Maryland
Curricular Standards
Mathematics - Grade 5
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Benchmark Number	*Benchmark* • *Instructional Target*	*Gourmet Resource*	*Taught*	*Tested*
	Knowledge of Algebra, Pattern, and Functions (1.0): MATHEMATICS Students will algebraically represent, model, analyze, and solve mathematical and real-world problems involving patterns and functional relationships. Rationale Algebra provides the means of operating with mathematical concepts symbolically. Through the application of algebra, students are able to interpret and represent relationships in order to solve mathematical and real-world problems. The knowledge of algebra enables all students to develop their ability to reason abstractly. Students will be able to demonstrate a knowledge of algebra, patterns, and functions in conjunction with the process standards: problem solving, communication, reasoning, and connections. By the end of Grade 5, students know and are able to:			
1.5.1	• *recognize describe, and extend patterns and functional relationships* - *analyze patterns and generalize rules illustrated in patterns* - *write the rule for a given function (one step) table*	**Appetizers 2 A, B, & C; Main Dish Objective 2 (Mathematical Relations) Lessons 1, 2, & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
1.5.2a	• *write numeric expressions in equivalent forms*	**Appetizers 1 A, B, C, & D; Main Dish Objective 1 (Number Concepts) Lessons 1, 2, 3, & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
1.5.2b	• *use grouping symbols to evaluate expressions*	**Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
1.5.3	• *solve for the unknown in an equation (one unknown, one operation) with whole number coefficients*	**Appetizers 2 A & B; Main Dish Objective 2 (Mathematical Relations) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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1.5.4a	• *represent relationships using graphs and tables*	**Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
1.5.4b	• *plot points on a coordinate plane*	**Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
2.5.1	• *compare one-, two-, and three-dimensional figures to one another and relate them to real-world objects* - *classify two- and three-dimensional figures by sides, angles, edges, vertices, and faces* - *identify parallelism and perpendicularity of geometric figures and real-world objects* - *identify and describe the attributes of solid figures*	**Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
2.5.2	• *identify, classify, measure, and draw acute,m right, and obtuse angles*	**Appetizers 3 E; Main Dish Objective 3 (Geometry) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
2.5.3	• *construct or draw geometric figures using tools and technology* - *draw, label, describe, and identify: points, lines, line segments, and rays* - *draw circles, squares, triangles, and rectangles given their dimensions*	**Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
2.5.4	• *identify transformations: translations, reflections, and rotations*	**Appetizers 3 C; Main Dish Objective 3 (Geometry) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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3.5.1	• *identify the appropriate measurable attribute to solve a problem*	**Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.2a	• *use protractors to measure angles*	**Appetizers 3 E**		
3.5.2b	• *use standard units (yards, meters, degrees, and other units) to measure objects*	**Appetizers 4 A, B, & C; Main Dish Objective 4 (Measurement) Lessons 1, 2, & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.3a	• *estimate and determine the perimeter of polygons and real-world objects*	**Appetizers 4 D; 11 B; Main Dish Objectives 4 (Measurement) Lesson 4; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.3b	• *estimate and determine the area of rectangles and estimate the area within any closed figure*	**Appetizers 4 D & E; 11 B; Main Dish Objectives 4 (Measurement) Lessons 4 & 5; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.3c	• *estimate and determine the volume of a rectangular prism using manipulatives and formulas*	**Appetizers 4 E; 11 B; Main Dish Objectives 4 (Measurement) Lesson 5; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.3d	• *estimate and determine elapsed time*	**Appetizers 4 A; Main Dish Objective 4 (Measurement) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
3.5.3e	• *determine and use equivalent units within the same system*	**Appetizers 4 A, B, & C; Main Dish Objective 4 (Measurement) Lessons 1, 2, & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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3.5.4	• *use perimeter, area, volume, and elapsed time to solve problems*	**Appetizers 4 A, D, E, & F; 11 B; Main Dish Objectives 4 (Measurement) Lessons 1, 4, 5, & 6; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
4.5.1	• *gather relevant data and compare data sets to answer a question*	**Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
4.5.2	• *organize and display data using stem and leaf plots, line plots, and line graphs*	**Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
4.5.3	• *analyze and interpret stem and leaf plots, circle graphs, line plots, and line graphs*	**Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
4.5.4	• *find the mean, median, mode, and range of data set and explain how these measures are different*	**Appetizers 5 E; Main Dish Objective 5 (Probability/Statistics) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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5.5.1	• *list all possible outcomes of an event with a limited number of possible results*	**Appetizers 5 A & C; Main Dish Objective 5 (Probability/Statistics) Lessons 1 & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
5.5.2	• *find the probability of an event with equally likely outcomes and express as a fraction or ratio*	**Appetizers 5 A & D; Main Dish Objectives 5 (Probability/Statistics) Lessons 1 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
