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MARYLAND MATHEMATICS VOLUNTARY CURRICULUM CORRELATED TO *MOVING WITH MATH®* EXTENSIONS GRADE 6

	Student Book	Skill Builders
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 numeric patterns and functions		
a) Identify and describe sequences represented by a physical model or in a function table	T.G. p. 60 61	
b) Interpret and write a rule for a one-operation (+, -, x, ÷) function table •Assessment limit: Use whole numbers or decimals with no more than two decimal places (0-10,000)	T.G. p. 60	
c) Complete a function table with a given two-operation rule •Assessment limit: Use the operations of (+, -, X), numbers no more than 10 in the rule, and whole numbers (0-50)		
B. Expressions, Equations, and Inequalities		
1. Write and evaluate expressions		
a) Write an algebraic expression to represent unknown quantities •Assessment limit: Use one unknown and one operation (+, -) with whole numbers, fractions with denominators as factors of 24, or decimals with no more than two decimal places (0-200)		45-5
b) Evaluate an algebraic expression •Assessment limit: Use one unknown and one operation (+, -) with whole numbers (0-200), fractions with denominators as factors of 24 (0-50), or decimals with no more than two decimal places (0-50)		
c) Evaluate numeric expressions using the order of operations •Assessment limit: Use no more than 4 operations (+, -, x, ÷ with no remainders) with or without 1 set of parentheses or a division bar and whole numbers (0-100)		
d) Represent algebraic expressions using physical models, manipulatives, and drawings		

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2. Identify, write, solve, and apply equations and inequalities		
a) Identify and write equations and inequalities to represent relationships •Assessment limit: Use a variable, the appropriate relational symbols ($>$, $<$, $=$) and one operational symbol ($+$, $-$, \times , \div) on either side and use fractions with denominators as factors of 4 (0-50) or decimals with no more than two decimal places (0-200)	4	5-1, 5-2, 45-5
b) Determine the unknown in a linear equation •Assessment limit: Use one operation ($+$, $-$, \times , \div with no remainders) and positive whole number coefficients using decimals with no more than two decimal places (0-100)		
c) Solve for the unknown in a one-step inequality		
d) identify or graph solutions of a one-step inequality on a number line		
e) Apply given formulas to a problem solving situation		
C. Numeric and Graphic Representations of Relationships		
1. Locate points on a number line and in a coordinate plane		
a) Represent rational numbers on a number line •Assessment limit: Use integers (-20 to 20)	35	21-1, 22-1
b) Graph ordered pairs in a coordinate plane •Assessment limit: Use no more than 3 ordered pairs of integers (-20 to 20) or no more than 3 ordered pairs of fractions/mixed numbers with denominators of 2 (-10 to 10)	61	11-1
c) Graph linear data from a function table	61	
2. Analyze linear relationships		
a) Identify and describe the change represented in a graph •Assessment limit: Identify increase, decrease, or no change		48-1
b) Translate the graph of a linear relationship onto a table of values that illustrates the type of change		
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. Plane Geometric Figures		
1. Analyze the properties of plane geometric figures		
a) Identify, describe, and label points, lines, rays, line segments, vertices, angles, and planes using correct symbolic notation	50-52	31-1, 32-1, 33-1, 37-1

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b) Identify and describe line segments ● Assessment limit: Use diagonal line segments	50	32-1
c) Identify and describe the parts of a circle ● Assessment limit: Use radius, diameter, or circumference	54	35-1
2. Analyze geometric relationships		
a) Compare and classify triangles by sides ● Assessment limit: use scalene, equilateral, or isosceles		
b) Compare and classify triangles by angle measure ● Assessment limit: Use equiangular, obtuse, acute, or right		
c) Determine a third angle measure of a triangle given two angle measures ● Assessment limit: Use the concept of the sum of angles in any triangle is 180 degrees without using a diagram		
d) Identify and compare the relationship between parts of a circle ● Assessment limit: Use radius, diameter or circumference ($\pi = 3.14$)	54	35-1
C. Representation of Geometric Figures		
1. Represent plane geometric figures		
a) Draw geometric figures using a variety of tools ● Assessment limit: Draw triangles given the measures of 2 sides and one angle or 2 angles and 1 side using whole numbers (0-20) and angle measures		
b) Identify, describe, or draw a polygon ● Assessment limit: Use the first quadrant given no more than six coordinates	53	34-1
c) Identify or describe angle relationships ● Assessment limit: Use perpendicular bisectors or angle bisectors	52	33-1
D. Congruence and Similarity		
1. Analyze congruent figures		
a) Identify and describe congruent polygons and their corresponding parts		
E. Transformations		
1. Analyze a transformation on a coordinate plane		
a) Plot the result of one transformation (translation, reflection, rotation) on a coordinate plane	53	34-1
STANDARD 3: KNOWLEDGE OF MEASUREMENT		
Students will identify attributes, units, or systems of measurements or apply a variety of techniques, formulas, tools or technology for determining measurement		

