



Math Teachers Press, Inc.

4850 Park Glen Road, Minneapolis, MN 55416
 phone (800) 852-2435 fax (952) 546-7502

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Rhode Island Mathematics Grade-Level Expectations Correlated to *Moving with Algebra Grade 7*

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
NUMBER AND OPERATIONS			
M(N&O)-7-1	Demonstrates conceptual understanding of rational numbers with respect to percents as a means of:		
•	comparing the same or different parts of the whole when the wholes vary in magnitude (e.g., 8 girls in a classroom of 16 students compared to 8 girls in a classroom of 20 students, or 20% of 400 compared to 50% of 100);	141, 142 SB: 138	
•	percents as a way of expressing multiples of a number (e.g., 200% of 50) using models, explanations, or other representations.		
•	Demonstrate conceptual understanding of rational numbers with respect to square roots of perfect squares, rates, and proportional reasoning.	122 SB: 102	216, 220-222, 225-227, 275-278, 304, 305 SB: 184, 187-189, 191, 192, 222, 223, 233, 246
M(N&O)-7-2	Demonstrates understanding of the relative magnitude of numbers by ordering, comparing, or identifying equivalent rational numbers across number formats, numbers with whole number bases and whole number exponents (e.g., 3^3 , 4^3), integers, absolute values, or numbers represented in scientific notation using number lines or equality and inequality symbols.	6, 7, 17, 64, 90, 134-137, 139-142 SB: 5, 6, 13, 54, 66-69, 110-116, 139, 140, 144, 145	240-243, 281-287 SB: 200, 201, 204, 225
M(N&O)-7-3	Demonstrate conceptual understanding of operations with integers and whole number exponents (where the base is a whole number) using models, diagrams, or explanations.	18, 19, 68-78 SB: 14, 56-60	244-248, 294-303 SB: 202-206, 229-232, 247, 252
M(N&O)-7-4	Accurately solves problems involving:		
•	proportional reasoning;	122 SB: 102	220-222, 225-227 SB: 187-189, 191, 192

	<ul style="list-style-type: none"> percents involving discounts, tax, or tips; 	41, 173-178 SB: 32, 136, 137	
	<ul style="list-style-type: none"> rates. 		275-278 SB: 222, 223, 246
	addition or subtraction of integers, raising numbers to whole number powers, and determining square roots of perfect square numbers and non-perfect square numbers.	18, 19, 68-73 SB: 14, 56-58	215-217, 244, 245 SB: 184, 185, 202-204
M(N&O)-7-5	No GLE at this grade		
M(N&O)-7-6	Uses a variety of mental computation strategies to:		
	<ul style="list-style-type: none"> solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answers; 	10-15, 30-34, 41, 52-55, 58, 59, 91, 103, 106, 116-119, 145, 146, 158-160, 172 SB: 9-12, 25-28, 42-46, 51-53, 84-88, 100, 101, 119, 124, 128, 129, 135	199, 290-293, 307-309 SB: 226-228, 234, 235
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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). 	169, 171-175, 179 SB: 133-136	
M(N&O)-7-7	Makes estimates in a given situation (including tips, discounts, and tax) by identifying when estimation is appropriate, selecting the appropriate method of estimation, determining the level of accuracy needed given the situation, analyzing the effect of the estimation method on the accuracy of results, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands	32, 33, 41, 52-54, 91, 103-106, 117-119, 145, 146, 158-160, 172 SB: 27, 28, 42-44, 84-88, 100, 119, 128, 129, 135	
M(N&O)-7-8	Applies properties of numbers (odd, even, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity, distributive, inverses) to solve problems and to simplify computation, and demonstrates conceptual understanding of field properties as they apply to subsets of the real numbers (e.g., the set of whole numbers does not have additive inverses, the set of integers does not have multiplicative inverses).	10-15, 20, 21, 113-115 SB: 9-12, 15, 16, 96-98	290-293, 298 SB: 226-228
GEOMETRY AND MEASUREMENT			

