

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 4**

Anchor	Fourth Grade Expectations	Every fourth grader should be able to:	Text pages or supplementary materials	Date Assessed
4A. Numbers and Operations				
1.	Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems	a. Use models and/or words to represent quantities as decimals, fractions, or mixed numbers.	1. Read, write, and identify whole numbers to the millions place.	
			2. Identify the place value of each digit for numerals through one million. Match amount to an appropriate model. (e.g., base ten blocks)	
			3. Express 5-digit whole numbers in standard, expanded, or word form.	
			4. Read, write, and model decimals to the hundredths using money, hundred squares, etc. as an example.	
			5. Create, match models, and find approximate location on a number line for common fractions, mixed numbers, and decimals to hundredths.	
		b. Compare quantities and magnitudes of numbers.	1. Compare and/or order whole numbers to one million.	
			2. Compare and/or order decimals through hundredths place and amounts of money to \$100 using =, >, <, (Limit: 4 numbers to a set being ordered.)	
			3. Compare and/or order fractions with like and unlike denominators up to 12ths using fractional models and/or a number line.	
		c. Develop and/or apply number theory concepts to represent numbers in various ways.	1. Find, identify, and list factors of a given number through factors of 10.	
			2. Find, identify, and list multiples of a number for multiples not exceeding 100.	
		d. Demonstrate an understanding of fractions as part of a whole or sent and as a location on a number line.	1. Express fractions with a denominator of 10 as an equivalent fraction with a denominator of 100.	
			2. Understand fractions with different denominators are equivalent if they represent the same amount or same point on a number line.	
			3. Recognize fractions as being =, >, or < than another fractions.	

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4A. Numbers and Operations				
2.	Understand meanings of operations, use operations and understand how they relate to each other.	a. Apply the appropriate operation to solve word or computation problems.	1. Choose the correct operation(s) to solve problems including word problems involving addition, subtraction, multiplication, and simple division of whole numbers: explain the solution. Limit to two-step problems.	
			2. Solve problems (word or computation) involving addition, subtraction, or multiplication with decimals through tenths (money to the cent) and explain the solution. Limit to a two-step problem; in multiplication, one factor must be a single-digit whole number.	
		b. Understand and use properties of operations.	1. Complete equations by using the commutative, associative, distributive properties; identify property of addition and multiplication; and zero property of multiplication.	
3.	Compute accurately and fluently and make reasonable estimates	a. Compute accurately and fluently without the use of a calculator for computation and word problems.	1. Master mental math fluency for basic addition, subtraction, multiplication, and division facts.	
			2. Multiply whole numbers through 3 digits by a two-digit multiplier.	
			3. Divide any whole number by a one-digit divisor.	
			4. Solve addition and subtraction problems involving decimals through hundredths.	
			5. Solve addition and subtraction problems with fractions with like denominators and no simplifying necessary.	
		b. Apply rounding and/or estimation strategies to solve problems.	1. Round whole numbers through 100,000 to the nearest ten, hundred, thousand, ten thousand, hundred thousand; round amounts of money to the nearest dollar.	
			2. Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through 1000,000. (limit multiplication to 2-digits X 1-digit or powers of 10).	
3. Use estimation to determine whether an answer is reasonable.				

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4B. Measurement					
1.	Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.	a. Determine, calculate time and elapsed time.	1. Match analog time to digital time.		
			2. Read time as the number of minutes before or after the hour, and identify as A.M. or P.M.		
			3. Calculate elapsed time in hours and minutes, in days, weeks, months.		
			4. Determine the beginning or ending time for an event when elapsed time is given.		
	2.	Apply appropriate techniques, tools, and formulas to determine measurements.	b. Convert linear measurements within the same system.	1. Convert linear measurements within the same system of measurement: • Metrics using mm, cm, m, km • Customary using in., ft., yd.	
2.	Apply appropriate techniques, tools, and formulas to determine measurements.	a. Estimate and/or determine the measurement of figures and objects using the appropriate tools and/or attributes.	1. Use a ruler to measure to the nearest $\frac{1}{4}$ inch or nearest millimeter.		
			2. Distinguish between area and perimeter of a square of rectangle and when each is appropriate to use.		
			3. Find the perimeter of a square when one side is given and a rectangle when the length and width are given. (same units)		
			4. Make reasonable estimates of weights, lengths, and capacities of familiar objects.		
			5. Estimate the area of an irregularly shaped figure on a grid.		

