Math Teachers Press, Inc.

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NEW YORK STATE LEARNING STANDARDS FOR MATHEMATICS CORRELATED TO
MOVING WITH MATH® FOUNDATIONS-BY-TOPIC GRADE 4

		B1 *Numeration, Addition & Subtraction* Student Book Skill Builders (SB)	B2 *Multiplication & Division Basic Facts* Student Book Skill Builders (SB)	B3 *Multiplication & Division - Problem Solving* Student Book Skill Builders (SB)	B4 *Fractions, Decimals, Geometry, Measurement* Student Book Skill Builders (SB)
	PROBLEM SOLVING				
	Students will build new mathematical knowledge through problem solving.				
4.PS.1	Explore, examine, and make observations about a social problem or mathematical situation	8	36	68	4
4.PS.2	Understand that some ways of representing a problem are more helpful than others	73	37	57	61 (T.G.)
4.PS.3	Interpret information correctly, identify the problem, and generate possible solutions	4	34, 38	25	61
	Students will solve problems that arise in mathematics and in other contexts.				
4.PS.4	Act out or model with manipulatives activities involving mathematical content from literature	read to me activities throughout	read to me activities throughout	read to me activities throughout	read to me activities throughout
4.PS.5	Formulate problems and solutions from everyday situations	63	36	35	2
4.PS.6	Translate from a picture/diagram to a numeric expression	4	36	39	2

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4.PS.7 Represent problem situations in oral, written, concrete, pictorial, and graphical forms	4, 5	37	41	61
4.PS.8 Select an appropriate representation of a problem	13	35	51	3
Students will apply and adapt a variety of appropriate strategies to solve problems.				
4.PS.9 Use trial and error to solve problems	77	69	25 **SB:** 26-12	75
4.PS.10 Use process of elimination to solve problems	8	32	51 **SB:** 26-12	48
4.PS.11 Make pictures/diagrams of problems	32	3, 36	10	70
4.PS.12 Use physical objects to model problems	31, 45	2	3	9
4.PS.13 Work in collaboration with others to solve problems	throughout	throughout	throughout	throughout
4.PS.14 Make organized lists to solve numerical problems	58 (T.G.)	7	15	76
4.PS.15 Make charts to solve numerical problems	26	58	14	61 (T.G.)
4.PS.16 Analyze problems by identifying relationships	38,	2	2	61
4.PS.17 Analyze problems by identifying relevant versus irrelevant information	54	34, 38	25	5 (T.G.)
4.PS.18 Analyze problems by observing patterns	44	52	11	5
4.PS.19 State a problem in their own words	27	34 (T.G.)	10 (T.G.)	17 (T.G.)
Students will monitor and reflect on the process of mathematical problem solving.				
4.PS.20 Determine what information is needed to solve a problem	54	33	10	17

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4.PS.21	Discuss with peers to understand a problem situation	11 (T.G.)	76 (T.G.)	25 (T.G.)	5 (T.G.)
R.-S.22	Discuss the efficiently of different representations of a problem	33 (T.G.)	46	22 (T.G.)	11 (T.G.)
4.PS.23	Verify results of a problem	49	72	34	17
4.PS.24	Recognize invalid approaches	49 (T.G.)	14 (T.G.)	29	17
P.PS.25	Determine whether a solution is reasonable in the context of the original problem	63	72	23	59
	REASONING AND PROOF				
	Students will recognize reasoning and proof as fundamental aspects of mathematics.				
4.RP.1	Use representations to support mathematical ideas	27	9	22	58 (T.G.)
4.RP.2	Determine whether a mathematical statement is true or false and explain why.			23	39
	Students will make and investigate mathematical conjectures.				
4.RP.3	Investigate and use of knowledgeable guessing by generalizing mathematical ideas	28	54	23	48
4.RP.4	Make conjectures from a variety of representations	27	10	30 (T.G.)	73
	Students will develop and evaluate mathematical arguments and proofs.				
4.RP.5	Justify general claims or conjectures, using manipulatives, models, and expressions	28	10	6	70

