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Rhode Island Mathematics Grade-Level Expectations Correlated to *Moving with Algebra Grade 8*

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders
	NUMBER AND OPERATIONS		
M(N&O)-8-1	Demonstrates conceptual understanding of rational numbers with respect to absolute values, perfect square and cube roots, and percents as a way of describing change (percent increase and decrease) using explanations, models, or other representations.	169, 170,, 173-178 SB: 133, 136-138	215, 216, 242, 243, 304, 305 SB: 184, 201, 233
M(N&O)-8-2	Demonstrates understanding of the relative magnitude of numbers by ordering or comparing rational numbers, common irrational numbers, numbers with whole number or fractional bases and whole number exponents, square roots, absolute values, integers, or numbers represented in scientific notation using number lines or equality and inequality symbols.	6, 7, 16, 17, 64, 80, 90, 134-137, 139-142 SB: 5, 6, 13, 54, 61, 66-69, 112, 113, 139, 144	217, 241, 242 SB: 185, 200, 201
M(N&O)-8-3	No GLE at this grade.		
M(N&O)-8-4	Accurately solves problems involving:		
	proportional reasoning (percent increase or decrease, interest rates, markups, or rates);	169-178 SB: 133, 134, 136-138	222, 225-227, 275-278 SB: 187-189, 191, 192, 222, 223, 246
	multiplication or division of integers;	74-78	246-248 SB: 205, 206
	squares, cubes, and taking square or cube roots.		215-217, 304, 305 SB: 184, 185, 233
M(N&O)-8-5	No GLE at this grade.		
M(N&O)-8-6	Uses a variety of mental computation strategies to:		

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	solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answer;	30-34, 41, 52-55, 91, 103-106, 116-119, 122, 145, 146, 158-160 SB: 25-28, 42-46, 84-88, 100-102, 119, 124, 128, 129, 135	199, 290-293, 307-309 SB: 226-228, 234, 235
	mentally calculates benchmark perfect squares and related square roots (e.g., 1^2 , 2^2 , ..., 12^2 , 15^2 , 20^2 , 25^2 , 100^2 , 1000^2);	16	215, 216 SB: 184
	determines the part of a number using benchmark percents and related fractions (1%, 10%, 25%, 33 1/3%, 50%, 66 2/3%, 75%, and 100%) (e.g., 25% of 16; 33 1/3% of 330).	171-175 SB: 134-136	
M(N&O)-8-7	Makes estimates in a given situation (including tips, discounts, tax, and the value of a non-perfect square root as between two whole numbers) by:		
	identifying when estimation is appropriate, selecting the appropriate method of estimation;	30-34, 41, 52-55, 91, 103-106, 116-119, 122, 145, 146, 158-160 SB: 25-28, 42-46, 84-88, 100-102, 119, 124, 128, 129, 135	
	determining the level of accuracy needed given the situation;	30-34, 41, 52-55, 91, 103-106, 116-119, 122, 145, 146, 158-160 SB: 25-28, 42-46, 84-88, 100-102, 119, 124, 128, 129, 135	
	analyzing the effect of the estimation method on the accuracy of results;		

