



# Math Teachers Press, Inc.

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## MARYLAND MATHEMATICS VOLUNTARY CURRICULUM CORRELATED TO *MOVING WITH MATH®* EXTENSIONS GRADE 7

	Student Book	Skill Builders
<b>STANDARD 1: KNOWLEDGE OF ALGEBRA, PATTERNS AND FUNCTIONS</b>		
Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.		
<b>A. Patterns and Functions</b>		
<b>1. Identify, describe, extend, and create linear patterns and functions.</b>		
a) Complete a function table with a given two-operation rule <b>•Assessment limit:</b> Use the operations (+, -, x) numbers no more than 20 in the rule and whole numbers (0 - 500)	16	
b) Identify and extend a geometric sequence		
c) Describe how a change in one variable in a linear function affects the other variable in a table of values	16	
<b>B. Expressions, Equations, and Inequalities</b>		
<b>1 Write and evaluate expressions</b>		
a) Write an algebraic expression to represent unknown quantities <b>•Assessment limit:</b> Use one unknown and one or two operations (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 - 500)	21, 22	50-1
b) Evaluate algebraic expressions <b>•Assessment limit:</b> Use one unknown and no more than two operations (+, -, x, ÷ with no remainders) with whole numbers (0 - 200), fractions with denominators as factors of 100 (0 - 100), or decimals with no more than three decimal places (0-100)	21, 22	50-1
c) Evaluate numeric expressions using the order of operations <b>• Assessment limit:</b> Use no more than 4 operations (+, -, x, ÷ with no remainders) with or without up to 2 sets of parentheses, brackets, or a division bar, with whole numbers (0 - 200), fractions with denominators as factors of 100 (0 - 100), or decimals with no more than three decimal places (0 - 100)	5 ,21 ,22	2-1, 2-2, 50-1

	Student Book	Skill Builders
d) Simplify algebraic expressions represented as physical models by combining like terms.		
<b>2. Identify, write, solve and apply equations and inequalities</b>		
a) Write equations and inequalities to represent relationships <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use a variable, the appropriate relational symbols (<math>&gt;</math>, <math>\geq</math>, <math>&lt;</math>, <math>\leq</math>, <math>=</math>), and one or two operational symbols (<math>+</math>, <math>-</math>, <math>\times</math>, <math>\div</math>) on either side and use whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 - 500)</li> </ul>	22	50-1
b) Determine the unknown in a linear equation <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use one or two operations (<math>+</math>, <math>-</math>, <math>\times</math>) and the unknown only once with whole numbers (0 - 500), fractions with denominators as factors of 100 (0 - 50), or decimals with no more than three decimal places (0 - 100)</li> </ul>	21, 22	50-1
c) Solve for the unknown in an inequality <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use an inequality with one variable with a positive whole number coefficient and one operation (<math>+</math>, <math>-</math>, <math>\times</math>, <math>\div</math> with no remainders) using whole numbers or decimals with no more than 2 decimal places (0 - 500)</li> </ul>		
d) Identify or graph solutions of inequalities on a number line <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use whole number (0 - 50)</li> </ul>		
e) Apply given formulas to a problem solving situation <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use formulas having no more than three variables and up to two operations, with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 - 100)</li> </ul>	70-76	38-1, 38-2, 39-1, 40-1, 40-2, 41-1
<b>C. Numeric and Graphic Representations of Relationships</b>		
<b>1. Locate points on a number line and in a coordinate plane</b>		
a) Represent rational numbers on a number line <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use rational numbers (-100 to 1000)</li> </ul>	23	
b) Graph ordered pairs in a coordinate plane <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Use no more than 4 ordered pairs of rational numbers (-20 to 20)</li> </ul>	19	49-1
c) Graph linear equations with one operation in a coordinate plane	19	49-1
<b>2. Analyze linear relationships</b>		
a) Identify and describe the change represented in a table of values <ul style="list-style-type: none"> <li>•<b>Assessment limit:</b> Identify increase, decrease, or no change</li> </ul>	16	
b) Describe the rate of change of a linear relationship by a table of values and a graph.	16	

