



# Math Teachers Press, Inc.

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2006 version

## Rhode Island Mathematics Grade-Level Expectations Correlated to Moving with Math Middle/High (MH) Grade 8

	MH1 <i>Number Sense, Reasoning &amp; Data</i> Student Book Skill Builders (SB)	MH2 <i>Fractions &amp; Decimals</i> Student Book Skill Builders (SB)	MH3 <i>Percent &amp; Probability</i> Student Book Skill Builders (SB)	MH4 <i>Geometry &amp; Measurement</i> Student Book Skill Builders (SB)	MH5 <i>Algebra</i> Student Book Skill Builders (SB)
<b>M(N&amp;O)-8-1</b>					
<b>NUMBER AND OPERATIONS</b>					
<b>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.</b>	21-30 SB: 3-3, 6-1, 6-2, 42-5, 54-1, 54-2, 57-1, 57-2, 69-1	SB: 6-1	Throughout	33-35, 65, 68, 72-76 SB: 6-1, 25-2, 27-1, 28-1, 40-2, 41-2, 51-1, 54-1 to 54-3, 56-1, 62-2, 63-1	9, 10, 33, 56-59, 69-74, 76 SB: 6-1, 25-1, 27-1, 28-1, 40-1, 48-4, 50-1, 51-1, 54-1, 56-1, 57-1, 59-2, 59-6, 60-4, 60-5, 61-1 to 61-4

		MH1 <i>Number Sense, Reasoning &amp; Data</i> Student Book Skill Builders (SB)	MH2 <i>Fractions &amp; Decimals</i> Student Book Skill Builders (SB)	MH3 <i>Percent &amp; Probability</i> Student Book Skill Builders (SB)	MH4 <i>Geometry &amp; Measurement</i> Student Book Skill Builders (SB)	MH5 <i>Algebra</i> Student Book Skill Builders (SB)
<b>M(N&amp;O)-8-2</b>	<b>Demonstrates understanding of the relative magnitude of numbers</b> 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.	2-5, 22, 25, 26, 28, 29 <b>SB:</b> 4-1, 4-2, 4-4, 5-1, 5-2, 6-1, 6-2, 54-1, 57-1, 69-1	2-12, 21, 41-47, 50-55, 77 <b>SB:</b> 3-1, 4-1, 5-1, 6-1, 11-1 to 11-4, 12-1, 12-2, 18-1 to 18-4, 20-1 to 20-3, 57-1, 65-1	17 <b>SB:</b> 4-1, 5-1, 6-1, 18-1, 19-1, 25-2, 44-1, 57-1	33-35 <b>SB:</b> 4-1, 5-1, 6-1, 11-1, 18-1, 19-1, 20-1, 20-2, 54-1 to 54-3	5, 9, 74 <b>SB:</b> 4-1, 5-1, 6-1, 18-1, 19-1, 48-2, 54-1, 57-1, 61-4
<b>M(N&amp;O)-8-3</b>	No GLE at this grade.					
<b>M(N&amp;O)-8-4</b>	<b>Accurately solves problems involving:</b>					
	proportional reasoning (percent increase or decrease, interest rates, markups, or rates);		37, 38 <b>SB:</b> 46-1, 46-2	24-28, 30, 32, 36, 37, 40, 42, 45, 49, 50, 52, 60 <b>SB:</b> 26-2, 43-3, 46-1	27-32 <b>SB:</b> 26-1 to 26-3, 46-1 to 46-3, 53-2	<b>SB:</b> 26-1, 46-1, 53-1

