



Math Teachers Press, Inc.

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MARYLAND VOLUNTARY CURRICULUM CORRELATED TO MOVING WITH ALGEBRA GRADE 8

	Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
STANDARD 1: KNOWLEDGE OF PATTERNS, ALGEBRA, AND FUNCTIONS		
Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships		
A. Patterns and Functions		
1. Identify, describe, extend, and create patterns, functions and sequences		
a) Determine the recursive relationship of arithmetic sequences represented in words, in a table, or in a graph •Assessment limit: Provide the n th term to no more than 10 terms beyond the last given term using common differences no more than 10 with integers (-100 to 5000)		307, 309 SB: 234
b) Determine the recursive relationship of geometric sequences represented in words, in a table, or in a graph •Assessment limit: Provide the n th term no more than 5 terms beyond the last given term using the recursive relationship of geometric sequences with whole numbers and a common ratio of no more than 5:1 (0- 10,000)		308, 309 SB: 234
c) Determine whether relationships are linear or nonlinear when represented in words, in a table, symbolically, or in a graph •Assessment limit: Use a graph to determine if a relationship is linear or nonlinear		231, 232, 273, 274, 279, 280, 311-317 SB: 196, 197, 224, 236-239
d) Determine whether relationships are linear or nonlinear when represented symbolically		233, 234, 317
B. Expressions, Equations, and Inequalities		
1. Write, simplify, and evaluate expressions		
a) Write an algebraic expression to represent unknown quantities •Assessment limit: Use one unknown and no more than 3 operations and rational numbers (-1000 to 1000)		249-251 SB: 207

	Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
b) Evaluate an algebraic expression ● Assessment limit: Use one or two unknowns and up to three operations and rational numbers (-100 to 100)		262-265, 268, 269, 303, 306 SB: 209, 210, 220
c) Evaluate numeric expressions using the order of operations ● Assessment limit: Use no more than 5 operations including exponents of no more than 33 and 2 sets of parentheses, brackets, a division bar, or absolute value with rational numbers (-100 to 100)		290-293, 306 SB: 226-228
d) Simplify algebraic expressions by combining like terms ● Assessment limit: Use no more than 3 variables with integers (-50 to 50), or proper fractions with denominators as factors of 20 (-20 to 20)		262-265, 268, 269, 303, 306 SB: 209, 210, 220
e) Describe a real-world situation represented by an algebraic expression		249-251
2. Identify, write, solve, and apply equations and inequalities		
a) Write equations or inequalities to represent relationships ● Assessment limit: Use a variable, the appropriate relational symbols ($>$, \geq , $<$, \leq , $=$), and no more than 3 operational symbols ($+$, $-$, \times , \div) on either side and rational numbers (-1000 to 1000)		252 282 SB: 208
b) Solve for the unknown in a linear equation ● Assessment limit: Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and rational numbers (-2000 to 2000)		253-261, 266, 267, 270-272, 281 SB: 211-216, 219, 221, 250, 251
c) Solve for the unknown in an inequality. ● Assessment limit: Use a one- or two-operation inequality with one variable on one side no more than 3 times, whose results after combining coefficients is a positive whole number coefficient with integers (-100 to 100)		283-287 SB: 225
d) Identify or graph solutions of inequalities on a number line ● Assessment limit: Use one variable once with a positive whole number coefficient and integers (-100 to 100)		282-287 SB: 225
d) Identify equivalent equations ● Assessment limit: Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and integers (-2000 to 2000)		