	Student Book	Skill Builders
<b>STANDARD 2: KNOWLEDGE OF GEOMETRY</b>		
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.		
<b>A. Properties of Plane Geometric Figures</b>		
<b>1. Analyze the properties of plane geometric figures</b>		
a) Identify and describe geometric relationships between angles formed when parallel lines are cut by a transversal. • <b>Assessment limit:</b> Use alternate interior, alternate exterior, or corresponding angles		
b) Identify angles formed when two parallel lines are cut by a transversal	69	
Identify the parts of right triangles		
<b>2. Analyze geometric relationships</b>		
a) Determine a missing angle measurement using the sum of the interior angles of polygons. • <b>Assessment limit:</b> Use angle measures in a quadrilateral		
b) Determine the measurement of angles formed by intersecting lines, line segments, and rays. • <b>Assessment limit:</b> Use vertical, adjacent, complementary, or supplementary angles	61	30-2, 33-1
c) Describe the relationship between the legs and hypotenuse of right triangles		
<b>C. Representation of Geometric Figures</b>		
<b>1. Represent plane geometric figures</b>		
a) Construct geometric figures using a variety of construction tools • <b>Assessment limit:</b> Construct a circle using a given line segment as the radius in whole number inches or centimeters	54, 55	
b) Construct geometric figures using a variety of construction tools • <b>Assessment limit:</b> Construct a line segment congruent to a given line segment		
c) Construct geometric figures using a variety of construction tools • <b>Assessment limit:</b> Construct a perpendicular bisector to a given line segment or a bisector of a given angle		
<b>D. Congruence and Similarity</b>		

	Student Book	Skill Builders
<b>1. Apply the properties of congruent polygons</b>		
a) Determine the congruent parts of polygons • <b>Assessment limit:</b> Use the length of corresponding sides or the measure of corresponding angles and whole numbers (0 - 1000)	60	32-1
b) Identify and describe similar polygons and their corresponding parts		46-1, 46-2
<b>E. Transformations</b>		
<b>1. Analyze a transformation on a coordinate plane</b>		
a) Identify, describe, and plot the results of one transformation on a coordinate plane <b>Assessment limit:</b> Identify or plot the result of one translation (horizontal or vertical), or rotation about a given point		
b) Identify and describe transformations that result in rotational and reflectional symmetry		32-1
<b>STANDARD 3: KNOWLEDGE OF MEASUREMENT</b>		
<b>Students will identify attribute, units, or systems of measurements to apply a variety of techniques, formulas, tools or technology for determining measurement.</b>		
<b>C. Applications in Measurement</b>		
<b>1. Estimate and apply measurement formulas</b>	69-76	38-1, 38-2, 39-1, 40-1 40-2, 41-1
a) Estimate and determine the area of quadrilaterals • <b>Assessment limit:</b> Use parallelograms or trapezoids and whole number dimensions (0 - 1000)	73, 74	
b) Determine the surface area of geometric solids • <b>Assessment limit:</b> Use rectangular prisms with whole number dimensions (0-1000)	T.G. p. 76	
c) Estimate pi using physical models	71	39-1
d) Estimate and determine the volume of a triangular prism.	T.G. p. 72	
<b>2. Analyze measurement relationships</b>		
a) Determine a missing dimension for a figure using a scale <b>*Assessment limit:</b> use a polygon with no more than 8 sides using whole numbers (0 - 1000)		46-1, 46-2
b) Determine the distance between 2 points using a drawing and a scale • <b>Assessment limit:</b> Use a scale of 1 cm - ?, inch = ?, or ___ inch = ?, and whole numbers (0 - 1000)	63, 64	
<b>STANDARD 4: KNOWLEDGE OF STATISTICS</b>		

