MARYLAND MATHEMATICS STATE CURRICULUM CORRELATED TO MOVING WITH MATH®-BY-TOPIC LEVEL D GRADE 8

		Student Book	Skill Builders
	STANDARD 1: KNOWLEDGE OF PATTERNS, ALGEBRA, AND FUNCTIONS		
	Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships		
	A. Patterns and Functions		
1.	**Identify, describe, extend, and create patterns, functions and sequences**		
a)	Determine the recursive relationship of arithmetic sequences represented in words, in a table, or in a graph •**Assessment limit:** Provide the nth term to no more than 10 terms beyond the last given term using common differences no more than 10 with integers (-100 to 5000)	**DI:** 4, 32, 33	42-1, 42-2
b)	Determine the recursive relationship of geometric sequences represented in words, in a table, or in a graph •**Assessment limit:** Provide the nth term no more than 5 terms beyond the last given term using the recursive relationship of geometric sequences with whole numbers and a common ratio of no more than 5:1 (0- 10.000)	**DI:** 32, 33	42-1 to 42-3
c)	Determine whether relationships are linear or nonlinear when represented in words, in a table, symbolically, or in a graph •**Assessment limit:** Use a graph to determine if a relationship is linear or nonlinear		
d)	Determine whether relationships are linear or nonlinear when represented symbolically		
	B. Expressions, Equations, and Inequalities		
1.	**Write, simplify, and evaluate expressions**		
a)	Write an algebraic expression to represent unknown quantities •**Assessment limit:** Use one unknown and no more than 3 operations and rational numbers (-1000 to 1000)	**DIII:** 34-37 **DV:** 39-42, 46, 65	50-1
b)	Evaluate an algebraic expression •**Assessment limit:** Use one or two unknowns and up to three operations and rational numbers (-100 to 100)	**DIV:** 65-67, 69, 72, 73, 75, 81, 82 **DV:** 63-65	39-3, 40-2, 59-2

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c)	Evaluate numeric expressions using the order of operations •**Assessment limit:** Use no more than 5 operations including exponents of no more than 33 and 2 sets of parentheses, brackets, a division bar, or absolute value with rational numbers (-100 to 100)		**DV:** 61, 62, 73	59-1
d)	Simplify algebraic expressions by combining like terms •**Assessment limit:** Use no more than 3 variables with integers (-50 to 50), or proper fractions with denominators as factors of 20 (-20 to 20)		**DV:** 43-45, 60	
e)	Describe a real-world situation represented by an algebraic expression		**DIII:** 34-37 **DV:** 43, 50	39-2, 59-2
2.	Identify, write, solve, and apply equations and inequalities			
a)	Write equations or inequalities to represent relationships •**Assessment limit:** Use a variable, the appropriate relational symbols (>, ≥, <. ≤, =), and no more than 3 operational symbols (+, -, x, ÷) on either side and rational numbers (-1000 to 1000)		**DV:** 42, 46, 68	38-2, 50-1
b)	Solve for the unknown in a linear equation •**Assessment limit:** Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and rational numbers (-2000 to 2000)		**DV:** 48-55	50-2, 50-3, 50-4
c)	Solve for the unknown in an inequality. •**Assessment limit:** Use a one- or two-operation inequality with one variable on one side no more than 3 times, whose results after combining coefficients is a positive whole number coefficient with integers (-100 to 100)		**DV:** 68-70	
d)	Identify or graph solutions of inequalities on a number line •**Assessment limit:** Use one variable once with a positive whole number coefficient and integers (-100 to 100)			
e)	Identify equivalent equations •**Assessment limit:** Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and integers (-2000 to 2000)		**DV:** 46, 47, 57	
f)	Apply given formulas to a problem-solving situation •**Assessment limit:** Use no more than four variables and up to three operations with rational numbers (-500 to 500)		**DIV:** 65-67, 69, 72, 73, 75, 81, 82	38-2, 38-3, 39-3, 40-2, 55-1, 55-2, 56-1 to 56-3
g)	Write equations and inequalities that describe real-world problems		**DIII:** 34-37	38-2, 38-3, 39-3, 40-2, 59-2
	C. Numeric and Graphic Representations of Relationships			
1.	Locate points on a number line and in a coordinate plane			
a)	Graph linear equations in a coordinate plane •**Assessment limit:** Use two unknowns having integer coefficients (-9 to 9) and integer constants (-20 to 20)		**DV:** 67	

