

Diocese of Lansing

Curriculum Guidelines for Mathematics

Kindergarten through Grade Eight



**Grade 3
2008**

MATHEMATICS K-8

JUNE, 2008

VISION STATEMENT

Mathematics plays an integral role in the Catholic School, home, community and world, reflecting the beauty, order and unity in God's universe. Basic knowledge and skills in mathematics are important to every individual. Mathematics contributes to the development of the whole person by providing a practical tool for daily living.

Society demands mathematical knowledge which helps students develop their ability to reason and to think logically, as well as to discover creative ways of solving problems.

Our goal is to provide the mathematics teachers with an overview of the broad spectrum of mathematical concepts. These specific standards are provided so that students can learn to apply mathematical concepts through the use of higher level thinking skills, critical analysis, application of technology and problem solving.

INTEGRATING CATHOLIC SOCIAL TEACHING INTO MATHEMATICS INSTRUCTION

“THE CHURCH’S SOCIAL TEACHING IS A RICH TREASURE OF WISDOM ABOUT BUILDING A JUST SOCIETY AND LIVING LIVES OF HOLINESS AMIDST THE CHALLENGES OF MODERN SOCIETY”.

(UNITED STATES COUNCIL OF CATHOLIC BISHOPS)

Diocese of Lansing mathematics teachers should integrate catholic social teachings whenever applicable. Examples of this could include faith-based data collection, economics and statistics respectful of the life and dignity of the human person, proportions and graphical representations that are illustrative of solidarity with our brothers and sisters, problem solving that will ensure the right to life and dignity, as well as math-based community service projects to encourage stewardship of creation.

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PURPOSE OF THIS DOCUMENT

- This document is designed to be used as a tool to guide instruction.
 - To provide Grade Level Content Expectations (GLECs) as developed by the State of Michigan (SOM) Department of Education
 - To assist schools with grade level and school-wide curriculum mapping.
 - To provide a means of measuring progress at grade level
 - To provide a means of communicating progress between grade levels
 - To provide continuity between schools within the Diocese of Lansing
- This document also offers main focus areas for each grade level.
- This document offers scope and sequence of objectives across grade levels.
- This document contains suggestions for incorporating Catholic faith and values into mathematics instruction.
- This document contains an analysis of current mathematical textbooks from a wide range of publishers.

WITH APPRECIATION

To Michael Goetz,

Math Department Chair for grades K-8 at Grand Blanc Community Schools

for sharing his expertise, knowledge and materials with us.

THIRD GRADE

In the third grade, students gain proficiency in addition and subtraction of whole numbers, and continue to develop meaning and computational skill in multiplication and division. This culminates in knowledge of the multiplication facts up to 10.

Students are introduced to decimals through money and fractions as portions of a whole.

Work in measurement is closely related to increased emphasis on ideas from geometry, including developing meaning for area and perimeter.

To allow for ease in referencing expectations, each expectation has been coded with a strand, domain, grade-level, and expectation number.

For example, **M.UN.00.01** indicates:

M-Measurement strand

UN-Units & systems of measurement domain of the Measurement strand

01-First Expectation in the Grade-Level view of the Measurement strand

Strand 1 Number & Operations	Strand 2 Algebra	Strand 3 Measurement	Strand 4 Geometry	Strand 5 Data & Probability
Domains				
Meaning, notation, place value, and comparisons (ME)	Patterns, relations, functions, and change (PA)	Units and systems of measurement (UN)	Geometric shape, properties, and mathematical arguments (GS)	Data representation (RE)
Number relationships and meaning of operations (MR)	Representation (RP)	Techniques and formulas for measurement (TE)	Location and spatial relationships (LO)	Data interpretation and analysis (AN)
Fluency with operations and estimation (FL)	Formulas, expressions, equations, and inequalities (RP)	Problem solving involving measurement (PS)	Spatial reasoning and geometric modeling (SR)	Probability (PR)
			Transformation and symmetry (TR)	

MEAP Correlations: [Core]-core item [Core-NC] No calculator [Ext-NC]- extension no calculator [Ext] -extension of core [Fut] – future core item [NASL] – Not assessed at State level