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	multiplication or division of integers;	10-16, 22, 25-28, 32-34, 39-50, 52, 54-57, 60, 61 <b>SB:</b> 1-1, 2-1 to 2-3, 3-3, 6-1, 6-2, Pre-Obj. 9, 9-1, to 9-3, Pre-Obj. 10, 10-1 to 10-3, 42-1 to 42-5, 43-1, 43-4 to 43-14, 44-1, 44-2, 45-1, 45-2, 54-1, 59-1 to 59-4, 60-1	26, 27, 31-33, 35-38, 53, 58, 59, 61, 63-65, 67, 69-74 <b>SB:</b> 10-1, 14-2, 17-2, 22-1, 22-2, 23-1, 43-1, 43-2, 44-1, 45-1, 46-1, 46-2	Throughout	Throughout	Throughout
	squares, cubes, and taking square or cube roots.	21-30, 32, 33 <b>SB:</b> 3-3, 6-1, 6-2, 42-5, 54-1, 54-2, 57-1, 57-2, 69-1	<b>SB:</b> 6-1	<b>SB:</b> 6-1, 57-1	33-35, 65, 68, 72-76 <b>SB:</b> 6-1, 40-2, 41-2, 54-1 to 54-3, 56-1, 62-2, 63-1	33, 58, 59, 69-76 <b>SB:</b> 6-1, 40-1, 50-1, 54-1, 56-1, 57-1, 59-2, 59-6, 60-4, 60-5, 61-1 to 61-4
<b>M(N&amp;O)-8-5</b>	No GLE at this grade.					
<b>M(N&amp;O)-8-6</b>	<b>Uses a variety of mental computation strategies to:</b> solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answer;	Throughout	Throughout	Throughout	Throughout	Throughout

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	<p><b>mentally calculates</b> benchmark perfect squares and related square roots (e.g., <math>1^2, 2^2, \dots, 12^2, 15^2, 20^2, 25^2, 100^2, 1000^2</math>);</p> <p>determines the part of a number using benchmark percents and related fractions (1%, 10%, 25%, 33 <math>\frac{1}{3}</math>%, 50%, 66 <math>\frac{2}{3}</math>%, 75%, and 100%) (e.g., 25% of 16; 33 <math>\frac{1}{3}</math>% of 330).</p>			<p>SB: 6-1, 57-1</p>	<p>33-35, 68, 73, 76 SB: 6-1, 40-2, 54-1 to 54-3, 56-1, 63-1</p>	<p>69, 72, 74-76 SB: 6-1, 40-1, 54-1, 56-1, 57-1, 59-2, 59-6, 60-4, 60-5, 61-3, 61-4</p>
<b>M(N&amp;O)-8-7</b>	<p><b>Makes estimates</b> in a given situation (including tips, discounts, tax, and the value of a non-perfect square root as between two whole numbers) by:</p> <p>identifying when estimation is appropriate, selecting the appropriate method of estimation;</p>	<p>38, 43, 45-49, 54 SB: 43-1, 43-4, 43-8, 43-11, 43-13, 44-1, 44-2</p>	<p>21-23, 34-36, 58, 71-74 SB: 10-1, 22-2, 23-3, 44-1</p>	<p>31-34, 57 SB: 10-1, 14-1, 44-1, 44-3</p>	<p>5, 45, 46, 49, 50 SB: 27-1, 30-2, 34-3, 36-1 to 36-3, 43-1, 44-1, 52-2, 54-3</p>	<p>SB: 30-1, 36-1, 43-1, 44-1, 52-1</p>
		<p>38, 43, 45-49, 54 SB: 43-1, 43-4, 43-8, 43-11, 43-13, 44-1, 44-2</p>	<p>21-23, 34-36, 58, 71-74 SB: 10-1, 22-2, 23-3, 44-1</p>	<p>31-34, 57 SB: 10-1, 14-1, 44-1, 44-3</p>	<p>4, 45, 46, 49, 50 SB: 27-1, 30-2, 34-3, 36-1 to 36-3, 43-1, 44-1, 52-2, 54-3</p>	<p>SB: 30-1, 36-1, 43-1, 44-1, 52-1</p>

