4th Grade Math **Curriculum Focal Points**	**Grades 3, 4, 5** **Strategies**	Address these Focal Points in contexts of the Process Standards: problem solving, reasoning, communication, making connections, and designing and analyzing representations
Number and Operations: Develop quick recall of multiplication facts and related division facts & fluency with whole number multiplication. • Apply understandings of models for multiplication, (i.e., equal-sized groups, arrays, area models, etc.) place value, properties of operations as they develop, discuss and use efficient, accurate, and generalizable methods to multiply multidigit whole numbers. **Number and Operations and Algebra:** Develop an understanding of decimals, including the connections between fractions and decimals. • Relate understanding of fractions to reading and writing decimals that are greater than or less than 1, identifying equivalent decimals, comparing and ordering decimals, and estimating decimal or fractional amounts in problem solving.	**<u>Number and Operations</u>** 4.a (3) Understand the place value structure of the base-ten number system and be able to represent and compare whole numbers up to 1,000,000 and decimals . 4.b (3, 5) Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (e.g. fact family [8, 4, 2]) 4.c (3) Use models, benchmarks, and equivalent forms to judge the size of fractions. 4.d (3) Recognize and generate (convert) equivalent forms of commonly used fractions and decimals. Recognize the relationship of fractions, decimals, and percents. 4.e (3, 5) Understand the effects of multiplying and dividing whole numbers. 4.f (3, 5) Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems. 4.g (3, 5) Understand and use properties of operations, such as the distributive property of multiplication over addition. 4.h (3, 5) Develop fluency with basic number combinations for multiplication and division, and use these combinations to mentally compute related problems, such as 40 x 50. 4.i (3, 5) Develop fluency in adding, subtracting, multiplying, and dividing whole numbers.	

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	Numbers and Operations (cont'd) 4.j (3, 5) Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results. 4.k (3, 5) Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tool. **Algebra** 4.1 (3, 5) Describe, extend, and make generalizations about geometric and numeric patterns.. 4.m (3, 5) Represent and analyze patterns and functions, using words, tables, and graphs. 4.n (3, 5) Identify such properties as commutative, associative, and distributive and use them to compute with whole numbers. 4.o (3, 5) Express mathematical relationships using equations. 4.p (3, 5) Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions	

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3. Measurement: Develop and understanding of area and determining the area of two-dimensional shapes. • Select appropriate units, strategies, and tools for solving problems that involve estimating or measuring area.	**<u>Geometry</u>** 4.q (3, 5) Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes. 4.r (3, 5) Investigate, describe, and reason about the results of subdividing, combining, and transforming shapes. 4.s (3) Explore congruence and similarity. 4.t Describe location and movement using common language and geometric vocabulary. 4.u Predict and describe the results of sliding, flipping, and turning two-dimensional shapes. 4.v Describe a motion or a series of motions that will show that two shapes are congruent. 4.w (5) Identify and describe line and rotational symmetry in two- and three-dimensional shapes and designs. 4.x (3, 5) Use geometric models to solve problems in other areas of mathematics, such as number and measurement. 4.y (3, 5) Recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.	

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	Measurement 4.z (3, 5) Understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute. 4.aa (5) Understand the need for measuring with standard units and become familiar with standard units in the customary and metric systems. 4.bb (3, 5) Carry out simple unit conversions, such as from centimeters to meters, within a system of measurement. 4.cc (3) Explore what happens to measurements of a two-dimensional shape such as its perimeter and area when the shape is changed in some way. 4.dd (3, 5) Develop strategies for estimating the perimeters, areas, and volumes or irregular shapes. 4.ee (3, 5) Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles. 4.ff (3, 5) Select and use benchmarks to estimate measurements. 4.gg Develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms.	

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	<u>Data Analysis and Probability</u> 4.hh (3, 5) Design investigations to address a question and consider how data-collection methods affect the nature of the data set. 4.ii (3, 5) Collect data using observations, surveys, and experiments. 4.jj (3, 5) Represent data using tables and graphs such as line plots, bar graphs, and line graphs. 4.kk (3, 5) Describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed – mean & media. 4.ll (3, 5) Compare different representations of the same data and evaluate how well each representation shows important aspects of the data. 4.mm (3, 5) Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.	