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4.RP.6	Develop and explain an argument using oral, written, concrete, pictorial, and/or graphical forms	9	4	6	17
4.RP.7	Discuss, listen, and make comments that support or reject claims made by other students	class discussions throughout	class discussions throughout	class discussions throughout	class discussions throughout
	Students will select and use various types of reasoning and methods of proof.				
4.RP.8	Support an argument by trying many cases	27	18	30	74
4.RP.9	Disprove an argument by finding counterexamples				
	COMMUNICATION				
	Students will organize and consolidate their mathematical thinking through communication.				
4.CM.1	Understand and explain how to organize their thought process	sum it ups throughout	sum it ups throughout	sum it ups throughout	sum it ups throughout
4.CM.2	Verbally explain their rationale for strategy selection	65 (T.G.)	14 (T.G.)	57	61 (T.G.)
4.CM.3	Provide reasoning both in written and verbal form	throughout	throughout	throughout	throughout
	Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others,				
4.CM.4	Organize and accurately label work	throughout	throughout	throughout	throughout

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4.CM.5	Share organized mathematical ideas through the manipulation of objects, drawing, pictures, charts, graphs, tables, diagrams, models, symbols, and expressions in written and verbal form	throughout	throughout	throughout	throughout
4.CM.6	Answer clarifying questions from others	54 (T.G.)	76 (T.G.)	62 (T.G.)	19 (T.G.)
	Students will analyze and evaluate the mathematical thinking and strategies of others.				
4.CM.7	Restate mathematical solutions shared by other students	54 (T.G.)	14 (T.G.)	36 (T.G.)	61 (T.G.)
4.CM.8	Consider strategies used and solutions found in relation to their own work	54	14 (T.G.)	57	61 (T.G.)
	Students will use the language of mathematics to express mathematical ideas precisely.				
4.CM.9	Increase their use of mathematical vocabulary and language when communicating with others	vocabulary cards	vocabulary cards	vocabulary cards	vocabulary cards
4.CM.10	Describe objects, relationships, solutions, and rationale using appropriate vocabulary	14	8	49	6, 48
4.CM.11	Decode and comprehend mathematical visuals and symbols to construct meaning	14	9	13	6
	CONNECTIONS				
	Students will recognize and use connections among mathematical ideas.				
4.CN.1	Recognize, understand, and make connections in their everyday experiences to mathematical ideas	59	46	3	8, 19

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4.CN.2	Compare and contrast mathematical ideas	2 (T.G.)	37	18	70
4.CN.3	Connect and apply mathematical information to solve problems	65	37	2	23
	Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.				
4.CN.4	Understand multiple representations and how they are related	3	5	5	23
4.CN.5	Model situations with objects and representations and be able to make observations	3	3	20	74
	Students will recognize and apply mathematics in contexts outside of mathematics.				
4.CN.6	Recognize the presence of mathematics in their daily lives	59	6	10	8
4.CN.7	Apply mathematics to solve problems that develop outside of mathematics	59	7	23	61
4.CN.8	Recognize and apply mathematics to other disciplines	18	33	17, 50	70 (T.G.)
	REPRESENTATION				
	Students ill create and use representations to organize, record, and communicate mathematical ideas				
4.R.1	Use verbal and written language, physical models, drawing charts, graphs, tables, symbols, and equations as representations	throughout	throughout	throughout	throughout

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4.R.2	Share mental images of mathematical ideas and understandings	7	15	7	2 (T.G.)
4.R.3	Recognize and use external mathematical representations	8 (T.G.)	29	22	2
4.R.4	Use standard and nonstandard representations with accuracy and detail	8 (T.G.)	15	19 (T.G.)	3
	Students will select, apply, and translate among mathematical representations to solve problems.				
4.R.5	Understand similarities and differences in representations	68	46	16	61 (T.G.)
4.R.6	Connect mathematical representations with problem solving	13	9	19 (T.G.)	61 (T.G.)
4.R.7	Construct effective representations to solve problems	13	9	19 (T.G.)	76
	Students will use representations to model and interpret physical, social, and mathematical phenomena.				
4.R.8	Use mathematics to show and understand physical phenomena (e.g., estimate and represent the number of apples in a tree)	7	17	25	49
4.R.9	Use mathematics to show and understand social phenomena (e.g., determine the number of buses required for a field trip)	6	21	25	19, 61
4.R.10	Use mathematics to show and understand mathematical phenomena (e.g., use a multiplication rid to solve odd and even number problems)	9	63	7, 13	23