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2.	Analyze linear relationships		
a)	Determine the slope of a graph in a linear relationship •Assessment limit: Use an equation with integer coefficients (-9 to 9) and integer constants (-20 to 20) and a given graph of the relationship		
b)	Determine the slope of a linear relationship represented numerically or algebraically		
	STANDARD 2: KNOWLEDGE OF GEOMETRY		
	Students will apply the properties of one-, two- or three-dimensional geometric figures to describe, reason or solve problems about shape, size, position or motion of objects.		
	A. Properties of Plane Geometric Figures		
1.	Analyze the properties of plane geometric figures		
a)	Identify and describe geometric relationships between angles formed when parallel lines are cut by a transversal •Assessment limit: Use alternate interior, alternate exterior, or corresponding angles	DIV: 25	33-2
b)	Identify and describe the relationship among the parts of a right triangle •Assessment limit: Use the hypotenuse or the legs of right triangles	DIV: 33, 34	54-2
2.	Analyze geometric relationships		
a)	Determine the measurements of angles formed by parallel lines cut by a transversal •Assessment limit: Use alternate interior, alternate exterior, and corresponding angles	DIV: 25	33-2
b)	Apply right angle concepts to solve real-world problems •Assessment limit: Use the Pythagorean Theorem		
c)	Determine whether three given side lengths form a right triangle	DIV: 33	54-2
	C. Representation of Geometric Figures		
1.	Representation plane geometric figures		
a)	Draw quadrilaterals •Assessment limit: Provide given whole number dimensions in inches or centimeters or angle measurement	DIV: 16	
b)	Construct perpendicular line segments •Assessment limit: Provide a given point on a given line segment	DIV: 13	
c)	Construct triangles •Assessment limit: Construct a triangle congruent to a given triangle	DIV: 15	32-2

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	D. Congruence and Similarity			
1.	Apply the properties of similar polygons			
a)	Determine similar parts of polygons •**Assessment limit:** Use the length of corresponding sides or the measure of corresponding angles and rational numbers with no more than 2 decimal places (0 - 1000)		**DIV:** 30, 91	53-1, 53-2
	E. Transformations			
1.	Analyze a transformation on a coordinate plane			
a)	Identify, describe, and plot the results of multiple transformations on a coordinate plane •**Assessment limit:** Identify or plot the result of two transformations on one figure using translations (horizontal or vertical), reflections (horizontal or vertical), or rotations about a given point			
	STANDARD 3: KNOWLEDGE OF MEASUREMENT			
	Students will identify attributes, units, or systems of measurements, or apply a variety of techniques, formulas, tools or technology for determining measurements			
	C. Applications in Measurement			
1.	Estimate and apply measurement formulas			
a)	Estimate and determine the circumference or area of a circle •**Assessment limit:** Include circles using rational numbers with no more than 2 decimal places (0 - 10,000)		**DIV:** 68-70, 83	39-1, 39-2, 56-2
b)	Estimate and determine area of a composite figure •**Assessment limit:** Include composite figures with no more than 6 polygons (triangles, rectangles, or circles) by measuring, partitioning, or using formulas with whole number dimensions (0 - 10,000)		**DIV:** 54, 55, 71, 74	36-2
c)	Estimate and determine the volume of a cylinder •**Assessment limit:** Use cylinders, the given formula, and whole number			41-3
d)	Determine the volume of cones, pyramids, and spheres			41-3
e)	Determine the surface area of cylinders, prisms, and pyramids			
2.	Analyze measurement relationships			
a)	Use proportional reasoning to solve measurement problems •**Assessment limit:** Use proportions, scale drawings with scales as whole numbers, or rates using whole numbers or decimals (0 - 1000)		**DIV:** 88-91	46-2, 46-3
	STANDARD 4: KNOWLEDGE OF STATISTICS			
	Students will collect, organize, display, analyze, or interpret data to make decisions or predictions			

