CP 3/06

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NEW YORK STATE LEARNING STANDARDS FOR MATHEMATICS CORRELATED TO *MOVING WITH ALGEBRA GRADE 7*

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
	PROBLEM SOLVING		
	Students will build new mathematical knowledge through problem solving.		
7.PS.1	Use a variety of strategies to understand new mathematical content and to develop more efficient methods	12(T.G.)	207 (T.G.)
7.PS.2	Construct appropriate extensions to problem situations.	22	324
7.PS.3	Understand and demonstrate how written symbols represent mathematical ideas	3	215
	Students will solve problems that arise in mathematics and in other contexts.		
7.PS.4	Observe patterns and formulate generalizations	18, 19	199 **SB:** 205, 206
7.PS.5	Make conjectures from generalizations	18, 19	199 **SB:** 205, 206
7.PS.6	Represent problem situations verbally, numerically, algebraically, and graphically	26	215, 317
	Students will apply and adapt a variety of appropriate strategies to solve problems.		
7.PS.7	Understand that there is no one right way to solve mathematical problems but that different methods have advantages and disadvantages	34	206
7.PS.8	Understand how to break a complex problem into simpler parts or use a similar problem type to solve a problem	59	260, 261
7.PS.9	Work backwards from a solution	103	333
7.PS.10	Use proportionality to model problems	122 **SB:** 102	276, 277 **SB:** 187-189

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.PS.11	Work in collaboration with others to solve problems	123 (T.G.)	211 (T.G.)
	Students will monitor and reflect on the process of mathematical problem solving.		
7.PS.12	Interpret solutions within the given constraints of a problem	51, 116 **SB:** 101	244
7.PS.13	Set expectations and limits for possible solutions	41	217
7.PS.14	Determine information required to solve the problem	32	273
7.PS.15	Choose methods for obtaining required information	32	309 (T.G.)
7.PS.16	Justify solution methods through logical argument	33	272
7.PS.17	Evaluate the efficiency of different representations of a problem	178 (T.G.)	307 (T.G.)
	REASONING AND PROOF		
	Students will recognize reasoning and proof as fundamental aspects of mathematics.		
7.RP.1	Recognize that mathematical ideas can be supported by a variety of strategies	34	206
	Students will make and investigate mathematical conjectures		
7.RP.2	Use mathematical strategies to reach a conclusion	34	197 **SB:** 165
7.RP.3	Evaluate conjectures by distinguishing relevant from irrelevant information to reach a conclusion or make appropriate estimates	32 **SB:** 44, 128	273 (T.G.)
	Students will develop and evaluate mathematical arguments and proofs.		
7.RP.4	Provide supportive arguments for conjectures	21 (T.G.)	287 (T.G.)
7.RP.5	Develop, verify, and explain an argument, using appropriate mathematical ideas and language	21 (T.G.)	305
	Students will select and use various types of reasoning and methods of proof.		
7.RP.6	Support an argument by using a systematic approach to test more than one case	18 (T.G.)	287 (T.G.)

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.RP.7	Devise ways to verify results or use counterexamples to refute incorrect statements	118	274
7.RP.8	Apply inductive reasoning in making and supporting mathematical conjectures	10, 11	307
	COMMUNICATION		
	Students will organize and consolidate their mathematical thinking through communication.		
7.CM.1	Provide a correct, complete, coherent, and clear rationale for thought process used in problem solving	118	272
7.CM.2	Provide an organized argument which explains rationale for strategy selection	38 (T.G.)	272
7.CM.3	Organize and accurately label work	journal prompts throughout	journal prompts throughout
	Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.		
7.CM.4	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
7.CM.5	Answer clarifying questions from others	45 (T.G.)	332 (T.G.)
	Students will analyze and evaluate the mathematical thinking and strategies of others.		
7.CM.6	Analyze mathematical solutions shared by others	41	309 (T.G.)
7.CM.7	Compare strategies used and solutions found by others in relation to their work	172 (T.G.)	211 (T.G.)
7.CM.8	Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others	102 (T.G.)	250 (T.G.), 255 (T.G.)
	Students will use the language of mathematics to express mathematical ideas precisely.		
7.CM.9	Increase their use of mathematical vocabulary and language when communicating with others	Glossary Masters	Glossary Masters