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	NUMBER SENSE AND OPERATION				
	Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.				
4.N.1	Skip count by 1,000's				
4.N.2	Read and write whole numbers to 10,000	20, 21 **SB:** 4-2, 5-2			
4.N.3	Compare and order numbers to 10,000	19 **SB:** 2-3, 2-4			
4.N.4	Understand the place value structure of the base ten number system:	14, 15, 17, 18 **SB:** 1-1, 1-3, 6-3			
	10 ones = 1 ten	14 **SB:** 6-3			
	10 tens = 1 hundred	14 **SB:** 6-3			
	10 hundreds = 1 thousand	14 **SB:** 6-3			
	10 thousands = 1 ten thousand				
4.N.5	Recognize equivalent representations for numbers up to four digits and generate them by decomposing and composing numbers	17 **SB:** 4-1			
4.N.6	Understand, use, and explain the associative property of multiplication		54 **SB:** 20-17	16 **SB:** 20-32	
4.N.7	Develop an understanding of fractions as locations on number lines and as divisions of whole numbers				2, 7 **SB:** 30-1, 30-2, 30-4, 30-8

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4.N.8 Recognize and generate equivalent fractions (halves, fourths, thirds, fifths, sixths, and tenths) using manipulatives, visual models, and illustrations				14 **SB:** 32-3
4.N.9 Use concrete materials and visual models to compare and order unit fractions or factions with the same denominator (with and without the use of a number line)				12, 13, 15 **SB:** 32-2, 32-4
4.N.10 Develop an understanding of decimals as part of a whole				23, 24 **SB:** 47-11, 47-12
4.N.11 Read and write decimals to hundredths, using money as a context				23-25 **SB:** 47-13
4.N.12 Use concrete materials and visual models to compare and order decimals (less than 1) to the hundredths place in the context of money				28 **SB:** 47-15
4.N.13 Develop an understanding of the properties of odd/even numbers as a result of multiplication		16		
Students will understand meanings of operations and procedures, and how they relate to one another.				
4.N.14 Use a variety of strategies to add and subtract numbers up to 10,000	30-37, 42-51, 71-76 **SB:** 10-9 to 10-12, 12-1, 12-2, 15-8 to 15-12, 17-1, 17-2			

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4.N.15 Select appropriate computational and operational methods to solve problems	38, 52, 53, 55 **SB:** 14-2, 15-13, 15-14, 15-15	33-37, 76 **SB:** 20-18, 26-5	51 **SB:** 29-2	
4.N.16 Understand various meanings of multiplication and division		2, 21-23 **SB:** 20-1, 25-1, 25-2	2, 3, 5, 41, 42, 46 **SB:** 20-19, 20-20, 20-22, 25-18, 25-19, 25-21	
4.N.17 Use multiplication and division as inverse operations to solve problems		62, 63, 66, 68 **SB:** 25-4, 25-7, 25-9	44, 49 **SB:** 25-20, 25-24	
4.N.18 Use a variety of strategies to multiply two-digit numbers by one-digit numbers (with and without regrouping)		56, 57 **SB:** 21-1	17-22 **SB:** 21-3, 21-4, 31-5	
4.N.19 Use a variety of strategies to multiply two-digit numbers by two-digit numbers (with and without regrouping)			32, 33 **SB:** 23-1, 23-4	
4.N.20 Develop fluency in multiplying and dividing multiples of 10 and 100 up to 1,000		52, 73 **SB:** 22-1, 26-3	17, 30, 74 **SB:** 22-2, 22-3	
4.N.21 Use a variety of strategies to divide two-digit dividends by one-digit divisors (with and without remainders)		73, 74 **SB:** 26-2, 26-4	61-66 **SB:** 26-9, 26-10	
4.N.22 Interpret the meaning of remainders		72 **SB:** 26-2	60	
4.N.23 Add and subtract proper fractions with common denominators				17-19 **SB:** 33-1 to 33-5
4.N.24 Express decimals as an equivalent form of fractions to tenths and hundredths				23-25 **SB:** 47-11, 47-12