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4C. Geometry				
1.	Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships.	a. Identify and/or describe the basic properties of two- or three-dimensional figures.	1. Identify, classify, compare two-dimensional figures. (circle, triangle, square, parallelogram, trapezoid, rhombus, rectangle, pentagon, hexagon, octagon)	
			2. Classify three-dimensional figures (cube, rectangular prism, and pyramid) and/or identify the characteristics (faces, edges, vertices.)	
			3. Draw and identify right triangles.	
		b. Represent and/or use properties or relationships of points, lines, line segments, rays, and angles.	1. Identify, describe, and draw representations for points, lines, line segments, or rays.	
			2. Identify, describe and draw representations for parallel and perpendicular lines.	
			3. Classify, describe, and compare angles as acute, right, or obtuse.	
2.	Identify and/or use the properties of a circle.	a. Identify, describe, and define elements of a circle.	1. Identify, describe, and define diameter, radius, circumference, degree.	
3.	Identify and/or apply concepts of transformation or symmetry.	a. Apply the concepts of reflection and symmetry.	1. Identify and draw congruent figures and angles.	
			2. Identify and draw the reflection (flip) of a two-dimensional figure.	
			3. Explore and identify lines of symmetry.	
4.	Locate points or describe relationships using the coordinate plane.	a. Locate points on a simple grid.	1. Match or plot an ordered pair of numbers with the appropriate point (or object) on a simple grid.	

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4D. Algebraic Concepts				
1.	Demonstrate an understanding of patterns, relations, and functions.	a. Recognize, describe, extend, create, and/or replicate a variety of patterns.	1. Identify the rule for a numerical or geometric pattern.	
			2. Extend or find a missing element in a numerical (whole numbers only) or geometric pattern of at least three repetitions.	
			3. Create or continue a numerical or geometric pattern showing three repetitions.	
		b. Apply simple function rules.	1. Determine the missing elements in a function table given the rule.	
2. Determine the rule for a function given completed input/output table.				
2.	Represent and/or analyze mathematical situations using numbers, symbols, words, tables, and/or graphs.	a. Create/model expressions, equalities or inequalities using numbers and symbols.	1. Write a simple equation for a word problem or match the situation in a word problem with appropriate expressions or equations.	
			b. Determine the missing number or symbol in a number sentence.	1. Solve for a missing number in a simple equation using various strategies. (estimation, guess & check, etc.)
		2. Identify the missing symbol that makes a number sentence true.		

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4E. Data Analysis and Probability				
1.	Formulate or answer questions that can be addressed with data and/or organize, display, interpret, or analyze data.	a. Interpret data shown on tables, charts, line graphs, or pictographs.	1. Describe, interpret, and/or answer questions based on data shown in tables, charts, bar graphs, or pictographs.	
		b. Collect, organize, display, and analyze data to answer questions.	1. Collect, organize and display data using a table, bar graph, or pictograph or line plot.	
			2. Translate information from one type of display to another. (table, tally chart, bar graph, pictograph, or line plot)	
2.	Select and/or use appropriate statistical methods to analyze data.	a. Describe and analyze data using grade appropriate vocabulary.	1. Determine the mean (average) for a given set of data. Limit the number of entries to six and the mean to a whole number.	
			2. Identify the mode for a gen set of data.	
			3. Identify the median for a set of data with an odd number of elements.	
3.	Understand and/or apply basic concepts of probability or outcomes.	a. Formulate predictions and/or draw conclusions based on data displays or probability.	1. Conduct probability experiments and/or predict their outcomes based on data from charts graphs or tallies.	
			2. Explain why some outcomes are certain, more likely, less likely, equally likely or impossible based on data or chance.	
		b. Find all possible combinations or arrangements involving two variables.	1. Determine or model all possible combinations or arrangements involving two variables and no more than 8 possible arrangements (e.g., Use a tree diagram to determine all combinations of 4 shirts and 2 trousers.)	