | |
| | Dilating Plane Figures | Students will select dilations that match a pre-image to target image figures, given a reference point. | 8.3C | | ✔ | | | | | • | | | | | |

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Mapping Similar Figures Using Transformations	Performing One Transformation	Students will select a translation, rotation, reflection, or dilation that matches a pre-image to a target image figure, given a reference point. Rotations are limited to 90-degree increments.	8.3C 8.10A 8.10C		✔				•						
	Performing Multiple Transformations	Students will select multiple transformations from translation, rotation, reflection, and dilation to match a pre-image to a target image figure, given a reference point. Rotations are limited to 90-degree increments.	8.3C 8.10A 8.10C		✔				•						
	Describing Transformations Using Coordinates	Students watch a brief animation showing how dilations are defined on the coordinate plane using algebraic notation. They compare and contrast shapes and their dilations on the coordinate plane and then define a similar figure as one which is obtained from an original figure by a sequence of dilations and rigid motions. Students also define a congruent figure as one which is obtained from an original figure by a sequence of rigid motions. Finally, students identify sequences of rigid motions or rigid motions and dilations which produce a transformed figure and differentiate between transformations that produce congruent figures and those that produce similar figures that are not congruent.	8.3B 8.3C 8.10B 8.10C	✔		•					•				

Topic 3: Line and Angle Relationships

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	✔			•	•							

1	Transforming Geometric Objects with Readiness				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**									
Special Angle Relationships (continued)	Solving for Angle Measures	Students write and solve equations to solve for unknown angle measures.	7.11C		✔					●				●
Triangle Sum and Exterior Angle Theorems	Introduction to Triangle Sum and Exterior Angle Theorems	Students are informally introduced to the Triangle Sum Theorem. They derive the Exterior Angle Theorem using the Triangle Sum Theorem and substitution.	8.8D	✔										●
	Solving Problems Using Triangle Sum and Exterior Angles	Students determine the remote interior angles of a triangle given an exterior angle. They use the Triangle Sum and Exterior Angle Theorems to calculate unknown angle measures in diagrams.	8.8D		✔					●				●
Angle Relationships Formed by Lines Intersected by a Transversal	Classifying Angles Formed by Transversals	Students follow worked examples and complete sorting activities as they learn to identify angles and angle pairs formed by lines cut by a transversal.	8.8D	✔		●	●							
	Reasoning about Angles Formed by Transversals	Students solve reasoning problems involving angle measures formed by lines cut by a transversal.	8.8D	✔										●
	Calculating Angle Measures Formed by Transversals	Calculate the measure of the sought angle by using angle relationships formed by two lines cut by a single transversal.	8.8D		✔					●				
The Angle-Angle Similarity Theorem	Introduction to the Angle-Angle Similarity Theorem	Students revisit the definition of similarity and how dilations produce similar figures. Students then recall what they have learned about corresponding angles when two parallel lines are crossed by a transversal. These facts are combined to suggest the Angle-Angle Similarity Theorem. Students then use the theorem to identify similar and non-similar triangles.	8.8D	✔			●							
	Identifying Similar Triangles	Students construct informal arguments to establish facts about the congruence between pairs of angles. Then they use the angle-angle criterion to decide if two triangles are similar (or not).	8.8D		✔						●				

CARNEGIE LEARNING

2 — Developing Function Foundations with Readiness

MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
Readiness for From Proportional to Linear Relationships															
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		✔								•		
	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		✔								•		
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	✔									•		•

2 Developing Function Foundations with Readiness						Strategies									
MATHia Unit	**MATHia Workspace**	**Overview**	**TEKS**	**Concept Builder**	**Mastery**	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
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		✔								•		

Topic 1: From Proportions to Linear Relationships

Representations of Proportional Relationships	Representing Proportional Relationships Algebraically	Students identify a constant of proportionality from a scenario. They use the constant of proportionality to select an equation that models a proportional relationship in a scenario. Students use an equation modeling a proportional relationship to determine a value for an independent variable when the value for the dependent variable is given.	8.5A 8.5E	✔									•		•
	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.	8.4B 8.5A 8.5E		✔				•		•		•	•	
	Comparing Proportional Relationships in Different Forms	Given two proportional relationships in different representations -- equation, graph, table, or description -- students compare the relationships' rate of change in a contextual or noncontextual scenario.	8.4C		✔				•				•		

