



Archdiocese of Newark Catholic Schools

Curriculum Mapping

Curriculum mapping is a process that helps schools and districts/dioceses determine the “agreed-upon” learning for all students. Curriculum mapping was undertaken in the Archdiocese of Newark in order to ensure that a consistent, clearly articulated curriculum infused with Gospel values is being provided to all students in our schools. The curriculum maps for the Catholic schools of the Archdiocese of Newark identify the content to be taught and skills to be mastered at each grade level.

The expertise and experience of the educators within our schools is the main source for determining the content and skills students will be expected to master. The Archdiocesan curriculum maps are developed through a collaborative process which involves individual teacher contributions, small group sessions and larger group meetings. Relevant educational standards, including those proposed by content area experts, the New Jersey Core Curriculum Content Standards, and the Common Core State Standards, are used as a resource in the curriculum mapping process. The resulting consensus maps reflect the collective thinking of classroom teachers based on their observation of student learning and their knowledge of educational practice and research. The Archdiocesan curriculum maps include teacher generated ideas for the infusion of Gospel values and faith connection activities.

While the curriculum maps clearly articulate the expected learning for all students, individual teachers have the flexibility to teach the content and skills in their own manner by:

- ◆ utilizing their own particular strengths and teaching style
- ◆ addressing the varying learning needs of their students
- ◆ determining the order in which the content and skills are presented within a marking period
- ◆ including additional content and skills once students have met the learning expectations identified in the curriculum map

Administrators at all levels will maintain the responsibility to ensure that teachers are following the curriculum maps and that appropriate teaching is being conducted. This will be done through a combination of classroom observations, faculty meetings, professional development opportunities and teacher evaluations, as well as by using various measurement tools, including but not limited to in-class and standardized testing. The Archdiocesan curriculum maps will help ensure the academic excellence that is integral to the mission of our Catholic schools and will provide educators and parents with a clear understanding of the learning expectations at each grade level.

Archdiocese of Newark Catholic Schools
Curriculum Map for Mathematics
Grade 4

First Trimester: September-November

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>Example: Recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i></p> <p>4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p> <p>4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.</p> <p>4.NBT.S1 Locate, order, and compare whole numbers on a number line.</p> <p>4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual model).</p>	<p>Place Value and Number Sense: Millions – Thousandths</p>	<p>Identify and locate place value and periods from millions – thousandth.</p> <p>Read and write numbers up to hundred millions in word form, standard form, and expanded form.</p> <p>Apply rounding rules to round whole numbers and decimals to a given place.</p> <p>Recognize and explore visual or gross estimation.</p> <p>Compare and order whole numbers and decimals with and without a number line.</p>	<p>Student learning will be assessed on a continual basis using various types of formal and informal assessments. A list of possible assessment methods is provided below:</p> <p>Quizzes Tests Projects Review of Student Work Apps/Software Manipulatives Verbal Response Graphs Art Work/Illustrations Math Games Drills Exit Slips Collaborative Work STEM Projects/Labs Benchmark Tasks Response Systems Homework Running Records</p>	<p>Gospel values should be evident in the classroom environment and referenced and reinforced throughout the curriculum.</p> <p>Gospel Values Community Compassion Faith in God Forgiveness Hope Justice Love Peace Respect For Life Service Simplicity Truth</p> <p>Included in this column are suggestions for making faith connections within the Math classroom. These suggestions were submitted by teachers.</p>

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Curriculum Map for Mathematics
Grade 4**

First Trimester: September-November

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.OA.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.</p> <p>4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.</p>	<p>Addition: Millions – Thousandths</p>	<p>Utilize addition properties and strategies: Commutative Associative Identity</p> <p>Demonstrate fluency with math facts of addition.</p> <p>Apply place value rules when aligning equations involving multi-digit addends.</p> <p>Compute addition with and without regrouping.</p>	<p>Student created word problems</p> <p>Problem of the Day</p> <p>Online Math Programs</p>	<p>Calculate costs of purchasing the items needed to prepare a meal for a family in need.</p>

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First Trimester: September-November

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
	<p>Subtraction; Millions – Thousandths</p>	<p>Recognize patterns and functions within a series of numbers and/or equations.</p> <p>Utilize subtraction properties and strategies.</p> <p>Demonstrate fluency with math facts of subtraction.</p> <p>Apply place value rules when aligning equations involving multi-digit minuends and subtrahends.</p> <p>Compute subtraction with and without regrouping.</p>		