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B. Measurement tools		
1. Measure in customary and metric units		
a) Select and use appropriate tools and units ● Assessment limit: Measure length to the nearest 1/16 inch with a ruler	55	36-2
2. Measure angles in polygons		
C. Applications in Measurement		
1. Estimate and apply measurement formulas		
a) Estimate and determine the area of a polygon ● Assessment limit: Use triangles and whole number dimensions (0-1200)	57	38-2
b) Estimate and determine the volume of a rectangular prism ● Assessment limit: Use rectangular prisms and whole number dimensions (0-1000)	58	39-1, 39-2, 42-1
c) Estimate and determine the area of a composite figure ● Assessment limit: Use composite figures with no more than four polygons (triangles or rectangles) and whole number dimensions (0-500)	57	38-2
d) Determine missing dimensions of a quadrilateral given the perimeter length ● Assessment limit: Find length in a quadrilateral given the perimeter with whole number dimensions (0-200)		
e) Determine the missing dimension of rectangles ● Assessment limit: Find length in a square or rectangle given the area and whole number dimensions (0-200)		

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 frequency tables ● Assessment limit: Use no more than 5 categories or ranges of numbers and total frequencies of no more than 25	T.G.. p. 19	
b) Organize and display data to make stem-and-leaf plots ● Assessment limit: Use no more than 20 data points and whole numbers (0-99)		
c) Organize and display data using back-to-back stem-and-leaf plot		
B. Data Analysis		
1. Analyze data		

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a) Interpret frequency tables ● Assessment limit: Use no more than 5 categories or ranges of numbers and frequencies of no more than 25		
b) Read and analyze circle graphs ● Assessment limit: Use no more than 5 categories using data in whole numbers or percents (0-1000)		
c) Interpret data from a stem-and-leaf plot		
2. Describe a set of data		
a) Apply measures of central tendency (mean, median, mode)	18	46-1, 46-2
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		
B. Theoretical Probability		
1. Determine the probability of one simple event comprised of equally likely outcomes		
a) Express the probability of an event as a fraction		47-2
b) Express the probability of an event as a decimal ● Assessment limit: Use a sample space of 10k, 20, 25, or 50 outcomes		
c) Express the probability of an event as a percent		
C. Experimental Probability		
1. Analyze the results of a probability experiment		
a) Make predictions and express the experimental probability as a fraction, a decimal, or a percent ● Assessment limit: Use no more than 30 results in the sample space		47-2
2. Conduct a probability experiment		47-2
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 COMPUTATIONAL ARITHMETIC		
Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology		
A. Knowledge of Number and Place Value		

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1. Apply knowledge of rational numbers and place value		
a) Read, write, and represent whole numbers ● Assessment limit: Use exponential form with powers of 10 (0-100,000)	1	1-1
b) Read, write, and represent integers ● Assessment limit: Use integers (-100 to 100)	1	1-1
c) Identify and determine equivalent forms of fractions as decimals, as percents, and as ratios ● Assessment limit: Use proper fractions with denominators as factors of 100, decimals, percents, or ratios (0-1000)	22, 23, 39, 40	14-1, 25-1
d) Compare and order fractions, decimals alone or mixed together, with and without relational symbols (<, >, =) ● Assessment limit: Include no more than 4 fractions with denominators with factors of 100 or decimals with up to 2 decimal places (0-100)	25, 38	13-1, 24-1
e) Compare and order integers	2	2-1
B. Number Theory		
1. Apply number relationships		
a) Determine prime factorizations for whole numbers and express them using exponential form		
C. Number Computation		
1. Analyze number relations and compute		
a) Add and subtract fractions and mixed numbers and express answers in simplest form ● Assessment limit: Use proper fractions and denominators as factors of 60 (0-20)	27-31	15-1, 16-1, 16-2, 17-1, 17-2, 18-1
b) Multiply fractions and mixed numbers and express in simplest form ● Assessment limit: Use denominators as factors of 24 not including 24 (0-20)	32, 33, 48	19-1, 19-2, 45-3
c) Multiply decimals ● Assessment limit: Use a decimal with no more than 3 digits multiplied by a 2-digit decimal) (0-1000)	44, 45, 49	27-1, 27-2, 45-4
d) Divide decimals ● Assessment limit: Use a decimal with no more than 5 digits divided by a whole number with no more than 2 digits without annexing zeros (0-1000)	46, 47	28-1, 28-2, 29-1, 30-1
e) Determine a percent of a whole number ● Assessment limit: Use 10%, 20%, 25% or 50% of a whole number (0-1000)		
f) Simplify numeric expressions using the properties of addition and multiplication ● Assessment limit: Use the distributive property to simplify numeric expressions with whole numbers (0-1000)	4	5-1, 5-2