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determining the level of accuracy needed given the situation;	4, 5, 38, 43, 45-49, 54 <b>SB:</b> 5-1, 5-2, 43-1, 43-4, 43-8, 43-11, 43-13, 44-1, 44-2	21, 48, 49, 63 <b>SB:</b> 5-1, 10-1, 19-1, 19-2, 22-2, 23-3	15, 16, 29, 31-34, 47, 57 <b>SB:</b> 5-1, 10-1, 19-1, 22-1, 25-5, 27-2, 28-7, 28-8, 43-1, 44-1, 51-2	5, 44-46, 48-51, 54, 55 <b>SB:</b> 30-2, 34-3, 36-1 to 36-3, 52-2, 54-3	<b>SB:</b> 5-1, 8-1, 19-1, 30-1, 36-1, 43-1, 44-1, 50-4, 52-1
analyzing the effect of the estimation method on the accuracy of results;	38, 43, 45-49, 54 <b>SB:</b> 43-1, 43-4, 43-8, 43-11, 43-13, 44-1, 44-2	21-23, 34-36, 58, 71-74 <b>SB:</b> 10-1, 22-2, 23-3, 44-1	31-34, 57 <b>SB:</b> 10-1, 14-1, 44-1, 44-3	5, 44-46, 48-51, 54, 55 <b>SB:</b> 30-2, 34-3, 36-1 to 36-3, 43-1, 52-2, 54-3	<b>SB:</b> 30-1, 36-1, 43-1, 44-1, 52-1
evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.	38, 43, 45-49, 54, 60, 77 <b>B:</b> 10-3, 43-1, 43-4, 43-8, 43-11, 43-13, 43-14, 44-1, 44-2, 68-7, 70-1	21-23, 34-36, 58, 71-74 <b>SB:</b> 10-1, 22-2, 23-3, 44-1	31, 32, 59 <b>SB:</b> 10-1, 68-4	5, 45, 46, 48-51, 54, 55 <b>SB:</b> 27-1, 34-3, 36-1 to 36-3, 43-1, 52-2, 54-3	26, 63 <b>SB:</b> 36-1, 43-1, 44-1, 52-1, 60-2

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	<p><b>Applies properties of numbers</b> (odd, even, remainders, divisibility, and prime factorization) and <b>field properties</b> (commutative, associative, identity [including the multiplicative property of one, e.g., <math>2^0 \times 2^3 = 2^{0+3} = 2^3</math>, so <math>2^0 = 1</math>], distributive, inverses) <b>to solve problems and to simplify computations, and demonstrates conceptual understanding of field properties</b> as they apply to subsets of real numbers when addition and multiplication are not defined in the traditional</p>	Throughout	Throughout	Throughout	Throughout	Throughout
	<b>GEOMETRY AND MEASUREMENT</b>					
M(G&M)-8-1	No GLE at this grade.					
M(G&M)-8-2	<b>Applies the Pythagorean Theorem</b> to find a missing side of a right triangle, or in problem solving situations.				34, 35 SB: 54-2, 54-3	
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	<b>Applies concepts of similarity to:</b>					

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	determine the impact of scaling on the volume or surface area of three-dimensional figures when linear dimensions are multiplied by a constant factor;				76 SB: 63-1	
	determine the length of sides of similar triangles, or to solve problems involving growth and rate.				29, 30 SB: 46-2, 53-1, 53-2	SB: 46-1, 53-1
<b>M(G&amp;M)-8-6</b>	<b>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.</b>				51, 52, 71-76 SB: 36-3, 41-1, 41-2, 62-2, 63-1	SB: 41-1
<b>M(G&amp;M)-8-7</b>	No GLE at this grade.					
<b>M(G&amp;M)-8-8</b>	No GLE at this grade.					
<b>M(G&amp;M)-8-9</b>	No GLE at this grade.					
	<b>FUNCTIONS AND ALGEBRA</b>					
<b>M(F&amp;A)-8-1</b>	<b>Identifies and extends to specific cases:</b>					
	a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or problem situations;	61, 69, 70 SB: 42-3, 60-1				12, 60-65, 67-69 SB: 60-1, 60-4 to 60-6b

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	generalizes a linear relationship to find a specific case;				61-64, 68 SB: 60-1, 60-5 to 60-6b
	generalizes a nonlinear relationship using words or symbols				69 SB: 60-4, 60-5
	generalizes a common nonlinear relationship to find a specific case				69 SB: 60-4, 60-5
<b>M(F&amp;A)-8-2</b>	<b>Demonstrates conceptual understanding of linear relationships (<math>y = kx</math>; <math>y = mx + b</math>) as a constant rate of change by:</b>				
	solving problems involving the relationship between slope and rate of change;				77
	informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations;				77
	describing the meaning of slope and intercept in context;				77
	<b>distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change)</b> represented in tables, graphs, equations, or problem situations;				69 SB: 60-4, 60-5



