Unit Map – Grade 8 Math

Real Number Relationships	Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.3 **Place value.** The student represents and use real numbers in a variety of forms.				

Catholic Identity Standards (Ways to Grow)	
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8.1C	recognize and oppose unjust social structures and work toward justice for all*
8.1D	see God at work in all things and as expressed in the sacraments*
8.1E	connect scripture, tradition, and the models of Mary and the saints to guide, grow, and deepen faith*

Learning Process Standards (Tools to Know)		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.2A	apply math in everyday situations				
8.2B	use problem-solving models				
8.2C	exhibit habits of thinking quantitatively*				

Content		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
Representing Real Numbers					
8.3A	extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers				
8.3A.1	convert between standard decimal notation and scientific notation				
Magnitude of Real Numbers					
8.3B	order a set of real numbers arising from mathematical and real-world contexts				
8.3B.1	approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line				

Learning Process Standards (Ways to Show)		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.2D	create representations				
8.2E	analyze information				
8.2F	develop lines of inquiry to determine truth or falsehood*				

Proportional and Non-Proportional Reasoning		Unit	CHECKPOINT		
			1	2	3
8.5	**Proportionality.** The student uses proportional and non-proportional relationships involving slope and intercept to develop foundational concepts of functions.				

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Learning Process Standards (Tools to Know)		Unit	CHECKPOINT		
			1	2	3
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8.2C	exhibit habits of thinking quantitatively*				

Content		Unit	CHECKPOINT		
			1	2	3
Functions					
8.5A	identify functions using sets of ordered pairs, tables, mappings, and graphs				
Proportional Reasoning					
8.5B	solve problems involving direct variation				
8.5B.1	represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$				
Non-Proportional Reasoning					
8.5C	write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations				
8.5C.1	represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$				
8.5C.2	distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$				
8.5C.3	identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems				
Slope					
8.5D	use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems				
8.5D.1	use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1) / (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line				
8.5D.2	graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship				

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			1	2	3
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Transformational Geometry	Unit	CHECKPOINT 1	2	3
8.6 **Geometry and measurement.** The student develops transformational geometry concepts.				

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Learning Process Standards (Tools to Know)		Unit	CHECKPOINT 1	2	3
8.2A	apply math in everyday situations				
8.2B	use problem-solving models				
8.2C	exhibit habits of thinking quantitatively*				

Content		Unit	CHECKPOINT 1	2	3
Transformations					
8.6A	explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation				
8.6A.1	generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane				
8.6A.2	differentiate between transformations that preserve congruence and those that do not				
Dilations					
8.6B	use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation				
8.6B.1	compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane				
8.6B.2	model the effect on linear and area measurements of dilated two-dimensional shapes				

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Triangles	Unit	CHECKPOINT 1	2	3
8.6 **Geometry and measurement.** The student use geometry to solve problems involving triangles.				

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Content		Unit	CHECKPOINT 1	2	3
Pythagorean Theorem					
8.6C	use the Pythagorean theorem and its converse to solve problems				
8.6C.1	use models and diagrams to explain the Pythagorean theorem				
8.6C.2	determine the distance between two points on a coordinate plane using the Pythagorean theorem				
Transversals					
8.6D	use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles				

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Surface Area and Volume		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.6	**Geometry and measurement.** The student uses geometry to solve problems involving surface area and volume.				

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Content		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
Surface Area					
8.6E	use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders				
Volume					
8.6F	solve problems involving the volume of cylinders, cones, and spheres				
8.6F.1	describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height				
8.6F.2	model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas				

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Data Analysis		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.7	**Data analysis.** The student uses statistical procedures to describe data.				

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Interpreting Data					
8.7A	use a trend line that approximates the linear relationship between bivariate sets of data to make predictions				
8.7A.1	contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation				
8.7A.2	construct a scatterplot and describe the observed data to address questions of association such as linear, nonlinear, and no association between bivariate data				
8.7A.3	determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points				
8.7A.4	simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected				

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Equations and Inequalities	Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
8.8 **Algebra.** The student uses multiple representations to develop foundational concepts of simultaneous linear equations.				

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Content		Unit	CHECKPOINT 1	CHECKPOINT 2	CHECKPOINT 3
Solving Problems with Equations/Inequalities					
8.8A	model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants				
8.8A.1	write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants				
8.8A.2	write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants				
8.8A.3	identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations				

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