2 — Developing Function Foundations with Readiness

MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
Using Similar Triangles to Describe the Steepness of a Line	Understanding the Slopes of Lines	Students watch an animation which shows that the unit rate and constant of proportionality for a situation are both equivalent to the slope of a line representing the situation. Students answer questions, demonstrating with similar triangles that the slope of a straight line is the same between any two points on the line. They interpret the slopes of lines representing different real-world scenarios. Finally, students use an interactive Explore Tool, which helps students to build the linear equation representing a straight line on a coordinate plane.	8.4A 8.4B	✔		•									
	Writing Equations for Lines	Students use slope triangles to determine the slopes of lines graphed on the coordinate plane. They then use the slope of the line, including slopes of 0, to write the equation for the line. Students then translate the line and write the equation for the translated line. Students learn that equations of the form y = mx represent straight lines graphed through the origin and equations of the form y = mx + b represent translations of those lines.	8.4C 8.5B 8.5I		✔						•				
Exploring Slopes	Graphing Linear Relationships	Students will graph proportional and non-proportional linear relationships. They will examine and compare unit rates.	8.4B 8.5A 8.5B 8.5F 8.5H	✔					•						
	Comparing Proportional and Non-Proportional Relationships	Students are given two linear relationships in two different representations -- equation, graph, table, or description -- of. They compute the y-intercept and rate of change. Then they determine if one, both, or neither of the equations is a proportional relationship.	8.4C 8.5F 8.5H		✔				•				•	

Readiness for Two-Step Equations and Inequalities															
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		✔	•								•	

2	Developing Function Foundations with Readiness					Strategies									
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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: Two-Step Equations and Inequalities

MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
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		✔		•						•		

2 Developing Function Foundations with Readiness

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Modeling Equations by Equal Expressions (continued)	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	✔				•	•						•
	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 3: Multiple Representations of Equations

MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
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	✔							•		•		•

2 Developing Function Foundations with Readiness						Strategies									
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Representing Equations with Tables and Graphs (continued)	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	✔							●		●		●
	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		✔						●		●	●	

Topic 4: Linear Relationships															
Using Tables, Graphs, and Equations	Multiple Representations of Linear Equations	Students represent scenarios with linear expressions. They compare multiple representations of linear functions and determine whether a table, graph, or equation match a given scenario. Students match graphed lines and equations to given scenarios.	8.4C 8.5B 8.5I	✔			●						●		

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Using Tables, Graphs, and Equations (continued)	Modeling Linear Relationships Using Multiple Representations	Students model problems using expressions, tables, and graphs. Students use number properties to evaluate and solve one-step and two-step equations.	8.5B 8.5I		✔				●		●		●	●	
Linear Relationships in Tables	Calculating Slopes	Students are given a relation and a choice as to which method to use to graph it. Students are then given information about the line appropriate to the chosen method.	8.4C		✔				●		●		●		
Graphing Linear Equations Using Slope and y-Intercept	Graphing Given an Integer Slope and y-Intercept	Students will write the equations of lines given an integer slope and a y-intercept.	8.5B 8.5I 8.8C		✔				●		●		●		
	Graphing Given a Decimal Slope and y-Intercept	Students will write the equations of lines given a decimal-value slope and a y-intercept.	8.5B 8.5I 8.8C		✔				●		●		●		

Topic 5: Introduction to Functions															
Defining Functional Relationships	Classifying Relations and Functions	Students watch an animation and follow worked examples as they learn how to classify relations as functions or non-functions.	8.5G	✔		●							●		●
	Exploring Functions	Students use an interactive function machine to explore mystery functions. Students use the function machine and a table to identify functions. They also use the machine along with sorting activities to identify the domain and range of different functions.	8.5G	✔				●	●						
Describing Graphs of Functions	Exploring Graphs of Functions	Students use an interactive function machine and a graph to identify and analyze function equations and graphs. Students identify intercepts of the graphs.	8.5G	✔					●						
Comparing Functions Using Different Representations	Comparing Linear Relationships in Different Forms	Given two linear functions in different representations -- equation, graph, table, or description -- with a contextual or noncontextual scenario, students compare the equations' slopes or y-intercepts.	8.4C 8.5B		✔				●				●		