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f) Apply given formulas to a problem-solving situation ● Assessment limit: Use no more than four variables and up to three operations with rational numbers (-500 to 500)		279, 280 SB: 224
g) Write equations and inequalities that describe real-world problems		
C. Numeric and Graphic Representations of Relationships		
1. Locate points on a number line and in a coordinate plane		
a) Graph linear equations in a coordinate plane ● Assessment limit: Use two unknowns having integer coefficients (-9 to 9) and integer constants (-20 to 20)		231, 232, 281, 311-317 SB: 196, 197, 236-239
2. Analyze linear relationships		
a) Determine the slope of a graph in a linear relationship ● Assessment limit: Use an equation with integer coefficients (-9 to 9) and integer constants (-20 to 20) and a given graph of the relationship		320-331 SB: 241-244, 248, 249, 254
b) Determine the slope of a linear relationship represented numerically or algebraically		320-331 SB: 241, 242, 254
STANDARD 2: KNOWLEDGE OF GEOMETRY		
Students will apply the properties of one-, two- or three-dimensional geometric figures to describe, reason or solve problems about shape, size, position or motion of objects.		
A. Properties of Plane Geometric Figures		
1. Analyze the properties of plane geometric figures		
a) Identify and describe geometric relationships between angles formed when parallel lines are cut by a transversal ● Assessment limit: Use alternate interior, alternate exterior, or corresponding angles		194, 195, 200 SB: 163, 167
b) Identify and describe the relationship among the parts of a right triangle ● Assessment limit: Use the hypotenuse or the legs of right triangles		218, 219 SB: 186
2. Analyze geometric relationships		

	Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
a) Determine the measurements of angles formed by parallel lines cut by a transversal • Assessment limit: Use alternate interior, alternate exterior, and corresponding angles		194, 195, 200 SB: 163, 167
b) Apply right angle concepts to solve real-world problems • Assessment limit: Use the Pythagorean Theorem		190, 191, 216-219
c) Determine whether three given side lengths form a right triangle		218, 219 SB: 186
C. Representation of Geometric Figures		
1. Representation plane geometric figures		
a) Draw quadrilaterals • Assessment limit: Provide given whole number dimensions in inches or centimeters or angle measurement		190, 191 SB: 157-160
b) Construct perpendicular line segments • Assessment limit: Provide a given point on a given line segment		184, 185 SB: 152, 154
c) Construct triangles • Assessment limit: Construct a triangle congruent to a given triangle		203 SB: 169, 170
D. Congruence and Similarity		
1. Apply the properties of similar polygons		
a) Determine similar parts of polygons • Assessment limit: Use the length of corresponding sides or the measure of corresponding angles and rational numbers with no more than 2 decimal places (0 - 1000)		223-225 SB: 189, 190
E. Transformations		
1. Analyze a transformation on a coordinate plane		
a) Identify, describe, and plot the results of multiple transformations on a coordinate plane • Assessment limit: Identify or plot the result of two transformations on one figure using translations (horizontal or vertical), reflections (horizontal or vertical), or rotations about a given point		204 SB: 171, 172
STANDARD 3: KNOWLEDGE OF MEASUREMENT		

	Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
Students will identify attributes, units, or systems of measurements, or apply a variety of techniques, formulas, tools or technology for determining measurements		
C. Applications in Measurement		
1. Estimate and apply measurement formulas		
a) Estimate and determine the circumference or area of a circle ● Assessment limit: Include circles using rational numbers with no more than 2 decimal places (0 - 10,000)		209 SB: 177
b) Estimate and determine area of a composite figure ● Assessment limit: Include composite figures with no more than 6 polygons (triangles, rectangles, or circles) by measuring, partitioning, or using formulas with whole number dimensions (0 - 10,000)		183
c) Estimate and determine the volume of a cylinder ● Assessment limit: Use cylinders, the given formula, and whole number		214
d) Determine the volume of cones, pyramids, and spheres		214
e) Determine the surface area of cylinders, prisms, and pyramids		
2. Analyze measurement relationships		
a) Use proportional reasoning to solve measurement problems ● Assessment limit: Use proportions, scale drawings with scales as whole numbers, or rates using whole numbers or decimals (0 - 1000)		224-227 SB: 191, 192
STANDARD 4: KNOWLEDGE OF STATISTICS		
Students will collect, organize, display, analyze, or interpret data to make decisions or predictions		
A. Data Displays		
1. Organize and display data		
a) Organize and display data to make circle graphs ● Assessment limit: Use no more than 5 categories with data in whole number percents	179	
b) Organize and display data to make box-and-whisker plots ● Assessment limit: Use no more than 12 pieces of data and whole numbers (0 - 1000)		