5.5.3	• *conduct an experiment and make a prediction based on the outcomes of the experiment*	**Appetizers 5 A; Main Dish Objective 5 (Probability/Statistics) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.1	• *read, write, and represent simple fractions, decimals, and percents using symbols, words, and models* - *read and write standard form and expanded notation for numbers through millions*	**Appetizers 1 A, B, C, & D; 2 D; Main Dish Objectives 1 (Number Concepts) Lessons 1, 2, 3, & 4; 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.2a	• *compare and order decimals to the nearest thousandth and describe them using place value concepts*	**Appetizers 1 B; Main Dish Objective 1 (Number Concepts) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.2b	• *compare and order fractions in equivalent forms including improper fractions and mixed numbers with like and unlike denominators*	**Appetizers 1 D; 6 G; Main Dish Objectives 1 (Number Concepts) Lesson 4; 6 (Addition) Lesson 7; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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6.5.3	• *use number theory concepts of primes, factors, multiples, and rules of divisibility to show number relationships*	**Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.4	• *demonstrate proficiency with multiplication and division facts*	**Appetizers 8 A; 9 A; Main Dish Objectives 8 (Multiplication) Lesson 1; 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.5a	• *multiply and divide whole numbers and interpret remainders*	**Appetizers 8 A, B, & C; 9 A; Main Dish Objectives 8 (Multiplication) Lessons 1, 2, & 3; 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.5b	• *add and subtract fractions, mixed numbers and decimals and express answers in simplest form*	**Appetizers 6 C, D, E, F, & G; 7 B; 11 A; Main Dish Objectives 6 (Addition) Lessons 3, 4, 5, 6, & 7; 7 (Subtraction) Lesson 2; 11 (Problem Solving) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.5c	• *multiply and divide decimals by whole numbers*	**Appetizers 8 D; 9 A; Main Dish Objectives 8 (Multiplication) Lesson 4; 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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6.5.6	• *use mathematical properties to solve problems* - *explain and apply number relationships using the mathematical properties of operations, including associative (addition and multiplication) and multiplicative inverse* - *simplify numerical expressions involving addition, subtraction, multiplication, division, and parentheses*	**Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		
6.5.7	• *apply strategies to solve problems with fractions and decimals* - *use estimation to solve problems with fractions and decimals* - *identify and describe the relationship among fractions, decimals, and percents* - *represent fractions, decimals, and percents in equivalent forms* - *compute percentages of 10, 20, 25, 50, and 100 percent of a number*	**Appetizers 1 B, D, & E; 6 D, E, & F; 7 B & C; 8 D; 10 B & F; 11 A; Main Dish Objectives 1 (Number Concepts) Lessons 2, 4, & 5; 6 (Addition) Lessons 4, 5, & 6; 7 (Subtraction) Lessons 2 & 3; 8 (Multiplication) Lesson 4; 10 (Estimation) Lessons 2 & 6; 11 (Problem Solving) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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7.5.1	• *apply a wide variety of mathematical concepts, procedures, and skills to solve a broad range of problems* - *use information to identify and define the question(s) within a problem* - *make a plane and decide what information is needed or missing and steps needed to solve the problem* - *choose the appropriate operation(s) for a given problem situation* - *create or select and then apply appropriate problem-solving strategies to solve a problem from visual (drawing, picture, graph), numerical (guess and check, look for a pattern), and symbolic (write an equation) perspectives* - *analyze multi-step problem solving situations* - *organize, interpret, and use relevant information* - *select and use appropriate tools and technology* - *persevere through to a solution* - *verify the conclusion based on the data and the processes used* - *communicate the conclusion with appropriate mathematical justification* - *show that no solution or multiple solutions may exist* - *ascribe a meaning to the solution in the context of the problem* - *identify alternative ways to find a solution* - *apply what was learned to a new and/or more complex problem*	**All Appetizers; All Main Dish Objectives; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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8.5.1	• *demonstrate the ability to organize and consolidate mathematical thinking in order to analyze and use information, and present ideas with words, symbols, visual displays, and technology* - *discuss, read, listen, and observe to obtain mathematical information from a variety of sources* - *use multiple representations to express mathematical concepts and solutions* - *represent problem situations and express their solutions using concrete, pictorial, tabular, graphical, and algebraic methods* - *clarify meaning by asking questions, supporting solutions with evidence, and explaining mathematical ideas in oral and written forms* - *use mathematical language and symbolism appropriately* - *give and use feedback to revise mathematical thinking/presentations/solutions*	**All Appetizers; All Main Dish Objectives; Applications; Final Tests; Reasonableness Problems; Journal Topics**		

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9.5.1	• *demonstrate the ability to reason mathematically, using inductive and deductive reasoning, and evaluate mathematical situations* - *justify why an answer or approach to a problem is reasonable* - *make and test generalizations based upon investigation or observation* - *make predictions or draw conclusions from available information* - *analyze statements and provide examples which support or refute them* - *follow and judge the validity of arguments by applying inductive and deductive thinking* - *use methods of proof including direct, indirect, paragraph, and/or contradiction* - *use supporting data to explain why a chosen method used and a solution are mathematically correct* - *analyze mathematical situations using manipulatives, technology, patterns, relationships, spatial proportional reasoning* - *use if…then statements to formulate valid arguments or proofs* - *use manipulatives to model and justify solutions*	**All Appetizers; All Main Dish Objectives; Applications; Final Tests; Reasonableness Problems; Journal Topics**		