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	evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.	30-34, 41, 52-55, 91, 103-106, 116-119, 122, 145, 146, 158-160 SB: 25-28, 42-46, 84-88, 100-102, 119, 124, 128, 129, 135	
M(N&O)-8-8	Applies properties of numbers (odd, even, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity [including the multiplicative property of one, e.g., $2^0 \times 2^3 = 2^{0+3} = 2^3$, so $2^0 = 1$], distributive, inverses) to solve problems and to simplify computations , and demonstrates conceptual understanding of field properties as they apply to subsets of real numbers when addition and multiplication are not defined in	10-15, 20, 21, 113-115 SB: 9-12, 15, 16, 96-98	294-299 SB: 231, 247, 252
GEOMETRY AND MEASUREMENT			
M(G&M)-8-1	No GLE at this grade.		
M(G&M)-8-2	Applies the Pythagorean Theorem to find a missing side of a right triangle, or in problem solving situations.		218, 219 SB: 186
M(G&M)-8-3	No GLE at this grade.		
M(G&M)-8-4	No GLE at this grade.		
M(G&M)-8-5	Applies concepts of similarity to:		
	determine the impact of scaling on the volume or surface area of three-dimensional figures when linear dimensions are multiplied by a constant factor;		
	determine the length of sides of similar triangles, or to solve problems involving growth and rate.		224, 225, 275-278 SB: 189, 222, 223, 246
M(G&M)-8-6	Demonstrates conceptual understanding of surface area or volume by solving problems involving surface area and volume of rectangular prisms, triangular prisms, cylinders, pyramids, or cones. Expresses all measures using appropriate units.		212-214 SB: 180-182
M(G&M)-8-7	No GLE at this grade.		
M(G&M)-8-8	No GLE at this grade.		
M(G&M)-8-9	No GLE at this grade.		

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	FUNCTIONS AND ALGEBRA		
M(F&A)-8-1	Identifies and extends to specific cases:		
	a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or problem situations;	16, 17, 27, 70-77, 87, 93, 94, 97, 122, 123 SB: 13, 56-60, 66, 73, 74, 102, 103, 141	199, 307-309 SB: 234, 235
	generalizes a linear relationship to find a specific case;		231-234, 311-317 SB: 196, 197, 236-239
	generalizes a nonlinear relationship using words or symbols		309 SB: 234
	generalizes a common nonlinear relationship to find a specific case		309 SB: 234
M(F&A)-8-2	Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by:		
	solving problems involving the relationship between slope ad rate of change;		321, 322 SB: 241, 242
	informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations;		324-328 SB: 243, 249
	describing the meaning of slope and intercept in context;		320-328 SB: 241-243, 249
	distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change) represented in tables, graphs, equations, or problem situations;		
	describes how change in the value of one variable relates to the change in the value of a second variable in problem situations with constant and varying rates of change.		311-317 SB: 236-239, 254
M(F&A)-8-3	Demonstrates conceptual understanding of algebraic expressions by:		
	evaluating and simplifying algebraic expressions (including those with square roots, whole number exponents, or rational numbers);		262-265, 268, 269, 303 SB: 209, 210, 220
	evaluating an expression within an equation.		
M(F&A)-8-4	Demonstrates conceptual understanding of equality by:		

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	showing equivalence between two expressions (expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level) using models of different representations of the expressions, solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$);		253-261, 266, 267, 270-272 SB: 211-216, 219, 221, 250, 251
	showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution;	10-14 SB: 9-11	262-265, 268, 269 SB: 209, 210, 220
	informally solving problems involving systems of linear equations in a context.		
DATA, STATISTICS, AND PROBABILITY			
M(DSP)-8-1	Interprets a given representation (line graphs, scatter plots, histograms, or box-and-whisker plots) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.	179 SB: 101	
M(DSP)-8-2	Analyzes patterns, trends, or distributions in data in a variety of contexts by:		
	determining or using measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, quartile, values, or estimated line of best fit to analyze situations, or to solve problems;	56, 57 SB: 47-50	
	evaluates the sample from which the statistics were developed (bias, random, or non-random).		
M(DSP)-8-3	Organizes and displays data using scatter plots to:		
	answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems;		
	identifies representations or elements of representations that best display a given set of data or situation, consistent with the representations required in M(DSP)-8-1.		
M(DSP)-8-4	Uses counting techniques to solve problems in context involving combinations or permutations using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or others).		
M(DSP)-8-5	For a probability event in which the sample space may or may not contain equally likely outcomes;		