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	A. Data Displays			
1.	Organize and display data			
a)	Organize and display data to make circle graphs •**Assessment limit:** Use no more than 5 categories with data in whole number percents			
b)	Organize and display data to make box-and-whisker plots •**Assessment limit:** Use no more than 12 pieces of data and whole numbers (0 - 1000)			
c)	Organize and display data to make a scatter plot •**Assessment limit:** Use no more than 10 points and whole numbers (0 - 1000)			
	B. Data Analysis			
1.	Analyze data			
a)	Interpret tables **Assessment limit:* Use no more than 5 categories having no more than 2 quantities per category and whole numbers or decimals with no more than 2 decimal places (0 - 100)	**DI**: 64 **DII**: 99 **DIV**: 41,93		
b)	Interpret box-and-whisker plots •**Assessment limit:** Use minimum, first (lower) quartile, median (middle quartile), third (upper) quartile, or maximum and whole numbers (0 - 100)			
c)	Interpret scatter plots •**Assessment limit:** Use no more than 10 points using whole numbers or decimals with no more than 2 decimal places (0 - 100)			
d)	Interpret circle graphs •**Assessment limit:** Use no more than 8 categories (0 - 100)	**DIV**: 94		
e)	Analyze multiple box-and-whisker plots using the same scale			
	STANDARD 5: KNOWLEDGE OF PROBABILITY			
	Students will use experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.			
	A. Sample Space			
1.	Identify a sample space			
a)	Describe the difference between independent and dependent events			
b)	Determine the number of outcomes •**Assessment limit:** Use no more than 5 dependent events with no more than 10 outcomes in the first event	**DIV**: 95, 96		47-3
	B. Theoretical Probability			
1.	Determine the probability of an event comprised of no more than 2 independent events			

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a)	Express the probability of an event as a fraction, a decimal, or a percent •**Assessment limit:** Use a sample space of 36 to 60 outcomes		**DIV:** 95, 96	47-3
2.	Determine the probability of a second event that is dependent on a first event of equally likely outcomes			
a)	Express the probability as a fraction, a decimal, or a percent •**Assessment limit:** Use a sample space of no more than 60 outcomes			
	C. Experimental Probability			
1.	Analyze the results of a survey or simulation			
a)	Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent •**Assessment limit:** Use 20 to 500 results			
2.	Conduct a probability experiment			
3.	Compare outcomes of theoretical probability with the results of experimental probability			
4.	Describe the difference between theoretical and experimental probability			
	STANDARD 6: KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC			
	Students will describe, represent, or apply numbers or their relationships will estimate or compute using mental strategies, paper/pencil or technology			
	A. Knowledge of Number and Place Value			
1.	Apply knowledge of rational numbers and place value			
a)	Read, write, and represent rational numbers •**Assessment limit:** Use exponential notation or scientific notation (-10,000 to 1,000,000,000)		**DI:** 28-31, 34-36	6-2, 57-1, 57-2, 57-3
b)	Compare, order and describe rational numbers with and without relational symbols ($< >,=$) •**Assessment limit:** Use no more than 4 integers (-100 to 100) or positive rational numbers (0-100) using equivalent forms or absolute value		**DII:** 5, 29, 33, 56, 65	11-4, 18-4
	C. Number Computation			
1.	Analyze number relations and compute			
a)	Add, subtract, multiply and divide integers •**Assessment limit:** Use one operation (-1000 to 1000)		**DV:** 17-21, 25-29, 31-38	58-1 to 58-5