3	Modeling Linear Equations with Readiness				Strategies										
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Topic 1: Patterns in Bivariate Data

| **Analyzing Patterns in Scatter Plots** | Estimating Lines of Best Fit | Students describe the patterns of association in scatter plots and select the most appropriate line of best fit for a scatter plot. They use an interactive Explore Tool to plot, analyze, interpret, and reason with lines of best fit using real-world data. | 8.5C 8.11A | ✔ | | | | • | • | | | | • | | |
| | Using Lines of Best Fit | Students practice interpreting the meaning of lines of best fit and using the lines to make predictions. | 8.5D | ✔ | | | | | | | | | • | | |

Readiness for Solving Linear Equations

| **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 2: Solving Linear Equations

Solving Multi-Step Equations	Solving Multi-Step Equations	Students practice solving equations algebraically using a variety of strategies, including using a balance tool.	8.8C	✔					•						•
	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.	8.8C		✔									•	
	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 decimal coefficients and constants.	8.8C		✔									•	

3	Modeling Linear Equations with Readiness					Strategies									
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Solving Multi-Step Equations (continued)	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.	8.8C		✔									•	
	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.	8.8C		✔									•	
Interpreting the Number of Solutions to Equations	Solving Equations with One Solution, Infinite, and No Solutions	Students follow worked examples as they learn to identify equations with one solution, no solutions, and infinite solutions. Students also check the solutions to equations.	8.8C	✔											•
	Sorting Equations by Number of Solutions	Students complete sorting activities to practice identifying linear equations with one, no, and infinite solutions.	8.8C	✔			•								
Solving Linear Equations with Variables on Both Sides	Solving with the Distributive Property Over Multiplication	Students will solve equations with variables embedded in distribution expressions.	7.11A		✔									•	
	Solving with the Distributive Property Over Division	Students will solve equations with variables embedded in distribution expressions in fractions.	7.11A		✔									•	
	Solving with Variables on Both Sides with Rationals (No Type In)	Students will solve equations with variables on both sides of the equals sign.	8.8C		✔									•	
	Solving with Variables on Both Sides with Rationals (Type In)	Students will solve equations with variables on both sides of the equals sign.	8.8C		✔									•	

3	Modeling Linear Equations with Readiness					Strategies									
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Topic 3: Systems of Linear Equations

Systems of Linear Equations	Introduction to Systems of Linear Equations	Students watch an animation introduces systems of linear equations and demonstrating that linear systems may have one solution, no solutions, or an infinite number of solutions. Students represent systems with one solution graphically and algebraically in order to understand that the solution to such a system is represented by a point of intersection of the graphs of the two linear equations. Students verify solutions to systems and interpret a system in context, making sense of the point of intersection as the break-even point in a cost-income situation.	8.9A	✔		•		•							
	Modeling Linear Systems Involving Integers	Students will write multiple expressions with integer coefficients and use equations to solve systems and determine break-even points in the context of real-world problems.	8.5I 8.9A		✔				•		•		•	•	
	Modeling Linear Systems Involving Decimals	Students will write multiple expressions with decimal coefficients and use equations to solve systems and determine break-even points in the context of real-world problems.	8.5I 8.9A		✔				•		•		•	•	

4 — Applying Powers with Readiness						Strategies									
MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example

Readiness for Real Numbers

| **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 | ✔ | | • | | | | | | | | | • |

Topic 1: Real Numbers

The Real Numbers	Introduction to Irrational Numbers	Students determine perfect squares and their square roots. They use rational approximations to determine decimal approximations of square roots of non-perfect squares. Students watch an animation about the real number system and classify real numbers as rational or irrational.	8.2A 8.2B	✔		•	•						•		•
	Graphing Real Numbers on a Number Line	Students practice plotting various real numbers on a number line. Students approximate, if necessary, and plot decimals, percents, fractions, square roots, and pi.	8.2B 8.2D		✔				•						
	Ordering Rational and Irrational Numbers	Students use a number line tool to plot approximate values of real numbers and then compare and order the numbers.	8.2B 8.2D	✔					•						
	Solving for Side Lengths in Area and Volume Problems	Students are given the area or volume of a figure and solve for the side length of a square or cube.	8.2B		✔									•	•
Scientific Notation	Using Scientific Notation	Students write numbers in standard form as numbers in scientific notation and write numbers in scientific notation as numbers in standard form.	8.2C	✔							•				