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2. Estimation		
a) Determine the approximate products and quotients of decimals •Assessment limit: Use a decimal with no more than a 3 digits multiplied by a 2-digit whole number, or the quotient of a decimal with no more than 4 digits in the dividend divided by a 2-digit whole number (0-1000)		
3. Analyze ratios, proportions, and percents	23, 39, 40	12-1
a) Represent ratios in a variety of forms	49	
b) Use ratios and unit rates to solve problems		
STANDARD 7: PROCESSES OF MATHEMATICS		
Students demonstrate the processes of mathematics by making connections and applying reasoning to solve and to communicate their findings.		
A. Problem Solving		
Apply a variety of concepts, processes, and skills to solve problems		
1. Identify the question in the problem		
a) Decide if enough information is present to solve the problem	7, 8, 14-17, 20, 21	11-1 to 11-3, 45-1, 45-2, 45-5, 49-1, 49-2, 50-1
b) Make a plan to solve a problem	7, 8, 14-17, 20, 21	11-1 to 11-3, 45-1, 45-2, 45-5, 49-1, 49-2, 50-1
c) Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	7, 8, 14-17, 20, 21	11-1 to 11-3, 45-1, 45-2, 45-5, 49-1, 49-2, 50-1
d) Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	7, 8, 14-17, 20, 21	11-1 to 11-3, 45-1, 45-2, 45-5, 49-1, 49-2, 50-1
e) Identify alternative ways to solve a problem	7, 8, 14-17, 20, 21	11-1 to 11-3, 45-1, 45-2, 45-5, 49-1, 49-2, 50-1
f) Show that a problem might have multiple solutions or no solution		
g) Extend the solution of a problem to a new problem situation	16	45-1
B. REASONING		

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Justify ideas or solutions with mathematical concepts or proofs		
1. Use inductive or deductive reasoning	T.G. p. 57	
a) Make or test generalizations	T. G. pp. 3, 9	
b) Support or refute mathematical statements or solutions	Journal Prompts through - p. 14 example	
c) Use methods of proof, i.e., direct, indirect, paragraph, or contradiction		
Communication		
Present mathematical ideas using words, symbols, visual displays, or technology		
1. Use multiple representations to express concepts or solutions	T.G. pp. 1, 2, 3, etc.	
a) Express mathematical ideas orally	Scripted questions in lesson plans	
b) Explain mathematical ideas in written form	Glossary (Masters 13a - 13c) Journal Prompts throughout	
c) Express solutions using concrete materials	Throughout	
d) Express solutions using pictorial, tabular, graphical, or algebraic methods	4, 9, 12, 13, 20, 21, etc.	
e) Explain solutions in written form	Journal Prompts throughout	
f) Ask questions about mathematical ideas or problems	Scripted questions in lesson plans	
g) Give or use feedback to revise mathematical thinking		
D. Connections		
Relate or apply mathematics within the discipline, to other disciplines, and to life		
1. Identify mathematical concepts in relationship to other mathematical concepts	1, 3, 6, 9, 12, etc.	
a) Identify mathematical concepts in relationship to other disciplines		47-1
b) Identify mathematical concepts in relationship to life	16, 17, 59, 60	45-1 to 45-4
c) Use the relationship among mathematical concepts to learn other mathematical concepts	20, 22, 35, 39, 40	29-1, 30-1, 43-1