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4.N.25	Add and subtract decimals to tenths and hundredths using a hundreds chart				SB: 47-17
	Students will compute accurately and make reasonable estimates.				
4.N.26	Round numbers less than 1,000 to the nearest tens and hundreds	22-25 **SB:** 7-1, 7-2, 8-1, 8-2			
4.N.27	Check reasonableness of an answer by using estimation	61, 63 **SB:** 10-14, 15-16		23, 24, 34, 60 **SB:** 21-6, 26-13	
	ALGEBRA				
	Students will represent and analyze algebraically a wide variety of problem solving situations				
4.A.1	Evaluate and express relationships using open sentences with one operation	29, 41, 52, 53 **SB:** 14-2, 15-13, 19-2	19, 34, 69 **SB:** 24-1, 26-6, 29-1		
	Students will perform algebraic procedures accurately.				
4.A.2	Use the symbols <, >, =, and ≠ (with and without the use of a number line) to compare whole numbers and unit fractions and decimals (up to hundredths)	5, 19 **SB:** 2-3, 2-4			13, 15, 28 **SB:** 32-1, 47-15
4.A.3	Find the value or values that will make an open sentence true, if it contains < or >				
	Students will recognize, use, and represent algebraically patterns, relations, and functions.				

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4.A.4	Describe, extend, and make generalizations about numeric (+, -, ×, ÷) and geometric patterns	10 **SB:** 3-2		**SB:** 3-4	
4.A.5	Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box	11	43	14, 15 **SB:** 20-31	
	GEOMETRY				
	Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.				
4.G.1	Identify and name polygons, recognizing that their names are related to the number of sides and angles (triangle, quadrilateral, pentagon, hexagon, and octagon)				35, 36 **SB:** 37-4, 37-7, 37-8
4.G.2	Identify points and line segments when drawing a plane figure				36 (T.G.)
4.G.3	Find perimeter of polygons by adding sides				65-67 **SB:** 46-3, 46-4
4.G.4	Find the area of a rectangle by counting the number of squares needed to cover the rectangle				68, 69 **SB:** 46-5, 46-8
4.G.5	Define and identify vertices, faces, and edges of three-dimensional shapes				48 **SB:** 40-3
	Students will identify and justify geometric relationships, formally and informally				
4.G.6	Draw and identify intersecting, perpendicular, and parallel lines				33 **SB:** 36-2, 36-3

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4.G.7	Identify points and rays when drawing angles				30 **SB:** 35-6, 35-8
4.G.8	Classify angles as acute, obtuse, right, and straight				31 **SB:** 35-3
	MEASUREMENT **Students will determine what can be measured and how, using appropriate methods and formulas.**				
4.M.1	Select tools and units (customary and metric) appropriate for the length being measured				56, 57, 62, 63 **SB:** 43-1, 43-2, 45-1
4.M.2	Use a ruler to measure to the nearest standard unit (whole, 1/2 and 1/4 inches, whole feet, whole yards, whole centimeters, and whole meters)				56, 62 **SB:** 43-1, 43-2, 43-3, 43-5
4.M.3	Know and understand equivalent standard units of length:				
	12 inches = 1 foot				57, 58 **SB:** 44-1
	3 feet = 1 yard				57, 58 **SB:** 44-1
4.M.4	Select tools and units appropriate to the mass of the object being measured (grams and kilograms)				64 **SB:** 45-2
4.M.5	Measure mass, using grams				64
4.M.6	Select tools and units appropriate to the capacity being measured (milliliters and liters)				**SB:** 45-2
4.M.7	Measure capacity, using milliliters and liters				

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	Students will use units to give meaning to measurement				
4.M.8	Make change, using combined coins and dollar amounts	59 **SB:** 47-3			
4.M.9	Calculate elapsed time in hours and half hours, not crossing A.M./P.M.				51 **SB:** 41-2
4.M.10	Calculate elapsed time in days and weeks, using a calendar				52 **SB:** 42-2
	STATISTICS AND PROBABILITY				
	Students will collect, organize, display, and analyze data.				
4.S.1	Design investigations to address a question from a given data	68 **SB:** 50-4	46		
4.S.2	Collect data using observations, surveys, and experiments and record appropriately	68 **SB:** 50-4	46		
4.S.3	Represent data using tables, bar graphs, and pictographs	68 **SB:** 50-4	46, 58		
4.S.4	Read and interpret line graphs				
	Students will make predictions that are based upon data analysis.				
4.S.5	Develop and make predictions that are based on data				74 **SB:** 49-6
4.S.6	Formulate conclusions and make predictions from graphs	68-70 **SB:** 50-2, 50-3	46, 58 **SB:** 50-5, 50-6		