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.CM.10	Use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale	journal prompts throughout	journal prompts throughout
7.CM.11	Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing	sum it ups, e.g., 69	253
	CONNECTIONS		
	Students will recognize and use connections among mathematical ideas.		
7.CN.1	Understand and make connections among multiple representations of the same mathematical ideas	74	317
7.CN.2	Recognize connections between subsets of mathematical ideas	42	272
7.CN.3	Connect and apply a variety of strategies to solve problems	34	272
	Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.		
7.CN.4	Model situations mathematically, using representations to draw conclusions and formulate new situations	70	301 (T.G.)
7.CN.5	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
	Students will recognize and apply mathematics in contexts outside of mathematics.		
7.CN.6	Recognize and provide examples of the presence of mathematics in their daily lives	176	275
7.CN.7	Apply mathematical ideas to problem situations that develop outside of mathematics	57	277
7.CN.8	Investigate the presence of mathematics in careers and areas of interest	108	312 (T.G.)
7.CN.9	Recognize and apply mathematics to other disciplines, areas of interest, and societal issues	57	312 (T.G.)

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	REPRESENTATION		
	Students will create and use representations to organize, record, and communicate mathematical ideas.		
7.R.1	Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations	Throughout	Throughout
7.R.2	Explain, describe, and defend mathematical ideas using representations	20	281
7.R.3	Recognize, compare, and use an array of representational forms	Throughout	Throughout
7.R.4	Explain how different representations express the same relationship	21	317
7.R.5	Use standard and non-standard representations with accuracy and detail	65	317
	Students will select, apply, and translate among mathematical representations to solve problems.		
7.R.6	Use representations to explore problem situations	Throughout	Throughout
7.R.7	Investigate relationships between different representations and their impact on a given problem	21	317 (T.G.)
7.R.8	Use representations as a tool for exploring and understanding mathematical ideas	20	317 (T.G.)
	Students will use representations to model and interpret physical, social, and mathematical phenomena.		
7.R.9	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 **SB:** 162, 191, 192
7.R.10	Use mathematics to show and understand social phenomena (e.g., determine profit from sale of yearbooks)	151	278
7.R.11	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 **SB:** 254
	NUMBER SENSE AND OPERATIONS		

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
	Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.		
7.N.1	Distinguish between the various subsets of real numbers (counting/natural numbers, whole numbers, integers, rational numbers, and irrational numbers)	62, 63, 80 **SB:** 61	
7.N.2	Recognize the difference between rational and irrational numbers (e.g., explore different approximations of π)		209 (T.G.)
7.N.3	Place rational and irrational numbers (approximations) on a number line and justify the placement of the numbers	80 **SB:** 61	
7.N.4	Develop the laws of exponents for multiplication and division	18, 19 **SB:** 14	296-303 **SB:** 230-232
7.N.5	Write numbers in scientific notation	22, 23, 25 **SB:** 17, 18	
7.N.6	Translate numbers from scientific notation into standard form	23, 25 **SB:** 17, 18	
7.N.7	Compare numbers written in scientific notation		
7.N.8	Find the common factors and greatest common factor of two or more numbers	87 **SB:** 66	
7.N.9	Determine multiples and least common multiple of two or more numbers	97, 123 **SB:** 103, 141	
7.N.10	Determine the prime factorization of a given number and write in exponential form	21 **SB:** 15, 16	
	Students will understand meaning of operations and procedures, and how they relate to one another.		
7.N.11	Simplify expressions using order of operations *Note: Expressions may include absolute value and/or integral exponents greater than 0.*	**SB:** 11	290-293 **SB:** 226-228
7.N.12	Add, subtract, multiply, and divide integers	68-78 **SB:** 56-60	244-248 **SB:** 202-206
7.N.13	Add and subtract two integers (with and without the use of a number line)	68-73 **SB:** 56-58	244, 245 **SB:** 202-204

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.N.14	Develop a conceptual understanding of negative and zero exponents with a base of ten and relate to fractions and decimals (e.g., $10^{-2} = 0.1 = 1/100$)	22, 25 **SB:** 18	297 **SB:** 252
7.N.15	Recognize and state the value of the square root of a perfect square (up to 225)		216 **SB:** 184
7.N.16	Determine the square root of non-perfect squares using a calculator		
7.N.17	Classify irrational numbers as non-repeating/non-terminating decimals		
	Students will compute accurately and make reasonable estimates.		
7.N.18	Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)		217 **SB:** 185
7.N.19	Justify the reasonableness of answers using estimation	105, 118, 145, 146, 172 **SB:** 27, 46, 88, 124	
	ALGEBRA		
	Students will represent and analyze algebraically a wide variety of problem solving situations.		
7.A.1	Translate two-step verbal expressions into algebraic expressions		251
	Students will perform algebraic procedures accurately.		
7.A.2	Add and subtract monomials with exponents of one		262, 263 **SB:** 209
7.A.3	Identify a polynomial as an algebraic expression containing one or more terms		
7.A.4	Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation		266, 267, 270-272 **SB:** 219, 221
7.A.5	Solve one-step equalities (positive coefficients only) (See 7.G.10)		255-259, 281 **SB:** 211-215

