CARNEGIE LEARNING

National MSMS Course 1
2019-2020 MATHia Enhancements Release Notes

Module		Topic	MATHia Unit		Workspace	Description	Enhancement
1	Transforming Geometric Objects	Rigid Motion Transformations	1	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.	NEW: This is a new Concept Builder workspace.
					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.	NEW: This is a new Concept Builder workspace.
		Similarity	2	Similar 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.	NEW: This is a new Concept Builder workspace.
					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	NEW: This is a new Concept Builder workspace.

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						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.	
		Line and Angle Relationships	3	Angles and Triangles	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. Students use these theorems to determine unknown angle measures on the interior and exterior of triangles.	NEW: This is a new Concept Builder workspace.
2	Developing Functional Foundations	From Proportions to Linear Relationships	1	Representing 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.	NEW: This is a new Concept Builder workspace.
					Understanding the Slopes of	Students watch an animation which shows that the unit rate and constant of proportionality for	NEW: This is a new Concept

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					Lines	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.	Builder workspace.
		Linear Relationships	2	Linear Models	Multiple Representations of Linear Functions	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.	NEW: This is a new Concept Builder workspace.
			3	Writing Equations of a Line	Connecting Slope-Intercept and Point-Slope Forms	Students watch an animation showing a situation involving a California roller coaster whose initial drop can be modeled by a linear equation in point-slope form. Students then write linear equations in point-slope form to describe lines on a coordinate plane given two points. They convert these equations in point-slope form into slope-intercept form to determine the y-intercept of each line.	NEW: This is a new Concept Builder workspace.
			4	Graphs of Linear Equations in Two Variables	Analyzing Models of Linear	Students analyze scenarios of linear relationships. They are given an equation that models the scenario. Students then match the	NEW: This is a new Mastery workspace.

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					Relationships	different expressions in the equation to verbal descriptions of these quantities in the context of the scenario.	
		Patterns in Bivariate Data	7	Categorical Data	Building Marginal Frequency Distributions	Students construct a Marginal Frequency Distribution from an input Data Table for a contextual scenario.	NEW: This is a Mastery workspace built for A1 that is new to C3.
					Analyzing Marginal Frequency Distributions	Students analyze a Marginal Frequency Distribution to answer questions about frequencies for interior and total cells, categories with minimum or maximum frequencies for interior and/or total cells, and comparing frequencies in different rows or columns	NEW: This is a Mastery workspace built for A1 that is new to C3.
					Building Marginal Relative Frequency Distributions	Students construct a Marginal Relative Frequency Distribution from an input Marginal Frequency Distribution for a contextual scenario.	NEW: This is a Mastery workspace built for A1 that is new to C3.
					Analyzing Marginal Relative Frequency Distributions	Students analyze a Marginal Relative Frequency Distribution to answer questions about relative frequencies for interior and total cells, categories with minimum or maximum relative frequencies for interior and/or total cells, and comparing relative frequencies in different rows or columns.	NEW: This is a Mastery workspace built for A1 that is new to C3.
3	Modeling Linear	Solving Linear Equations	3	Linear Models and the	Analyzing Models of	Students analyze scenarios of one-step linear relationships involving the distributive	NEW: This is a new Mastery

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Equations			Distributive Property	Linear Relationships Involving the Distributive Property	property. 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.	workspace.
					Solving with the Distributive Property Over Multiplication	Students will solve equations with variables embedded in distribution expressions.
					Solving with the Distributive Property Over Division	Students will solve equations with variables embedded in distribution expressions in fractions.
	Systems of Linear Equations	5	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	NEW: This is a new Concept Builder workspace.

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						intersection as the break-even point in a cost-income situation.	
5	Applying Powers	Volume of Curved Figures	3	Volume	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.	NEW: This is a new Concept Builder workspace.