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c)	Organize and display data to make a scatter plot ● Assessment limit: Use no more than 10 points and whole numbers (0 - 1000)		
B. Data Analysis			
1. Analyze data			
a)	Interpret tables ● Assessment limit: Use no more than 5 categories having no more than 2 quantities per category and whole numbers or decimals with no more than 2 decimal places (0 - 100)	56, 57 SB: 47-50	
b)	Interpret box-and-whisker plots ● Assessment limit: Use minimum, first (lower) quartile, median (middle quartile), third (upper) quartile, or maximum and whole numbers (0 - 100)		
c)	Interpret scatter plots ● Assessment limit: Use no more than 10 points using whole numbers or decimals with no more than 2 decimal places (0 - 100)		
d)	Interpret circle graphs ● Assessment limit: Use no more than 8 categories (0 - 100)		
e)	Analyze multiple box-and-whisker plots using the same scale		
STANDARD 5: KNOWLEDGE OF PROBABILITY			
Students will use experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.			
A. Sample Space			
1. Identify a sample space			
a)	Describe the difference between independent and dependent events		
b)	Determine the number of outcomes ● Assessment limit: Use no more than 5 dependent events with no more than 10 outcomes in the first event		
B. Theoretical Probability			
1. Determine the probability of an event comprised of no more than 2 independent events			

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a) Express the probability of an event as a fraction, a decimal, or a percent ● Assessment limit: Use a sample space of 36 to 60 outcomes		
2. Determine the probability of a second event that is dependent on a first event of equally likely outcomes		
a) Express the probability as a fraction, a decimal, or a percent ● Assessment limit: Use a sample space of no more than 60 outcomes		
C. Experimental Probability		
1. Analyze the results of a survey or simulation		
a) Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent ● Assessment limit: Use 20 to 500 results		
2. Conduct a probability experiment		
3. Compare outcomes of theoretical probability with the results of experimental probability		
4. Describe the difference between theoretical and experimental probability		
STANDARD 6: KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC		
Students will describe, represent, or apply numbers or their relationships will estimate or compute using mental strategies, paper/pencil or technology		
A. Knowledge of Number and Place Value		
1. Apply knowledge of rational numbers and place value		
a) Read, write, and represent rational numbers ● Assessment limit: Use exponential notation or scientific notation (-10,000 to 1,000,000,000)	2-5, 22, 23, 25 SB: 1-4, 17, 18	215, 294-297, 301 SB: 229, 252

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b)	Compare, order and describe rational numbers with and without relational symbols (< > , =) ● Assessment limit: Use no more than 4 integers (-100 to 100) or positive rational numbers (0-100) using equivalent forms or absolute value	6, 7, 62-64, 80, 89, 90, 135, 136 SB: 5, 6, 54, 61, 67-69, 112, 113, 144	
C. Number Computation			
1. Analyze number relations and compute			
a)	Add, subtract, multiply and divide integers ● Assessment limit: Use one operation (-1000 to 1000)	26-29, 34-40, 42-51, 68-78 SB: 19-24, 29-41, 56-60	
b)	Calculate powers of integers and square roots of perfect square whole numbers ● Assessment limit: Use powers with bases no more than 12 and exponents no more than 3, or square roots of perfect squares no more than 144	16, 17 SB: 13	215, 216, 301, 304, 305 SB: 184, 229, 233
c)	Identify and use the laws of exponents to simplify expressions ● Assessment limit: Use the rules of power times power or power divided by power with the same integer as a base (-20 to 20) and exponents (0-10)	18, 19 SB: 14	296-300, 303 SB: 229-231
d)	Use properties of addition and multiplication to simplify expressions ● Assessment limit: Use the commutative property of addition or multiplication, associative property of addition or multiplication, additive inverse property, the distributive property, or the identity property for one or zero with integers (-100 to 100)	10-15 SB: 9-12	
2. Estimation			
a)	Estimate the square roots of whole numbers ● Assessment limit: Use whole numbers (0 - 100)		217 SB: 185
3. Analyze ratios, proportions, and percents			
a)	Determine unit rates ● Assessment limit: Use positive rational numbers (0 - 100)		
b)	Determine or use percents, rates of increase and decrease, discount, commission, sales tax and simple interest in the context of a problem ● Assessment limit: Use positive rational numbers (0 - 10,000)	134, 140-142, 161-171, 173-179 SB: 105, 106, 110, 111, 130-134, 136-138	