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b)	Calculate powers of integers and square roots of perfect square whole numbers •**Assessment limit:** Use powers with bases no more than 12 and exponents no more than 3, or square roots of perfect squares no more than 144	**DI:** 28-31 **DIV:** 31, 32	6-2, 54-1
c)	Identify and use the laws of exponents to simplify expressions •**Assessment limit:** Use the rules of power times power or power divided by power with the same integer as a base (-20 to 20) and exponents (0-10)	**DI:** 28-31, 34-36	6-2
d)	Use properties of addition and multiplication to simplify expressions •**Assessment limit:** Use the commutative property of addition or multiplication, associative property of addition or multiplication, additive inverse property, the distributive property, or the identity property for one or zero with integers (-100 to 100)	**DI:** 10-14	2-1 to 2-3
2.	**Estimation**		
a)	Estimate the square roots of whole numbers •**Assessment limit:** Use whole numbers (0 - 100)	**DIV:** 32	
3.	**Analyze ratios, proportions, and percents**		
a)	Determine unit rates •**Assessment limit:** Use positive rational numbers (0 - 100)	**DII:** 93, 94	
b)	Determine or use percents, rates of increase and decrease, discount, commission, sales tax and simple interest in the context of a problem •**Assessment limit:** Use positive rational numbers (0 - 10,000)	**DIII:** 49-60, 65, 66, 69	28-1, 28-2
c)	Solve problems using proportional reasoning •**Assessment limit:** Use positive rational numbers (0 - 1000)	**DIII:** 27-31, 33-37, 67, 68 **DIV:** 87-90	26-1 to 26-3, 27-2, 27-3, 46-1, 46-2, 51-1
	STANDARD 7: PROCESS OF MATHEMATICS		
	Students demonstrate the processes of mathematics by making connections and applying reason to solve and to communicate their findings		
	A. Problem solving		
1.	Apply a variety of concepts, processes, and skills to solve problems		
a)	Identify the question in the problem	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2

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b)	Decide if enough information is present to solve the problem	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2
c)	Make a plan to solve a problem	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2
d)	Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2
e)	Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2
f)	Identify alternative ways to solve a problem	**DI:** 15, 43, 46, 51, 56-64, 68-70 **DII:** 49, 50, 81, 86, 87, 100-102 **DIII:** 32, 35, 39 **DIV:** 51, 91 **DV:** 10, 22	9-2, 24-2, 26-3, 43-1 to 43-6, 44-2
g)	Show that a problem might have multiple solutions or no solution		
h)	Extend the solution of a problem to a new problem situation		
	B. Reasoning		
1.	**Justify ideas or solutions with mathematical concepts or proofs**		
a)	Use inductive or deductive reasoning	**DI:** 9	
b)	Make or test generalizations		

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c)	Support or refute mathematical statements or solutions			
d)	Use methods of proof, I.e., direct, indirect, paragraph, or contradiction			
	C. Communication			
1.	**Present mathematical ideas using words, symbols, visual displays, or technology**			
a)	Use multiple representations to express concepts or solutions			
b)	Express mathematical ideas orally			
c)	Explain mathematically ideas in written form			
d)	Express solutions using concrete materials			
e)	Express solutions using pictorial, tabular, graphical, or algebraic methods			
f)	Explain solutions in written form			
g)	Ask questions about mathematical ideas or problems			
h)	Give or use feedback to revise mathematical thinking			
	D. Connections			
1.	**Relate or apply mathematics within the discipline, to other disciplines, and to life**			
a)	identify mathematical concepts in relationship to other mathematical concepts			
b)	identify mathematical concepts in relationship to other disciplines			
c)	Identify mathematical concepts in relationship to life			
d)	Use the relationship among mathematical concepts to learn other mathematical concepts			
	DI: *Numeration & Whole Numbers*			
	DII: *Fractions & Decimals*			
	DIII: *Problem Solving with Percent*			
	DIV: Geometry & Measurement			
	DV: *Pre-Algebra*			