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	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.	61, 69, 70 SB: 42-3, 60-1				12, 61-66, 68 SB: 60-2 to 60-6C
<b>M(F&amp;A)-8-3</b>	<b>Demonstrates conceptual understanding of algebraic expressions by:</b> evaluating and simplifying algebraic expressions (including those with square roots, whole number exponents, or rational numbers);	11, 12, 17, 18, 25-28, 31, 32, 61 SB: 2-1, 2-2, 6-1, 6-2, 42-3 to 42-5, 59-3, 59-4, 69-1	37, 38, 60 69 SB: 2-1, 46-2	24-28, 30, 32, 36, 37, 40, 42, 45, 49, 50, 52, 60 SB: 2-1, 26-2, 43-3, 46-1, 57-1	28-32 SB: 2-1, 26-2, 26-3, 46-1 to 46-3, 53-2	32-34, 36-38, 49, 50, 58, 59, 70-76 SB: 59-2 to 59-6, 61-1 to 61-4
	evaluating an expression within an equation.		69		Throughout	58-69 SB: 38-1, 39-1, 40-1, 41-1, 55-1, 56-1, 60-1 to 60-5
<b>M(F&amp;A)-8-4</b>	<b>Demonstrates conceptual understanding of equality by:</b>					

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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., $d = rt$ ; $d/r = t$ ).	11, 12, 25-28 <b>SB:</b> 2-1, 2-2, 6-1, 6-2, 69-1	37, 38, 60 <b>SB:</b> 2-1, 46-2	24-28, 30, 32, 36, 37, 40, 42, 45, 49, 50, 52, 60 <b>SB:</b> 2-1, 26-2, 43-3, 46-1, 57-1	28-32 <b>SB:</b> 2-1, 26-2, 26-3, 46-1 to 46-3, 53-2	19, 23, 24, 36-38, 40, 49, 50, 70-76 <b>SB:</b> 2-1, 10-1, 16-1, 17-1, 37-1, 46-1, 53-1, 58-3, 59-2 to 59-6, 61-1 to 61-4
	showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution;	9-12 <b>SB:</b> 2-1, 2-2	<b>SB:</b> 2-1	<b>SB:</b> 2-1	<b>SB:</b> 2-1	19, 23, 24, 40, 49, 50, 70-76 <b>SB:</b> 2-1, 10-1, 16-1, 17-1, 58-3, 59-2 to 59-6, 61-1 to 61-4
	informally solving problems involving systems of linear equations in a context.	61, 69, 70 <b>SB:</b> 42-3, 60-1				11, 12, 48, 56, 57, 61-68 <b>SB:</b> 50-6, 60-1 to 60-3, 60-5 to 60-6a
	<b>DATA, STATISTICS, AND PROBABILITY</b>					
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.	56-58, 70-76 <b>SB:</b> 45-3 to 45-6, 60-1, 67-1 to 67-4, 68-1 to 68-6, 70-1		55, 56, 58-60 <b>SB:</b> 68-1 to 68-4		

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<b>M(DSP)-8-2</b>	<b>Analyzes patterns, trends, or distributions in data in a variety of contexts by:</b>					
	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;	55-60, 64, 67, 71-74 <b>SB:</b> 45-1 to 45-6, 67-1 to 67-4, 68-2, 68-4, 68-5	75, 76 <b>SB:</b> 45-1	<b>SB:</b> 45-1	<b>SB:</b> 45-1	<b>SB:</b> 45-1
	evaluates the sample from which the statistics were developed (bias, random, or non-random).	77 <b>SB:</b> 68-7				
<b>M(DSP)-8-3</b>	<b>Organizes and displays data using scatter plots to:</b>					
	answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems;	75, 76 <b>SB:</b> 68-4, 70-1				
	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.	75, 76 <b>SB:</b> 68-4, 68-6, 70-1				

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<b>M(DSP)-8-4</b>	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).		69, 75-77 SB: 66-1, 66-2		
<b>M(DSP)-8-5</b>	For a probability event in which the sample space may or may not contain equally likely outcomes;	78 SB: 47-1	61-68, 70-74 SB: 47-1 to 47-6	SB: 47-1	SB: 47-1
	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;	78 SB: 47-1	61-68, 70-74 SB: 47-1 to 47-6	SB: 47-1	SB: 47-1
	compares and contrasts theoretical and experimental probabilities.		61-63, 67, 68, 74 SB: 47-1, 47-2, 47-4 to 47-6		
<b>M(DSP)-8-6</b>	In response to a teacher or student generated question or hypothesis:				