M(G&M)-7-1	Uses properties of angle relationships resulting from two or three intersecting lines (adjacent angles, vertical angles, straight angles, or angle relationships formed by two non-parallel lines cut by a transversal), or two parallel lines cut by a transversal to solve problems.		186, 187, 194, 195, 200 SB: 155, 163, 167
M(G&M)-7-2	Applies theorems or relationships (triangle inequality or sum of the measures of interior angles of regular polygons) to solve problems.		196-199 SB: 164-166
M(G&M)-7-3	No GLE at this grade.		
M(G&M)-7-4	Applies the concepts of congruence by solving problems on a coordinate plane involving reflections, translations, or rotations.		203-205 SB: 171
M(G&M)-7-5	Applies concepts of similarity by solving problems involving scaling up or down and their impact on angle measures, linear dimensions and areas of polygons and circles when the linear dimensions are multiplied by a constant factor. Describes effects using models or explanations.		211, 223-227 SB: 183, 189, 191, 192
M(G&M)-7-6	Demonstrates conceptual understanding of the areas of circles or the area or perimeter of composite figures (quadrilaterals, triangles, or parts of circles), and the surface area of rectangular prisms, or volume of rectangular prisms, triangular prisms, or cylinders using models, formulas, or by solving related problems. Expresses all measures using appropriate units.		209, 212-214 SB: 180-182
M(G&M)-7-7	No GLE at this grade.		
M(G&M)-7-8	No GLE at this grade.		
M(G&M)-7-9	No GLE at this grade.		
M(G&M)-7-10	Demonstrate conceptual understanding of:		
	<ul style="list-style-type: none"> spatial reasoning and visualization by sketching three-dimensional solids; 		192, 214 SB: 161
	<ul style="list-style-type: none"> draws nets of rectangular and triangular prisms, cylinders, and pyramids and uses the net as a technique for finding surface area. 		193, 212, 213 SB: 162
	FUNCTIONS AND ALGEBRA		
M(F&A)-7-1	Identifies and extends to specific cases a variety of:		
	<ul style="list-style-type: none"> patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or in 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, 221, 222 SB: 166, 187, 188, 234, 235

•	generalizes a linear relationship using words and symbols;		231-234, 311-317 SB: 196, 197, 236-239, 254
•	generalizes a linear relationship to find a specific case		231-234, 311-317 SB: 196-199, 236-239
•	writes an expression or equation using words or symbols to express the generalization of a nonlinear relationship.		308, 309 SB: 234, 235
M(F&A)-7-2	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 and rate of change, by describing the meaning of slope in concrete situations, or informally determining the slope of a line from a table or graph;		314-316, 318-333 SB: 238, 239, 240-244, 249, 254
•	informally determining the slope of a line from a table or graph		320-326 SB: 241, 242, 254
•	distinguish between constant and varying rates of change in concrete situations represented in tables or graphs		
•	describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.		231-234, 311-317 SB: 196, 197, 236-239, 254
M(F&A)-7-3	Demonstrates conceptual understanding of:		
•	algebraic expressions by using letters to represent unknown quantities to write algebraic expressions (including those with whole number exponents or more than one variable);	55, 58, 59, 116, 159, 160 SB: 45, 46, 51-53, 129	249-252 SB: 207, 208, 245
•	by evaluating algebraic expressions (including those with whole number exponents or more than one variable)		256, 258, 259, 261 SB: 216, 219, 221
•	by evaluating an expression within an equation (e.g., determine the value of y when $x = 4$ given $y = 5x^3 - 2$).		256, 258, 259, 261 SB: 216, 219, 221
M(F&A)-7-4	Demonstrates conceptual understanding of:		

