



# Math Teachers Press, Inc.

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

## NEW YORK STATE LEARNING STANDARDS FOR MATHEMATICS CORRELATED TO *MOVING WITH ALGEBRA GRADE 8*

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
<b>PROBLEM SOLVING</b>			
<b>Students will build new mathematical knowledge through problem solving.</b>			
<b>8 .PS.1</b>	Use a variety of strategies to understand new mathematical content and to develop more efficient methods	12 (T.G.)	207 (T.G.)
<b>8.PS.2</b>	Construct appropriate extensions to problem situations	22	324
<b>8.PS.3</b>	Understand and demonstrate how written symbols represent mathematical ideas	3	215
<b>Students will solve problems that arise in mathematics and in other contexts.</b>			
<b>8.PS.4</b>	Observe patterns and formulate generalizations	18, 19	199 SB: 205, 206
<b>8.PS.5</b>	Make conjectures from generalizations	18, 19	199 SB: 205, 206
<b>8.PS.6</b>	Represent problem situations verbally, numerically, algebraically, and graphically	26	215, 317
<b>Students will apply and adapt a variety of appropriate strategies to solve problems</b>			
<b>8.PS.7</b>	Understand that there is no one right way to solve mathematical problems but that different methods have advantages and disadvantages	34	206
<b>8.PS.8</b>	Understand how to break a complex problem into simpler parts or use a similar problem type to solve a problem	59	260, 261
<b>8.PS.9</b>	Work backwards from a solution	103	333

		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.PS.10</b>	Use proportionality to model problems	122 SB: 102	276, 277 SB: 187-189
<b>8.PS.11</b>	Work in collaboration with others to solve problems	123 (T.G.)	211 (T.G.)
	<b>Students will monitor and reflect on the process of mathematical problem solving.</b>		
<b>8.PS.12</b>	Interpret solutions within the given constraints of a problem	51, 116 SB: 101	244
<b>8.PS.13</b>	Set expectations and limits for possible solutions	41	217
<b>8.PS.14</b>	Determine information required to solve the problem	32	273
<b>8.PS.15</b>	Choose methods for obtaining required information	32	309 (T.G.)
<b>8.PS.16</b>	Justify solution methods through logical argument	33	272
<b>8.PS.17</b>	Evaluate the efficiency of different representations of a problem	178 (T.G.)	307 (T.G.)
	<b>REASONING AND PROOF</b>		
	<b>Students will recognize reasoning and proof as fundamental aspects of mathematics.</b>		
<b>8.RP.1</b>	Recognize that mathematical ideas can be supported by a variety of strategies	34	206
	<b>Students will make and investigate mathematical conjectures.</b>		
<b>8.RP.2</b>	Use mathematical strategies to reach a conclusion	34	197 SB: 165
<b>8.RP.3</b>	Evaluate conjectures by distinguishing relevant from irrelevant information to reach a conclusion or make appropriate estimates	32 SB: 44, 128	273 (T.G.)
	<b>Students will develop and evaluate mathematical arguments and proofs.</b>		
<b>8.RP.4</b>	Provide supportive arguments for conjectures	21 (T.G.)	287 (T.G.)

		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.RP.5</b>	Develop, verify, and explain an argument, using appropriate mathematical ideas and language	21 (T.G.)	305
	<b>Students will select and use various types of reasoning and methods of proof.</b>		
<b>8.RP.6</b>	Support an argument by using a systematic approach to test more than one case	18 (T.G.)	287 (T.G.)
<b>8.RP.7</b>	Devise ways to verify results or use counterexamples to refute incorrect statements	118	274
<b>8.RP.8</b>	Apply inductive reasoning in making and supporting mathematical conjectures	10, 11	307
	<b>COMMUNICATION</b>		
	<b>Students will organize and consolidate their mathematical thinking through communication</b>		
<b>8.CM.1</b>	Provide a correct, complete, coherent, and clear rationale for thought process used in problem solving	118	272
<b>8.CM.2</b>	Provide an organized argument which explains rationale for strategy selection	38 (T.G.)	272
<b>8.CM.3</b>	Organize and accurately label work	journal prompts	journal prompts
	<b>Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.</b>		
<b>8.CM.4</b>	Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models and symbols in written and verbal form	Throughout	Throughout
<b>8.CM.5</b>	Answer clarifying questions from others	45 (T.G.)	332 (T.G.)
	<b>Students will analyze and evaluate the mathematical thinking and strategies of others.</b>		
<b>8.CM.6</b>	Analyze mathematical solutions shared by others	41	309 (T.G.)
<b>8.CM.7</b>	compare strategies used and solutions found by others in relation to their own work	172 (T.G.)	211 (T.G.)