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.A.6	Evaluate formulas for given input values (surface area, rate, and density problems)		208-214, 279, 280 **SB:** 176, 177, 179, 224
	Students will recognize, use, and represent algebraically patterns, relations, and functions.		
7.A.7	Draw the graphic representation of a pattern from an equation or from a table of data		312-314, 316, 317 **SB:** 236, 237, 254
7.A.8	Create algebraic patterns using charts/tables, graphs, equations, and expressions		317 **SB:** 254
7.A.9	Build a pattern to develop a rule for determining the sum of the interior angles of polygons		198, 199 **SB:** 166
7.A.10	Write an equation to represent a function from a table of values		332, 333
	GEOMETRY		
	Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.		
7.G.1	Calculate the radius or diameter, given the circumference or area of a circle		209 **SB:** 177
7.G.2	Calculate the volume of prisms and cylinders, using a given formula and a calculator		213, 214 **SB:** 180, 181
7.G.3	Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, cylinders, cones, and pyramids)		192, 193 **SB:** 161
7.G.4	Determine the surface area of prisms and cylinders, using a calculator and a variety of methods		
	Students will identify and justify geometric relationships, formally and informally		
7.G.5	Identify the right angle, hypotenuse, and legs of a right triangle		218
7.G.6	Explore the relationship between the lengths of the three sides of a right triangle to develop the Pythagorean Theorem		218, 219 **SB:** 186
7.G.7	Find a missing angle when given angles of a quadrilateral		198 **SB:** 166

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.G.8	Use the Pythagorean Theorem to determine the unknown length of a side of a right triangle		219 **SB:** 186
7.G.9	Determine whether a given triangle is a right triangle by applying the Pythagorean Theorem and using a calculator		218 **SB:** 186
	Students will apply coordinate geometry to analyze problem solving situations.		
7.G.10	Graph the solution set of an inequality (positive coefficients only) on a number line (See 7.A.5)		283-287 **SB:** 225
	MEASUREMENT		
	Students will determine what can be measured and how, using appropriate methods and formulas.		
7.M.1	Calculate distance using a map scale		226, 227 **SB:** 191, 192
7.M.2	Convert capacities and volumes within a given system		233 **SB:** 198
7.M.3	Identify customary and metric units of mass		234 **SB:** 199
7.M.4	Convert mass within a given system		234 **SB:** 199
7.M.5	Calculate unit price using proportions		277 **SB:** 246
7.M.6	Compare unit prices		277
7.M.7	Convert money between different currencies with the use of an exchange rate table and a calculator		
7.M.8	Draw central angles in a given circle using a protractor (circle graphs)		
7.M.9	Determine the tool and technique to measure with an appropriate level of precision: mass		
	Students will develop strategies for estimating measurements.		
7.M.10	Identify the relationships between relative error and magnitude when dealing with large numbers (e.g., money, population)		
7.M.11	Estimate surface area		

		Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
7.M.12	Determine personal references for customary/metric units of mass		234 **SB:** 199
7.M.13	Justify the reasonableness of the mass of an object		234 **SB:** 199
	STATISTICS AND PROBABILITY		
	Students will collect, organize, display, and analyze data.		
7.S.1	Identify and collect data using a variety of methods	57 (T.G.)	
7.S.2	Display data in a circle graph		
7.S.3	Convert raw data into double bar graphs and double line graphs		
7.S.4	Calculate the range for a given set of data	57 **SB:** 50	
7.S.5	Select the appropriate measure of central tendency	56, 57 **SB:** 47-50	
7.S.6	Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs or circle graph	179 **SB:** 101	
	Students will make predictions that are based upon data analysis.		
7.S.7	Identify and explain misleading statistics and graphs		
	Students will understand and apply concepts of probability.		
7.S.8	Interpret data to provide the basis for predictions and to establish experimental probabilities		
7.S.9	Determine the validity of sampling methods to predict outcomes		
7.S.10	Predict the outcome of an experiment		
7.S.11	Design and conduct an experiment to test predictions		
7.S.12	Compare actual results to predict results		