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<p>4.OA.1 Interpret a multiplication equation as a comparison (e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.</p> <p>4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem) distinguishing multiplicative comparison from additive comparison.</p> <p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p> <p>4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. All students will gain familiarity with factors and multiples.</p>	<p>Multiplication</p>	<p>Utilize multiplication properties and strategies:</p> <ul style="list-style-type: none"> Commutative Associate Identity Zero Distributive <p>Demonstrate fluency within math facts of multiplication with factors of 0 – 12.</p> <p>Create models and arrays to find products.</p> <p>Recognize patterns and functions within a series of numbers and/or equations.</p> <p>Solve multiplication problems with various strategies.</p> <p>Apply place value rules when multiplying multi-digit numbers.</p>		

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Grade 4**

First Trimester: September-November

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.OA.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>Problem Solving Skills/Strategies</p>	<p>Analyze word problems to identify key words, knowns and unknowns.</p> <p>Determine and apply appropriate operations and strategies needed to solve given word problems.</p> <p>List problem solving strategies.</p> <p>Apply the four operations to solve problems involving measurement.</p>		<p>Have students write a story about donating cookies to a homeless shelter. Describe the steps including determining the number of cookies needed; shopping for best buy; and calculating the cost of the cookies to be purchased.</p> <p>Develop problem solving scenarios that incorporate real-world situations and foster awareness of social justice themes.</p>

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Second Trimester: December-February

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<p>4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p> <p>4.OA.S1 Develop and use strategies to recognize divisibility by 2, 3, 4, 5, 6, 9 and 10.</p> <p>4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.</p>	<p>Division & Divisibility Rules</p>	<p>Recognize the relationship between multiplication and division.</p> <p>Recognize basic facts within compatible numbers</p> <p>Explain and apply divisibility rules of 2, 3, 4, 5, 6, 9, and 10.</p> <p>Create and extend number patterns.</p> <p>Calculate the quotient with and without remainders with up to 4-digit dividend and 1-digit divisors.</p> <p>Recognize that zero is used to represent place value.</p> <p>Use models and arrays to find quotients and remainders.</p> <p>Apply place value rules when dividing multi-digit numbers.</p>	<p>Response Systems</p> <p>Homework</p> <p>Running Records</p> <p>Student created word problems</p> <p>Problem of the Day</p> <p>Online Math Programs</p>	<p>Collect clothing for a shelter and have the children sort and count the number of different garments. Display the information in a graph.</p>

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Second Trimester: December-February

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.NF.S1 Identify the numerator and denominator of a fraction and understand what each refers to.</p> <p>4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.</p> <p>4.NF.2 Compare two fractions with different numerators and different denominators (e.g., by creating common denominators and renaming the numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$). Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual fraction model).</p>	<p>Fractions & Mixed Numbers</p>	<p>Identify the numerator and denominator of a fraction.</p> <p>Rename fractions as equivalent fractions including multiples of 10 with and without models.</p> <p>Order, compare, and locate (on a number line) fractions with unlike denominators using multiplication and visual models.</p> <p>Estimate fractions by telling whether a fraction is closer to 0, $\frac{1}{2}$ or 1.</p> <p>Generate equivalent fractions by multiplying and/or dividing.</p>		<p>Determine the fractional part of each day students are involved in prayer.</p>

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<p>4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.</p> <ul style="list-style-type: none"> a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). c. Add and subtract mixed numbers with like denominators (e.g., by replacing each mixed number with an equivalent fraction) and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators (e.g., by using visual fraction models and equations to represent the problem). 		<p>Decompose a fraction into a sum of two fractions.</p> <p>Simplify fractions.</p> <p>Read and write mixed numbers.</p> <p>Rename improper fractions as whole numbers or mixed numbers.</p> <p>Write whole numbers as fractions.</p> <p>Compare improper fractions as mixed numbers.</p> <p>Add and subtract fractions and mixed numbers with like and unlike denominators.</p>		

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<p>4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p> <p>c. Solve word problems involving multiplication of a fraction by a whole number (e.g., by using visual fraction models and equations to represent the problem).</p> <p>4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p> <p>4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <p>a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the</p>	<p>Geometry: Angles Lines</p>	<p>Solve word problems involving addition, subtraction, and multiplication of fractions.</p> <p>Find fractional parts of a number</p> <p>Identify, construct, and describe lines, line segments, and angles.</p> <p>Locate points on a line.</p> <p>Recognize angles as degrees of a circle constructed by connected rays.</p> <p>Determine the measure of an angle using a protractor.</p>		

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<p>fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.</p> <p>b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p> <p>4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p>4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p>4.G.S1 Identify, compare, and analyze attributes of two-dimensional and three-dimensional geometric shapes using mathematical vocabulary.</p>	<p>Polygons</p>	<p>Identify, describe, construct and analyze 2-dimensional and 3-dimensional figures</p> <p>Identify and classify polygons.</p>		<p>Take students to Church and have them make a list of the geometric shapes they see and where they see the shapes.</p> <p>Stained Glass Window Activity: Students will use geometric shapes to design a stained glass window with a religious theme or symbol. Once the design is complete, students will then design a key for coloring purposes using mathematical equations.</p>