	Student Book	Skill Builders
<b>Students will collect, organize, display, analyze or interpret data to make decisions or predictions.</b>		
<b>A. Data Displays</b>		
<b>1. Organize and display data</b>		
a) Organize and display data using back-to-back stem-and-leaf plots • <b>Assessment limit:</b> Use no more than 20 data points using whole numbers (0 - 999)		
b) Organize and display data to make circle graphs	80	47-3
<b>B. Data Analysis</b>		
<b>1. Analyze data</b>		
a) Recognize and analyze faulty interpretation or representation of data • <b>Assessment limit:</b> Use the choice of graphical display or the scale as leading to faulty interpretation or representation of data		
b) Determine the best choice of a data display • <b>Assessment limit:</b> Use a given data set		
c) Analyze misleading data representation		
<b>2. Describe a set of data</b>		
a) Analyze measures of central tendency to determine or apply mean, median, mode • <b>Assessment limit:</b> Use no more than 15 pieces of data for the mean or median; or 15 to 30 pieces of data for the mode, using whole numbers or decimals with no more than 2 decimal places (0 - 100)	17, 18	45-1
<b>STANDARD 5: KNOWLEDGE OF PROBABILITY</b>		
<b>Students will use experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.</b>		
<b>A. Sample Space</b>		
<b>1. Identify a sample space</b>		
a) Determine the number of outcomes • <b>Assessment limit:</b> Use no more than 3 independent events with a sample space of no more than 6 outcomes in each event.	77	47-1
<b>B. Theoretical Probability</b>		
<b>1. Determine the probability of an event comprised of no more than 2 independent events.</b>		

	Student Book	Skill Builders
a) Express the probability of an event as a fraction, a decimal, or a percent * <b>Assessment limit:</b> Use a sample space of no more than 35 outcomes and decimals with no more than 2 decimal places	77	47-1
<b>C. Experimental Probability</b>		
<b>1. Analyze the results of a survey or simulation</b>		
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 • <b>Assessment limit:</b> Use 25 or 50 results	77	47-1
<b>2. Conduct a probability experiment</b>		
	T.G. p. 77	
<b>3. Compare outcomes of theoretical probability with the results of experimental probability</b>		
<b>4. Describe the differences between theoretical and experimental probability</b>		
<b>STANDARD 6: KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATIONAL ARITHMETIC</b>		
Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.		
<b>A. Knowledge of Number and Place Value</b>		
<b>1. Apply knowledge of rational numbers and place value</b>		
a) Read, write, and represent whole numbers • <b>Assessment limit:</b> Use exponential notation with bases no more than 12 and exponents no more than 3 in standard form (0 - 1000)	1	4-1, 4-2
b) Express decimals using expanded form • <b>Assessment limit:</b> Use decimals with no more than 4 decimal places (0 - 100) Determine equivalent forms of rational numbers expressed as fractions, decimals, percents, and ratios • <b>Assessment limit:</b> Use positive rational numbers (0 - 100)	37, 49, 50	20-1, 26-1, 46-1
c) Determine equivalent forms of rational numbers expressed as fractions, decimals, percents, and ratios • <b>Assessment limit:</b> Use positive rational numbers (0 - 100)	24, 26, 37, 38, 46-48	11-1 to 11-3, 11-5, 20-1, 25-2

	Student Book	Skill Builders
d) Compare, order and describe rational numbers with or without relational symbols (<, >, =) <b>•Assessment limit:</b> Use no more than 4 fractions with denominators that are factors of 300 that are less than 101 (0 - 100), decimals with no more than 4 decimal places (0 - 100), percents (0 - 100) or integers (-100 to 100)	2, 25	11-4
e) Express whole numbers and decimals in scientific notation.		
<b>C. Number Computation</b>		
<b>1. Analyze number relations and compute</b>		
a) Add, subtract, multiply, and divide integers <b>•Assessment limit:</b> Use one operation (-100 to 100)	5, 7-11	1-1, 2-1, 2-2, 7-1, 8-1, 9-1, 10-1, 10-2
b) Add, subtract, and multiply positive fractions and mixed numbers <b>•Assessment limit:</b> Use no more than 2 operations and positive fractions or mixed numbers with denominators as factors of 300 less than 10 (0 - 200)	27-32	12-1 to 12-3, 13-1 to 13-3, 14-1, 14-2, 15-1
c) Divide fractions and mixed numbers	33	15-1, 16-1, 16-2, 17-1
d) Calculate powers of integers and square roots of perfect square whole numbers <b>•Assessment Limit:</b> Use exponents of no more than 3 for integers (-10 to 20) or square roots of perfect square whole numbers (0 - 100)	6	6-1, 6-2
e) Use the laws of exponents to simplify expressions <b>•Assessment limit:</b> Use the rules of exponents (power times power or power divided by power) with the same whole number base (0 - 100) and exponents (0 - 10)	6	6-1, 6-2
f) Identify and use the properties of addition and multiplication to simplify expressions <b>•Assessment limit:</b> Use the commutative property of addition or multiplication, associative property of addition or multiplication, or the identity property for one or zero with whole numbers (0 - 100)	5	2-1, 2-2
g) Determine percent of a number	46, 47, 52	25-1, 27-1, 27-2,
<b>2. Estimation</b>		
a) Determine approximate sums, difference, products, and quotients <b>•Assessment limit:</b> Use no more than 3 positive rational numbers (0-1000)	12, 34-36	18-1, 19-1, 19-2, 43-5, 43-6, 44-2
<b>3. Analyze ratios, proportions, or percents</b>		