		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.CM.8</b>	Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others	102 (T.G.)	250 (T.G.), 255 (T.G.)
	<b>Students will use the language of mathematics to express mathematical ideas precisely.</b>		
<b>8.CM.9</b>	Increase their use of mathematical vocabulary and language when communicating with others	Glossary masters	Glossary masters
<b>8.CM.10</b>	Use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale	journal prompts	journal prompts
<b>8.CM.11</b>	Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing	sum it ups, e.g., p 69	253
	<b>CONNECTIONS</b>		
	<b>Students will recognize and use connections among mathematical ideas.</b>		
<b>8.CN.1</b>	Understand and make connections among multiple representations of the same mathematical idea	74	317
<b>8.CN.2</b>	Recognize connections between subsets of mathematical ideas	42	272
<b>8.CN.3</b>	Connect and apply a variety of strategies to solve problems	34	272
	<b>Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</b>		
<b>8.CN.4</b>	Model situations mathematically, using representations to draw conclusions and formulate new situations	70	301 (T.G.)
<b>8.CN.5</b>	Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics	42	277
	<b>Students will recognize and apply mathematics in contexts outside of mathematics.</b>		

		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.CN.6</b>	Recognize and provide examples of the presence of mathematics in their daily lives	176	275
<b>8.CN.7</b>	Apply mathematical ideas to problem situations that develop outside of mathematics	57	277
<b>8.CN.8</b>	Investigate the presence of mathematics in careers and areas of interest	108	312 (T.G.)
<b>8.CN.9</b>	Recognize and apply mathematics to other disciplines, areas of interest, and societal issues	57	312 (T.G.)
	<b>REPRESENTATION</b>		
	<b>Students will create and use representations to organize, record, and communicate mathematical ideas.</b>		
<b>8.R.1</b>	Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations	Throughout	Throughout
<b>8.R.2</b>	Explain, describe, and defend mathematical ideas using representations	20	281
<b>8.R.3</b>	Recognize, compare, and use an array of representational forms	Throughout	Throughout
<b>8.R.4</b>	Explain how different representations express the same relationship	21	317
<b>8.R.5</b>	Use standard and non-standard representations with accuracy and detail	65	317
	<b>Students will select, apply, and translate among mathematical representations to solve problems.</b>		
<b>8.R.6</b>	Use representations to explore problem situations	Throughout	Throughout
<b>8.R.7</b>	Investigate relationships between different representations and their impact on a given problem	21	317 (T.G.)
<b>8.R.8</b>	Use representation as a tool for exploring and understanding mathematical ideas	20	317 (T.G.)
	<b>Students will use representations to model and interpret physical, social, and mathematical phenomena.</b>		

		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.R.9</b>	Use mathematics to show and understand physical phenomena (e.g., make and interpret scale drawings of figures or scale models of objects)	7	193, 226, 227 <b>SB:</b> 162, 191, 192
<b>8.R.10</b>	Use mathematics to show and understand social phenomena (e.g, determine profit from sale of yearbooks)	151	278
<b>8.R.11</b>	Use mathematics to show and understand mathematical phenomena (e.g., use tables, graphs, and equations to show a pattern underlying a function)	20	311, 312 <b>SB:</b> 254
	<b>NUMBER SENSE AND OPERATIONS</b>		
	<b>Students will understand meanings of operations and procedures, and how they relate to one another.</b>		
<b>8.N.1</b>	Develop and apply the laws of exponents for multiplication and division	18, 19 <b>SB:</b> 14	296-303 <b>SB:</b> 230-232
<b>8.N.2</b>	Evaluate expressions with integral exponents		292, 293, 297 <b>SB:</b> 228, 252
<b>8.N.3</b>	Read, write, and identify percents less than 1% and greater than 100%	170 <b>SB:</b> 135	
<b>8.N.4</b>	Apply percents to:		
	• Tax	176 <b>SB:</b> 137	
	• Percent increase/decrease		
	• Simple interest	177, 178 <b>SB:</b> 138	
	• Sale price	173-175 <b>SB:</b> 136	
	• Commission		
	• Interest rates	177, 178 <b>SB:</b> 138	
	• Gratuities	170, 172	
	<b>Students will compute accurately and make reasonable estimates.</b>		
<b>8.N.5</b>	Estimate a percent of quantity, given an application	172 <b>SB:</b> 135	

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
8.N.6	Justify the reasonableness of answers using estimation	105, 118, 145, 146, 172 SB: 27, 46, 88, 124	
<b>ALGEBRA</b>			
<b>Students will represent and analyze algebraically a wide variety of problem solving situations.</b>			
8.A.1	Translate verbal sentences into algebraic inequalities		284 SB: 225
8.A.2	Write verbal expressions that match given mathematical expressions		275 (T.G.), 315, 317
8.A.3	Describe a situation involving relationships that matches a given graph		317 SB: 238, 239
8.A.4	Create a graph given a description or an expression for a situation involving a linear or nonlinear relationship		312, 314, 316, 317, 324, 327 SB: 236, 237, 249, 254
8.A.5	Use physical models to perform operations with polynomials		262-264, 268 SB: 209, 210
<b>Students will perform algebraic procedures accurately.</b>			
8.A.6	Multiply and divide monomials		298, 299, 302 SB: 231, 232
8.A.7	Add and subtract polynomials (integer coefficients)		263-265 SB: 209, 210, 220
8.A.8	Multiply a binomial by a monomial or a binomial (integer coefficients)		268-269 SB: 220
8.A.9	Divide a polynomial by a monomial (integer coefficients) <i>Note: The degree of the denominator is less than or equal to the degree of the numerator for all variables.</i>		
8.A.10	Factor algebraic expressions using the GCF		
8.A.11	Factor a trinomial in the form $ax^2 + bx + c$ ; $a = 1$ and $c$ having no more than three sets of factors		

