



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 7

First Trimester: September-November

Standards	Content	Skills	Assessment	Gospel Values and Faith Connections
<p>7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>a. Describe situations in which opposite quantities combine to make zero.</p> <p>b. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of zero (additive inverses). Interpret sums of rational numbers by describing real world contexts.</p> <p>c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real world contexts.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers.</p>	<p>Integers</p>	<p>Compare and order integers</p> <p>Add, subtract, multiply and divide with integers.</p> <p>Identify the absolute value of a number.</p> <p>Graph integers on a number line.</p> <p>Solve word problems using integers.</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>Tests</p> <p>Quizzes</p> <p>Thumbs-up/down</p> <p>Individual Response Boards</p> <p>Oral assessment</p> <p>Observation</p> <p>Show of hands</p> <p>Independent work</p> <p>Extension of knowledge</p> <p>Projects</p> <p>Web-based math programs</p> <p>Homework review</p> <p>Group work</p> <p>Games</p> <p>Self-assessment</p>	<p>Gospel values should be evident in the classroom environment and referenced and reinforced throughout the curriculum.</p> <p>Gospel Values</p> <p>Community</p> <p>Compassion</p> <p>Faith in God</p> <p>Forgiveness</p> <p>Hope</p> <p>Justice</p> <p>Love</p> <p>Peace</p> <p>Respect For Life</p> <p>Service</p> <p>Simplicity</p> <p>Truth</p> <p>Included in this column are some suggestions for making faith connections within the Math classroom. These suggestions were submitted by teachers.</p>

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First Trimester: September-November

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<p>7.NS.2 Apply and extend previous understandings of multiplication, division, and fractions to multiply and divide rational numbers.</p> <p>a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real world contexts.</p> <p>b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in zero or eventually repeats.</p>	<p>Rational Numbers</p>	<p>Identify and define rational numbers.</p> <p>Recognize perfect squares and square roots incorporating estimation.</p> <p>Review and/or apply rational number concept (basic decimal and fraction concepts).</p>	<p>Class discussion</p> <p>Manipulatives</p> <p>Class participation</p> <p>Portfolio</p> <p>Rubrics</p> <p>Graphic organizers</p>	<p>Display student-created faith messages using Math terms and concepts</p> <p>Develop word problems involving social justice issues. <i>Example:</i> In trying to bring in the concept of social justice, we discuss the Parish Lunch Program for the homeless. The students are asked to create a monthly budget for a food pantry that serves about 30 to 40 people a day. In creating a budget, they must use store circulars to find the better buy for the groceries and other necessities. Once the budget is established and weekly grocery list is created, the students are to present their information as a circle graph using percentages.</p>

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<p>7.EE.4a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.</p> <p>7.NS.S1 Represent numbers in scientific notation and use them in calculations and problem situations.</p> <p>7.NS.S2. Apply the laws of exponents to the solution of problems. Extend the Order of Operations to include positive integer exponents and square roots.</p> <p>7.NS.S3. Compare and order fractions, decimals, and percents efficiently and find their approximate locations on a number line.</p>	<p>Order of Operations</p> <p>Powers and Exponents</p> <p>Scientific Notation</p>	<p>State the steps in the Order of Operations and apply to expressions.</p> <p>Recognize and correctly use grouping symbols.</p> <p>Identify base and exponents.</p> <p>Use powers to describe repeated multiplication.</p> <p>Apply the Laws of Exponents.</p> <p>Evaluate expressions containing negative and zero exponents.</p> <p>Convert numbers in scientific notation to standard form and standard form to scientific notation.</p> <p>Use scientific notation in calculations and problem situations.</p>		

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<p>7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.</p>	<p>Factorization</p> <p>*Measures of Central Tendency <i>*Content to be covered in either the 1st or 2nd trimester</i></p>	<p>List and apply divisibility rules.</p> <p>Identify prime and composite numbers.</p> <p>Find prime factorization of composite numbers (<i>monomials</i>) using factor trees or division ladders.</p> <p>Define and identify factors and multiples of a number.</p> <p>Define and calculate mean, median, mode, range, and outlier.</p> <p>Explain which measure of central tendency best describes the data.</p>		<p>Data, Statistics, & Graphs</p> <p>Have students do research to gather statistics about homelessness, poverty rates, etc. Create graphs to present the statistics. Find out about programs that address these needs in your local community and ways students can support these programs.</p>

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Second Trimester: December-February