	<b>Student Book</b>	<b>Skill Builders</b>
a) Determine equivalent ratios ● <b>Assessment limit:</b> Use denominators as factors of 300 but less than 101 and whole numbers (0 - 100)	49-51	26-1, 27-1, 46-1
b) Determine and use rate, unit rates, and percents as ratios in the context of a problem ● <b>Assessment limit:</b> Use whole numbers (0 - 1000)	50, 51	27-1, 46-1
c) Determine rate of increase and decrease, discounts, simple interest, commission, sales tax	31, 53	14-2, 28-1
d) Determine percent of a number	46, 47, 52	25-1, 27-1, 27-2
<b>STANDARD 7: PROCESSES OF MATHEMATICS</b>		
<b>Students demonstrate the processes of mathematics by making connections and applying reasoning to solve and to communicate their findings</b>		
<b>A. Problem Solving</b>		
<b>1. Apply a variety of concepts, processes, and skills to solve problems</b>		
a) Identify the question in the problem	13-16	43-1 to 43-4
b) Decide if enough information is present to solve the problem	13-16	43-1 to 43-4
c) Make a plan to solve a problem	13-16	43-1 to 43-4
d) Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	13-16	43-1 to 43-4
e) Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	13-16	43-1 to 43-4
f) Identify alternative ways to solve a problem	13, 14	43-1 to 43-4
g) Show that a problem might have multiple solutions or no solution		
h) Extend the solution of a problem to a new problem situation.	13	
<b>B. Reasoning</b>		
<b>1. Justify ideas or solutions with mathematical concepts or proofs</b>		
a) Use inductive or deductive reasoning	30 (one example only)	14-1
b) Make or test generalizations	T.G. p. 27	
c) Support or refute mathematical statements or solutions		
d) Use methods of proof, i.e., direct, indirect, paragraph, or contradiction		



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<b>C. Communication</b>		
<b>1. Present mathematical ideas using words, symbols, visual displays, or technology</b>		
a) Use multiple representations to express concepts or solutions	37, 49, 50	
b) Express mathematical ideas orally	Lesson plans throughout	
c) Explain mathematical ideas in written form	Journal Prompts throughout	
d) Express solutions using concrete materials	Manipulatives used throughout	
e) Express solutions using pictorial, tabular, graphical, or algebraic methods	78-80	47-1, 47-2
f) Explain solutions in written form	Journal Prompts throughout	
g) Ask questions about mathematical ideas or problems	Lesson plans throughout	
h) Give or use feedback to revise mathematical thinking	T.G. pp. 13-15	
<b>D. Connections</b>		
<b>1. Relate or apply mathematics within the discipline, to other disciplines, and to life</b>		
a) Identify mathematical concepts in relationship to other mathematical concepts	p. 7 & 8 related to p. 1	
b) Identify mathematical concepts in relationship to other disciplines	67, 68	35-1, 37-1
c) Identify mathematical concepts in relationship to life	13-15	43-1, 43-2
d) Use the relationship among mathematical concepts to learn other mathematical concepts.	Used throughout	