	4 Applying Powers with Readiness						Strategies									
MATHia Unit	**MATHia Workspace**	**Overview**	**TEKS**	**Concept Builder**	**Mastery**	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example

Topic 2: The Pythagorean Theorem

The Pythagorean Theorem	Exploring the Pythagorean Theorem	Students explore a variety of right triangles and answer questions about proofs of the Pythagorean Theorem and its converse.	8.6C 8.7C	✔			•	•							
	Using the Pythagorean Theorem	Students increase their familiarity with using the Pythagorean Theorem by analyzing worked examples.	8.7C		✔						•				•
	Problem Solving Using the Pythagorean Theorem	Students solve for an unknown side length of a right triangle in real-world problems by using the Pythagorean Theorem.	8.7C	✔									•		
Distances in a Coordinate System	Calculating Distances on the Coordinate Plane	Students determine distances on the coordinate plane using the Pythagorean Theorem.	8.7D	✔				•							

Topic 3: Three-Dimensional Figures

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		✔						•				

4 Applying Powers with Readiness						Strategies									
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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		✔						•		•	•	

Readiness for Volume of Curved Figures															
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	✔											•

CARNEGIE LEARNING

4	Applying Powers with Readiness					Strategies									
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Solving Area and Circumference Problems (continued)	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 4: Volume of Curved Figures															
Volume of a Cylinder	Relating Volumes of Cylinders, Cones, and Spheres	Students analyze a cylinder and its circular bases to understand the volume formulas $V = Bh$ and $V = pi * r^2$ for the cylinder. They watch an animation which shows filling a cone with liquid and pouring its volume into first a cylinder and then a hemisphere. Students infer the volume formulas for the cone and sphere. Finally, students solve mathematical problems related to the volumes of cylinders, cones, and spheres.	8.6A 8.6B 8.7A	✔			•								
	Calculating Volume of Cylinders	Students will use mathematical and real-world objects to determine the volume of cylinders.	8.7A		✔						•		•	•	
	Using Volume of Cylinders	Students will apply the formula for the volume of a cylinder to solve a variety of different problems.	8.7A		✔						•		•	•	
Volume of a Cone	Calculating Volume of Cones	Students will use mathematical and real-world objects to determine the volume of cones.	8.7A		✔						•		•	•	
	Using Volume of Cones	Students will apply the formula for the volume of a cone to solve a variety of different problems.	8.7A		✔						•		•	•	
Volume of a Sphere	Calculating Volume of Spheres	Students will use mathematical and real-world objects to determine the volume of spheres.	8.7A		✔						•		•	•	
	Using Volume of Spheres	Students will apply the formula for the volume of a sphere to solve a variety of different problems.	8.7A		✔						•		•	•	

5	Analyzing Populations, Probabilities, and Potential with Readiness					**Strategies**									
MATHia Unit	**MATHia Workspace**	**Overview**	**TEKS**	**Concept Builder**	**Mastery**	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example

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	✔								•		•	

5	Analyzing Populations, Probabilities, and Potential with Readiness					Strategies									
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Topic 3: Drawing Inferences

Drawing Inferences	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	✔			•								
Using Data Displays to Compare Two Populations	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.	7.6G 7.12A 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.	7.12A 7.12B 7.12C	✔											

Readiness for Financial Literacy: Your Financial Future

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	✔									•		

5 Analyzing Populations, Probabilities, and Potential with Readiness						Strategies									
MATHia Unit	MATHia Workspace	Overview	TEKS	Concept Builder	Mastery	Animations	Classifications	Explore Tools	Graphing Tools	Interactive Diagrams	Interactive Worksheets	Proof	Real-World Scenarios	Solvers	Worked Example
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		✔								•		
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		✔										

Topic 4: Financial Literacy: Your Financial Future															
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.	8.12D		✔										

						Strategies									
5	**Analyzing Populations, Probabilities, and Potential with Readiness**					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**										
Simple and Compound Interest (continued)	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.	8.12D		✔										
Car, Home, and Other Loans	Monthly Payments and Interest Costs	Students compute payments and costs for pairs of consumer, car, or home loans with differing interest rates, terms, down payments, rebates (for car loans), and/or points (for home loans). Then students compare the effects of the differences in the loans on monthly and cumulative costs.	8.12A 8.12B 8.12E		✔										
	Using Credit Cards	Students will learn how to use a Credit Card Repayment Calculator to make sound financial decisions.	8.12B		✔										