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	decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question;	57, 67, 77 <b>SB:</b> 45-5, 45-6, 68-4, 68-7				
	collects, organizes, and appropriately displays the data;	56-68, 70-76 <b>SB:</b> 45-3 to 45-6, 60-1, 67-1 to 67-4, 68-1 to 68-6, 70-1		55, 56, 58-60 <b>SB:</b> 68-1 to 68-4		
	analyzes the data to draw conclusions about the question or hypothesis being tested while considering the limitations that could affect interpretations;	56-68, 70-76 <b>SB:</b> 45-3 to 45-6, 60-1 to 67-4, 68-1 to 68-6, 70-1		55, 56, 58-60 <b>SB:</b> 68-1 to 68-4		
	and when appropriate makes predictions;	77 <b>SB:</b> 43-14, 70-1		56, 65, 67 <b>SB:</b> 47-4		
	asks new questions and makes connections to real world situations.	Throughout	Throughout	Throughout	Throughout	Throughout
	<b>PROBLEM SOLVING, REASONING AND PROOF</b>					
<b>M(PRP)-8-1</b>	Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:					

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•	Use problem-solving strategies appropriately and effectively for a given situation.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Determine, collect and organize the relevant information needed to solve real-world problems.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Use technology when appropriate to solve problems.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.	Throughout	Throughout	Throughout	Throughout	Throughout
<b>M(PRP)-8-2</b>	<b>Students will use mathematical reasoning and proof</b> and be able to:					
•	Draw logical conclusions and make generalizations using deductive and inductive reasoning.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Formulate, test, and justify mathematical conjectures and arguments.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Construct and determine the validity of a mathematical argument or a solution.	77 SB: 68-7	35, 72	24, 31, 32, 59, 66 SB: 68-4	11, 46, 49, 50, 58 SB: 36-1, 36-2, 43-1	22 SB: 36-1, 43-1, 48-2, 48-3

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•	Apply mathematical reasoning skills in other disciplines.	Throughout	Throughout	Throughout	Throughout	Throughout
	<b>COMMUNICATION, CONNECTIONS AND REPRESENTATIONS</b>					
<b>M(CCR)-8-1</b>	<b>Students will communicate their understanding of mathematics and be able to:</b>					
•	Articulate ideas clearly and logically in both written and oral form.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Present, share, explain, and justify thinking with others and build upon the ideas of others to solve problems.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Use mathematical symbols and notation.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Formulate questions, conjectures, definitions, and generalizations about data, information, and problem situations.	Throughout	Throughout	Throughout	Throughout	Throughout
<b>M(CCR)-8-2</b>	<b>Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:</b>					
•	Use models and technology to develop equivalent representations of the same mathematical concept.	Throughout	Throughout	Throughout	Throughout	Throughout

		MH1 <i>Number Sense, Reasoning &amp; Data</i> Student Book Skill Builders (SB)	MH2 <i>Fractions &amp; Decimals</i> Student Book Skill Builders (SB)	MH3 <i>Percent &amp; Probability</i> Student Book Skill Builders (SB)	MH4 <i>Geometry &amp; Measurement</i> Student Book Skill Builders (SB)	MH5 <i>Algebra</i> Student Book Skill Builders (SB)
•	Use and create representations to solve problems and organize their thoughts and ideas.	Throughout	Throughout	Throughout	Throughout	Throughout
•	Convert between representations (e.g., a table of values, an equation, and a graph may all be representations of the same function).	Throughout	Throughout	Throughout	Throughout	Throughout
<b>M(CCR)-8-3</b>	<b>Students will recognize, explore, and develop mathematical connections and be able to:</b>					
•	Connect new mathematical ideas to those already studied and build upon them.	Throughout	Throughout	Throughout	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	Throughout	Throughout	Throughout
•	Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.	Throughout	Throughout	Throughout	Throughout	Throughout



<ul style="list-style-type: none"> <li>• Explain in oral and written form the relationships among various mathematical concepts (e.g., the relationships between exponentiation and multiplication.)</li> </ul>		<b>MH1</b> <i>Number Sense, Reasoning &amp; Data</i> Student Book Skill Builders (SB)	<b>MH2</b> <i>Fractions &amp; Decimals</i> Student Book Skill Builders (SB)	<b>MH3</b> <i>Percent &amp; Probability</i> Student Book Skill Builders (SB)	<b>MH4</b> <i>Geometry &amp; Measurement</i> Student Book Skill Builders (SB)	<b>MH5</b> <i>Algebra</i> Student Book Skill Builders (SB)
		Throughout	Throughout	Throughout	Throughout	Throughout