## Grades 3-4 Math Curriculum Overview - Adapted from Fall River Diocesan Curriculum Guidelines

PLEASE NOTE: *These learner outcomes are presented and/or reinforced over a two-year period in grades 3 and 4. It is expected that students (by the end of grade 4) will be able to do the following:*

| **Number Sense and Operations** | |
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| 1) | Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers. |
| 2) | Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation (e.g., 853=8 x 100 + 5 x 10 + 3). |
| 3) | Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line. |
| 4) | Select, use, and explain models to relate common fractions and mixed numbers (1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12, and 1½), find equivalent fractions, mixed numbers, and decimals, and order fractions. |
| 5) | Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths and tenths). |
| 6) | Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths. |
| 7) | Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems. |
| 8) | Select, use, and explain various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations. |
| 9) | Select, use, and explain the commutative, associative, and identity properties of operations on whole numbers in problem situations (e.g., 37 x 46 = 46 x 37, (5 x 7) x 2 = 5 x (7 x 2)). |
| 10) | Select and use appropriate operations (addition, subtraction, multiplication, division) to solve problems, including those involving money. |
| 11) | Know multiplication facts through 12 x 12 and related division facts. Use these facts to solve related multiplication problems and compute related problems (e.g., 3 x 5 is related to 30 x 50, 300 x 5, and 30 x 500). |
| 12) | Add and subtract (up to five-digit numbers) and multiply (up to three digits by two digits) accurately and efficiently. |
| 13) | Divide up to a three-digit whole number with a single-digit divisor (with or without remainders) accurately and efficiently. |
| 14) | Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction (up to five-digit numbers), and multiplication (up to three digits by two digits). |
| 15) | Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders). |
| 16) | Round whole numbers through 100,000 to the nearest 10, 100, 1000. 10,000, and 100,000. |
| 17) | Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to $1000, and to judge the reasonableness of the answer. |
| 18) | Use concrete objects and visual models to add and subtract common fractions. |

| **Patterns, Relations, and Algebra** | |
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| **1)** | Create, describe, extend and explain symbolic (geometric) and numeric patterns, including multiplication patterns like 3, 30,300,3000… |
| **2)** | Use symbol and letter variables (e.g. Δ. X) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <,>). |
| 3) | Determine values of variables in simple equations (e.g. 4106 – Δ =37, 5 = μ + 3). |
| 4) | Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships. |
| 5) | Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g. one inch represents five miles, so two inches represent ten miles). |
| 6) | Determine how change in one variable relates to a change in a second variable (e.g., input-output tables). |

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| Geometry | |
|---|---|
| 1) | Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional geometric shapes. |
| 2) | Describe, model, draw, compare, and classify two-and three-dimensional shapes (e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids). |
| 3) | Recognize similar figures. |
| 4) | Identify angles as acute, right, or obtuse. |
| 5) | Describe and draw intersecting, parallel, and perpendicular lines. |
| 6) | Using ordered pairs of numbers and/or letters, graph, locate, identify points, and describe paths (first quadrant). |
| 7) | Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent. |
| 8) | Identify and describe line symmetry in two-dimensional shapes. |
| 9) | Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes. |

| Measurement | |
|---|---|
| 1) | Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute. |
| 2) | Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.). |
| 3) | Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since…) and using a calendar (e.g., days since…). |
| 4) | Estimate and find area and perimeter of a rectangle, triangle, or irregular shape using diagrams, models, and grids or by measuring. |
| 5) | Identify and use appropriate metric and English units and tools (e.g., ruler, angle ruler, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature. |

| Data Analysis, Statistics, and Probability | |
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| 1) | Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data. |
| 2) | Match representations of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data |
| 3) | Construct, draw conclusions, and make predictions of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies. |
| 4) | Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles). |
| 5) | List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?). |
| 6) | Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners or coins. |