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c)	Solve problems using proportional reasoning ● Assessment limit: Use positive rational numbers (0 - 1000)	SB: 102	
STANDARD 7: PROCESS OF MATHEMATICS			
Students demonstrate the processes of mathematics by making connections and applying reason to solve and to communicate their findings			
A. Problem solving			
1. Apply a variety of concepts, processes, and skills to solve problems			
a)	Identify the question in the problem	54, 55, 78, 82, 105, 106, 116, 118, 119, 145, 146, 158-160, 172-179 SB: 44-46, 51-53, 62, 87, 88, 101, 119, 128, 129, 133, 134, 136- 138	
b)	Decide if enough information is present to solve the problem	54, 55, 78, 82, 105, 106, 116, 118, 119, 145, 146, 158-160, 172-179 SB: 44-46, 51-53, 62, 87, 88, 101, 119, 128, 129, 133, 134, 136- 138	
c)	Make a plan to solve a problem	54, 55, 78, 82, 105, 106, 116, 118, 119, 145, 146, 158-160, 172-179 SB: 44-46, 51-53, 62, 87, 88, 101, 119, 128, 129, 133, 134, 136- 138	

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d) apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	54, 55, 78, 82, 105, 106, 116, 118, 119, 145, 146, 158-160, 172-179 SB: 44-46, 51-53, 62, 87, 88, 101, 119, 128, 129, 133, 134, 136- 138	
e) Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation		
f) Identify alternative ways to solve a problem	Throughout	
g) Show that a problem might have multiple solutions or no solution	32, 58, 105, 118, 145, 159 SB: 28, 45	
h) Extend the solution of a problem to a new problem situation		
B. Reasoning		
1. Justify ideas or solutions with mathematical concepts or proofs		
a) Use inductive or deductive reasoning		307-309 SB: 234, 235
b) Make or test generalizations	Throughout	Throughout
c) Support or refute mathematical statements or solutions	Throughout	Throughout
d) Use methods of proof, i.e., direct, indirect, paragraph, or contradiction		
C. Communication		
1. Present mathematical ideas using words, symbols, visual displays, or technology		
a) Use multiple representations to express concepts or solutions	Throughout	Throughout
b) Express mathematical ideas orally	58, 59, 105, 118	
c) Explain mathematical ideas in written form	58, 59, 105, 118	
d) Express solutions using concrete materials	Throughout	
e) Express solutions using pictorial, tabular, graphical, or algebraic methods	58, 59, 105, 118	

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f)	Explain solutions in written form	58, 59, 105, 118	
g)	Ask questions about mathematical ideas or problems	58, 59, 105, 118	
h)	Give or use feedback to revise mathematical thinking	58, 59, 105, 118	
D. Connections			
1. Relate or apply mathematics within the discipline, to other disciplines, and to life			
a)	Identify mathematical concepts in relationship to other mathematical concepts	Throughout	Throughout
b)	Identify mathematical concepts in relationship to other disciplines	67	
c)	Identify mathematical concepts in relationship to life	24, 58, 59, 78, 218, 219	
d)	Use the relationship among mathematical concepts to learn other mathematical concepts	Scaffolding Throughout	Throughout