	<ul style="list-style-type: none"> equality by 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 or different representations of the expressions, solving multi-step linear equations of the form $ax + b = c$ with $a \neq 0$, where a, b, c and d are whole numbers; 		253-261, 266, 267, 270-272 SB: 211-216, 219, 221, 250, 251
	<ul style="list-style-type: none"> translating a problem-solving situation into an equation consistent with the parameters of the type of equations being solved for this grade level. 		273, 274, 275-280, 332, 333 SB: 217, 218, 222-224, 245
	DATA, STATISTICS, AND PROBABILITY		
M(DSP)-7-1	Interprets a given representation (circle graphs, scatter plots that represent discrete linear relationships or histograms) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.	179 SB: 101	
M(DSP)-7-2	Analyzes patterns, trends, or distributions in data in a variety of contexts by:		
	<ul style="list-style-type: none"> solving problems using measures of central tendency (mean, median, or mode), dispersion (range or variation), or outliers to analyze situations to determine their effect on mean, median, or mode; 	56, 57 SB: 47-50	
	<ul style="list-style-type: none"> evaluates the sample from which the statistics were developed (bias). 		
M(DSP)-7-3	Identifies or describes representations or elements of representations that best display a given set of data or situation , consistent with the representations required in M(DSP)-7-1.		
	Organizes and displays data using tables, line graphs, scatter plots, and circle graphs to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.		Throughout
M(DSP)-7-4	Uses counting techniques to solve problems in context involving combinations or permutations (e.g., How many different ways can eight students place first, second, and third in a race?) using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or others).		
M(DSP)-7-5	For a probability event in which the sample space may or may not contain equally likely outcomes:		
	<ul style="list-style-type: none"> determines the experimental or theoretical probability of an event in a problem-solving situation; 		
	<ul style="list-style-type: none"> predicts the theoretical probability of an event and tests the prediction through experiments and 		

	<ul style="list-style-type: none"> compares and contrasts theoretical and experimental probabilities. 		
M(DSP)-7-6	In response to a teacher or student generated question by hypothesis:		
	<ul style="list-style-type: none"> decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; 		
	<ul style="list-style-type: none"> collects, organizes, and appropriately displays the data; 		
	<ul style="list-style-type: none"> analyzes the data to draw conclusions about the question or hypotheses being tested while considering the limitations that could affect interpretations; 		
	when appropriate makes predictions		
	<ul style="list-style-type: none"> 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. 	Throughout	Throughout
	<ul style="list-style-type: none"> Determine, collect and organize the relevant information needed to solve real-world problems. 	Throughout	Throughout
	<ul style="list-style-type: none"> Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics. 	Throughout	Throughout
	<ul style="list-style-type: none"> Use technology when appropriate to solve problems. 		Throughout
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> Formulate, test, and justify mathematical conjectures and arguments. 	Throughout	
	<ul style="list-style-type: none"> Construct and determine the validity of a mathematical argument or a solution. 		
	<ul style="list-style-type: none"> 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 situation.	Throughout	Throughout
M(CCR)-8-2	Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:		
•	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, 62-68, 69, 71, 72, 77, 78, 80, 84, 85, 89, 96-98, 102-109, 113, 114, 120-122, 125, 127, 130, 144	Throughout

<ul style="list-style-type: none"> • 	<p>Use and create representations to solve problems and organize their thoughts and ideas.</p>	<p>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, 62-68, 69, 71, 72, 77, 78, 80, 84, 85, 89, 96-98, 102-109, 113, 114, 120-122, 125, 127, 130, 144</p>	<p>Throughout</p>
<ul style="list-style-type: none"> • 	<p>Convert between representations (e.g., a table of values, an equation, and a graph may all be representations of the same function).</p>		<p>231-234, 311-317, 332, 333 SB: 196, 197, 236-239, 254</p>
<p>M(CCR)-8-3</p>	<p>Students will recognize, explore, and develop mathematical connections and be able to:</p>		
<ul style="list-style-type: none"> • 	<p>Connect new mathematical ideas to those already studied and build upon them.</p>	<p>Throughout</p>	<p>Throughout</p>
<ul style="list-style-type: none"> • 	<p>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).</p>	<p>Throughout</p>	<p>Throughout</p>
<ul style="list-style-type: none"> • 	<p>Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.</p>	<p>Throughout</p>	<p>Throughout</p>
<ul style="list-style-type: none"> • 	<p>Explain in oral and written form the relationships among various mathematical concepts (e.g., the relationship between exponentiation and multiplication).</p>	<p>16-19, 22, 23, 25, 113-115 SB: 13, 14, 17, 18, 96-98</p>	<p>216, 217, 304, 305 SB: 184, 185, 233</p>