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
8.A.12	Apply algebra to determine the measure of angles formed by or contained in parallel lines cut by a transversal and by intersecting lines		
8.A.13	Solve multi-step inequalities and graph the solution set on a number line		285-287 SB: 225
8.A.14	Solve linear inequalities by combining like terms, using the distributive property, or moving variables to one side of the inequality (include multiplication or division of inequalities by a negative number)		285-287 SB: 225
	<b>Students will recognize, use, and represent algebraically patterns, relations, and functions.</b>		
8.A.15	Understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically		231, 232, 273, 274, 312 SB: 196, 197, 224, 236, 237
8.A.16	Find a set of ordered pairs to satisfy a given linear numerical pattern (expressed algebraically); then plot the ordered pairs and draw the line		313, 314, 316, 317 SB: 237, 254
8.A.17	Define and use correct terminology when referring to function (domain and range)		
8.A.18	Determine if a relation is a function		
8.A.19	Interpret multiple representations using equation, tables of values, and graph		231, 232, 311-317 SB: 196, 197, 236, 254
	<b>GEOMETRY</b>		
	<b>Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.</b>		
8.G.0	Construct the following, using a straight edge and compass:		
	• Segment congruent to a segment		SB: 169
	• Angle congruent to an angle		SB: 169
	• Perpendicular bisector		
	• Angle bisector		
	<b>Students will identify and justify geometric relationships, formally and informally.</b>		



		<b>Part A Student Book Skill Builders (SB)</b>	<b>Part B Student Book Skill Builders (SB)</b>
<b>8.G.1</b>	Identify pairs of vertical angles as congruent		195 <b>SB:</b> 163
<b>8.G.2</b>	Identify pairs of supplementary and complementary angles		194 <b>SB:</b> 163
<b>8.G.3</b>	Calculate the missing angle in a supplementary or complementary pair		194 <b>SB:</b> 163
<b>8.G.4</b>	Determine angle pair relationships when given two parallel lines cut by a transversal		200 <b>SB:</b> 167
<b>8.G.5</b>	Calculate the missing angle measurements when given two parallel lines cut by a transversal		200 <b>SB:</b> 167
<b>8.G.6</b>	Calculate the missing angle measurements when given two intersecting lines and an angle		195 <b>SB:</b> 163, 167
	<b>Students will apply transformations and symmetry to analyze problem solving situations.</b>		
<b>8.G.7</b>	Describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations)		204 <b>SB:</b> 171
<b>8.G.8</b>	Draw the image of a figure under rotations of 90 and 180 degrees		204 <b>SB:</b> 171
<b>8.G.9</b>	Draw the image of a figure under a reflection over a given line		204 <b>SB:</b> 171
<b>8.G.10</b>	Draw the image of a figure under a translation		204 <b>SB:</b> 171, 172
<b>8.G.11</b>	Draw the image of a figure under a dilation		224
<b>8.G.12</b>	Identify the properties preserved and not preserved under a reflection, rotation, translation, and dilation		204, 223, 224 <b>SB:</b> 171, 190
	<b>Students will apply coordinate geometry to analyze problem solving situations.</b>		
<b>8.G.13</b>	Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change		321-323 <b>SB:</b> 241, 242
<b>8.G.14</b>	Determine the y-intercept of a line from a graph and be able to explain the y-intercept		324-326

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
8.G.15	Graph a line using a table of values		232, 312-314, 316 SB: 197, 236, 237, 254
8.G.16	Determine the equation of a line given the slope and the y-intercept		325
8.G.17	Graph a line from an equation in slope-intercept form ( $y = mx + b$ )		325, 326 SB: 249
8.G.18	Solve systems of equations graphically (only linear, integral solutions, $y = mx + b$ format, no vertical/horizontal lines)		
8.G.19	Graph the solution set of an inequality on a number line		282-287 SB: 225
8.G.20	Distinguish between linear and nonlinear equations $ax^2 + bx + c$ ; $a = 1$ (only graphically)		318 SB: 240
8.G.21	Recognize the characteristics of quadratics in tables, graphs, equations, and situations		
	<b>MEASUREMENT</b>		
	<b>Students will determine what can be measured and how, using appropriate methods and formulas.</b>		
8.M.1	Solve equations/proportions to convert to equivalent measurements within metric and customary measurement systems <i>Note: Also allow Fahrenheit to Celsius and vice versa.</i>		233, 234, 316 SB: 198, 199