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	determines the experimental or theoretical probability of an event in a problem-solving situation;		
	predicts the theoretical probability of an event and tests the prediction through experiments and simulations;		
	compares and contrasts theoretical and experimental probabilities.		
M(DSP)-8-6	In response to a teacher or student generated question or hypothesis: decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested while considering the limitations that could affect interpretations; and when appropriate makes predictions; asks new questions and makes connections to real world situations.		
	PROBLEM SOLVING, REASONING AND PROOF		
M(PRP)-8-1	Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to: <ul style="list-style-type: none">• Use problem-solving strategies appropriately and effectively for a given situation.• Determine, collect and organize the relevant information needed to solve real-world problems.• Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.• Use technology when appropriate to solve problems.• Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.	Throughout	Throughout
M(PRP)-8-2	Students will use mathematical reasoning and proof and be able to: <ul style="list-style-type: none">• Draw logical conclusions and make generalizations using deductive and inductive reasoning.	Throughout	Throughout

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•	Formulate, test, and justify mathematical conjectures and arguments.	Throughout	
•	Construct and determine the validity of a mathematical argument or a solution.	Throughout	
•	Apply mathematical reasoning skills in other disciplines.		
	COMMUNICATION, CONNECTIONS AND REPRESENTATIONS		
M(CCR)-8-1	Students will communicate their understanding of mathematics and be able to:		
•	Articulate ideas clearly and logically in both written and oral form.	Throughout	Throughout
•	Present, share, explain, and justify thinking with others and build upon the ideas of others to solve problems.	Throughout	Throughout
•	Use mathematical symbols and notation.	Throughout	Throughout
•	Formulate questions, conjectures, definitions, and generalizations about data, information, and problem situations.	Throughout	Throughout
M(CCR)-8-2	Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:		

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•	Use models and technology to develop equivalent representations of the same mathematical concept.	2-10, 12-17, 20-29, 34-40, 46-48, 55, 56, 62-76, 78, 80, 81, 85-94, 96, 98-100, 107-111, 122-126, 128-137, 139-141, 143, 144, 147-150, 152-155, 157, 161, 163-166, 168, 170, 171, 174, 177 SB: 9, 10, 12, 14, 15, 18, 19, 21, 24, 25, 29, 30, 36, 37, 39, 40, 47, 52-56, 58, 59, 62-67, 69, 71, 72, 77, 78, 80, 84, 85, 89, 96-98, 102-109, 113, 114, 120-122, 125, 127,	Throughout

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•	Use and create representations to solve problems and organize their thoughts and ideas.	2-10, 12-17, 20-29, 34-40, 46-48, 55, 56, 62-76, 78, 80, 81, 85-94, 96, 98-100, 107-111, 122-126, 128-137, 139-141, 143, 144, 147-150, 152-155, 157, 161, 163-166, 168, 170, 171, 174, 177 SB: 9, 10, 12, 14, 15, 18, 19, 21, 24, 25, 29, 30, 36, 37, 39, 40, 47, 52-56, 58, 59, 62-67, 69, 71, 72, 77, 78, 80, 84, 85, 89, 96-98, 102-109, 113, 114, 120-122, 125, 127, 130-144	Throughout
•	Convert between representations (e.g., a table of values, an equation, and a graph may all be representations of the same function).		231-234, 311-317, 332, 333 SB: 196, 197, 236-239, 254
M(CCR)-8-3	Students will recognize, explore, and develop mathematical connections and be able to:		
•	Connect new mathematical ideas to those already studied and build upon them.	Throughout	Throughout
•	Understand that many real-world applications require an understanding of mathematical concepts (e.g., personal finance, running a business, building a house, following a recipe, or sending a rocket to the moon)	Throughout	Throughout
•	Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.	Throughout	Throughout
•	Explain in oral and written form the relationships among various mathematical concepts (e.g., the relationships between exponentiation and multiplication.)	16-19, 22, 23, 25, 113-115 SB: 13, 14, 17, 18, 96-98	216, 217, 304, 305 SB: 184, 185, 233