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<p>7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</p> <p>7.RP.2 Recognize and represent proportional relationships between quantities.</p> <p>a) Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>b) Represent proportional relationships by equations.</p> <p>7.RP.3 Use proportional relationships to solve multi-step ratio and percent problems. <i>Examples: Simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent of change (increase and decrease), percent error.</i></p> <p>7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a drawing at a different scale.</p>	<p>Ratios, Rates, Proportion and Percent</p>	<p>Write a ratio to represent the relationship between two quantities.</p> <p>Define rate and proportion.</p> <p>Find the missing value in a proportion using cross products and common multiplier.</p> <p>Compare like items using unit rate.</p> <p>Calculate missing dimensions in similar figures using proportions.</p> <p>Apply proportions to scale drawings in word problems.</p> <p>Determine percent of change.</p> <p>Express fractions and ratios in simplest form.</p>	<p>Self-assessment</p> <p>Class discussion</p> <p>Manipulatives</p> <p>Class participation</p> <p>Portfolio</p> <p>Rubrics</p> <p>Graphic organizers</p>	<p>Connecting to Church and Parish</p> <p>When doing problems involving percents, or measurement use places and things that are part of the parish or connected to the Catholic faith.</p> <p>Scale Drawings –Make models of the church or parish center.</p> <p>Build a manger using scale figures and proportions</p>

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<p>7.EE.4b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.</p>	<p>Simple and *Compound Interest <i>*Optional</i></p> <p>Inequalities</p>	<p>Calculate interest earned and account balances.</p> <p>Calculate sales tax, tips, commission, mark-ups and discounts.</p> <p>Calculate simple and compound interest.</p> <p>Write algebraic inequalities from words and vice versa.</p> <p>Graph inequalities on a number line.</p> <p>Solve one and two step inequalities using the properties of equality.</p>		<p>Problem Solving Suggestions</p> <p>When doing problems involving scale use places and things that are part of our Catholic faith such as the Sistine chapel or Vatican City or holy places in Jerusalem.</p> <p>When doing problems involving percent of increase or decrease relate it to statistics in the Catholic Church.</p> <p>When doing problems involving the environment or science highlight how we can use math to be stewards of God’s creation.</p>

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<p>7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p> <p>7.G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p> <p>7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems. Give an informal derivation of the relationship between the circumference and area of a circle.</p> <p>7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</p> <p>7.G.6 Solve real world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>	<p>Plane Geometry</p>	<p>Identify various types of lines and angles.</p> <p>Identify geometric objects by description of its properties or attributes.</p> <p>Classify and draw quadrilaterals and triangles by sides and angles.</p> <p>Identify parts of a circle.</p> <p>Construct congruent angles, bisectors, parallel, and perpendicular lines.</p> <p>Calculate area and perimeter of polygons.</p> <p>Calculate area and circumference of circles.</p>		

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	Measurement	Convert between units within the metric system. Convert between units within the customary system. Measure objects to the nearest 16 th of an inch. Measure objects to the nearest millimeter. Choose the most reasonable unit of measure.		

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Third Semester: March-June

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<p>7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.</p> <p>7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <p>a) Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</p>	<p>*Probability <i>*To be covered in either the 2nd or 3rd trimester.</i></p>	<p>Define probability and factorials.</p> <p>Identify permutations and combinations.</p> <p>Use the Fundamental Counting Principle.</p> <p>Find the probability of independent and dependent events.</p> <p>Calculate theoretical and experimental probability.</p> <p>Gather and record data and use to form inferences.</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>Tests</p> <p>Quizzes</p> <p>Thumbs-up/down</p> <p>Individual Response Boards</p> <p>Oral assessment</p> <p>Observation</p> <p>Show of hands</p> <p>Independent work</p> <p>Extension of knowledge</p> <p>Projects</p> <p>Web-based math programs</p> <p>Homework review</p> <p>Group work</p> <p>Games</p>	<p>Gospel values should be evident in the classroom environment and referenced and reinforced throughout the curriculum.</p> <p>Gospel Values</p> <p>Community</p> <p>Compassion</p> <p>Faith in God</p> <p>Forgiveness</p> <p>Hope</p> <p>Justice</p> <p>Love</p> <p>Peace</p> <p>Respect For Life</p> <p>Service</p> <p>Simplicity</p> <p>Truth</p> <p>Included in this column are some suggestions for making faith connections within the Math classroom. These suggestions were submitted by teachers.</p>

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<p>b) Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</p> <p>7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a) Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b) Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c) Design and use a simulation to generate frequencies for compound events.</p>			<p>Self-assessment</p> <p>Class discussion</p> <p>Manipulatives</p> <p>Class participation</p> <p>Portfolio</p> <p>Rubrics</p> <p>Graphic organizers</p>	

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<p>7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.</p> <p>7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.</p>	<p>Graphs</p>	<p>Use fractions to calculate percent of a circle graph.</p> <p>Construct a circle graph.</p> <p>Use circle graphs to demonstrate fractions and percents.</p> <p>Create appropriate graphs based on data.</p> <p>Label graphs correctly and completely.</p>		<p>Graphs Create bar graphs showing the average monthly precipitation and line graphs showing the average monthly temperature in various biomes. Discuss diversity in God’s creation.</p> <p>Circle Graph of the Liturgical Year Determine length of days of each liturgical season. Calculate percentage of year of each season; rename as fractions and decimals. Calculate degrees of central angle representing each season. Construct the circle graph. Color the seasons correctly</p>