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Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.</p> <p>4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.</p>	<p>Perimeter/Area/Volume</p> <p>Patterns</p>	<p>Apply transformations such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent</p> <p>Calculate the perimeter of polygons.</p> <p>Calculate the area and volume of rectangles.</p> <p>Generate or complete a shape pattern that follows a given rule.</p>		<p>Discuss shapes and patterns in God’s creation. Talk about the patterns in the snowflakes and honeycombs of a beehive. This shows the intricacy and magnificence of God’s work. Discuss examples of congruence and symmetry in nature.</p>

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<p>4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; l, ml; yd., ft, in; lb, oz; gal, qt, pt, c; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.</p> <p>4.MD.S1 Develop strategies for estimating measurements and determine when estimation is appropriate.</p> <p>4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>Measurement Weights Lengths Capacity Conversion</p>	<p>Understand relative size of measurement units (km, m, g, l, ml, yd, ft, in, lb, oz, gal, qt, pt, c, hr, min, sec).</p> <p>Estimate measurement when appropriate.</p> <p>Measure customary and metric units of length, weight and capacity.</p> <p>Convert customary and metric units of length, weight, and capacity to units within the same measurement system.</p> <p>Solve word problems involving distances, intervals of time, liquid volumes, mass/weight and money by using the four operations.</p>		

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Second Trimester: December-February

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
	Measurement Time Elapsed Time Calendar Temperature	Tell time and differentiate between analog and digital clocks. Calculate elapsed time. Interpret a calendar. Read temperature on thermometer.		

Archdiocese of Newark Catholic Schools
Curriculum Map for Mathematics
Grade 4

Third Trimester: March-June

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>4.MD.S2 Collect data through surveys, observations, measurements, and experiments and determine the most appropriate way to organize the collected data.</p> <p>4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.</p> <p>4.MD.S3 Construct representations of data sets including tables, bar graphs, pictographs, line graphs, and line plots.</p> <p>4.MD.S4 Draw conclusions and make predictions based on representations of data sets such as: tallies, tables, bar graphs, pictographs, circle graphs, line graphs, and line plots.</p> <p>4.MD.S5 Explore the concept of median, mode, maximum and minimum, and range.</p>	<p>Graphing & Data</p>	<p>Collect and organize data through surveys, observations, experiments and measurement.</p> <p>Create, read, and interpret various types of graphs including pictographs, bar graphs, line graphs, circle graphs, line plots, and tally charts.</p> <p>Determine the mean, median, mode, range, maximum, minimum, and outliers of a set of data.</p>	<p>Student learning will be assessed on a continual basis using various types of formal and informal assessments. A list of possible assessment methods is provided below:</p> <p>Quizzes Tests Projects Review of Student Work Apps/Software Manipulatives Verbal Response Graphs Art Work/Illustrations Math Games</p> <p>Drills Exit Slips Collaborative Work STEM Projects/Labs Benchmark Tasks Response Systems Homework</p>	<p>Gospel values should be evident in the classroom environment and referenced and reinforced throughout the curriculum.</p> <p>Gospel Values Community Compassion Faith in God Forgiveness Hope Justice Love Peace Respect For Life Service Simplicity Truth</p> <p>Included in this column are suggestions for making faith connections within the Math classroom. These suggestions were submitted by teachers.</p>

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Grade 4

Third Trimester: March-June

Standards	Content	Skills	Assessment	Gospel Values & Faith Connections
<p>5.OA.S1 Apply the order of operations for expressions involving addition, subtraction, multiplication, and division with grouping symbols (+, −, ×, ÷).</p> <p>4.OA.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding</p> <p>4.OA.S2 Represent and analyze patterns and functions using words, tables, and graphs.</p>	<p>Order of Operations</p> <p>Algebraic Expressions and Equations</p> <p>Functions</p>	<p>Evaluate numerical expressions and equations using the order of operations.</p> <p>Recognize, write, and evaluate algebraic expressions using variables for the unknown.</p> <p>Recognize, write, and solve algebraic equations using variables for the unknown</p> <p>Represent and analyze patterns and functions using words and tables.</p>	<p>Running Records</p> <p>Student created word problems</p> <p>Problem of the Day</p> <p>Online Math Programs</p>	<p>Show the liturgical calendar as a circle graph with sections depicting the liturgical seasons. Students can use protractors to measure the angles in the circular calendar and make comparison statements about the length of the various liturgical seasons.</p>