3RD GRADE GLCES

SOM – GLCES Code	Objectives	Complete	Date	Chapter
Strand 1	NUMBER AND OPERATIONS			
	Understand and use number notation and place value			
N.ME.03.01	[Core – NC] Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent e.g., relate numeral or written word to a display of dots or objects.			
N.ME.03.02	[Core – NC] Identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. Recognize and use expanded notation for numbers using place value through 9,999, e.g., 2,517 is 2000+ 500+10+ 7; 4 hundreds and 2 ones is 402.			
N.ME.03.03	[Ext – NC] Compare and order numbers up to 10,000.			
	Count in steps, and understand even and odd numbers			
N.ME.03.04	[NASL] Count orally by 6's, 7's, 8's, and 9's starting with 0, making the connection between repeated addition and multiplication.			
N.ME.03.05	[Ext – NC] Know that even numbers end in 0, 2, 4, 6, or 8; name a whole number quantity that can be shared in two equal groups or grouped into pairs with no remainders; recognize even numbers as multiples of 2. Know that odd numbers end in 1, 3, 5, 7, or 9, and work with patterns involving even and odd numbers.			
	Add and subtract whole numbers			
N.FL.03.06	[Core – NC] Add and subtract fluently two numbers through 999 with regrouping and through 9,999 without regrouping.			
N.FL.03.07	[Core – NC] Estimate the sum and difference of two numbers with three digits (sums up to 1,000), and judge reasonableness of estimates.			
N.FL.03.08	[NASL] Use mental strategies to fluently add and subtract two-digit numbers.			

SOM – GLCES Code	Objectives	Complete	Date	Chapter
	Multiply and divide whole numbers			
N.MR.03.09	[Core – NC] Use multiplication and division fact families to understand the inverse relationship of these two operations, e.g., because $3 \times 8 = 24$, we know that $24 \div 8 = 3$ or $24 \div 3 = 8$; express a multiplication statement as an equivalent division statement.			
N.MR.03.10	[Core] Recognize situations that can be solved using multiplication and division including finding “How many groups?” and “How many in a group?” and write mathematical statements to represent those situations.			
N.FL.03.11	[Core – NC] Find products fluently up to 10×10 ; find related quotients using multiplication and division relationships			
N.MR.03.12	[Fut] Find solutions to open sentences, such as $7 \times \blacksquare = 42$ or $12 \div \blacksquare = 4$, using the inverse relationship between multiplication and division.			
N.FL.03.13	[NASL] Mentally calculate simple products and quotients up to a three-digit number by a one-digit number involving multiples of 10, e.g., 500×6 , or $400 \div 8$.			
N.MR.03.14	[Fut] Solve division problems involving remainders, viewing the remainder as the “number left over,” interpret based on problem context, e.g., when we have 25 children with 4 children per group then there are 6 groups with 1 child left over.			
	Problem solving with whole numbers			
N.MR.03.15	[Core] Given problems that use any one of the four operations with appropriate numbers, represent with objects, words (including “product” and “quotient”), and mathematical statements; solve.			
	Understand simple fractions, relation to the whole, and addition and subtraction of fractions			
N.ME.03.16	[Core] Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms “numerator” and “denominator.”			
N.ME.03.17	[Ext] Recognize, name, and use equivalent fractions with denominators 2, 4, and 8, using strips as area models.			
N.ME.03.18	[Fut] Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8.			

SOM – GLCES Code	Objectives	Complete	Date	Chapter
N.ME.03.19	[Ext] Understand that any fraction can be written as a sum of unit fractions, e.g., $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$.			
N.MR.03.20	[Ext] Recognize that addition and subtraction of fractions with equal denominators can be modeled by joining or taking away segments on the number line.			
	Understand simple decimal fractions in relation to money			
N.ME.03.21	[Core] Understand and relate decimal fractions to fractional parts of a dollar, e.g., $\frac{1}{2}$ dollar = \$0.50; $\frac{1}{4}$ dollar = \$0.25			
Strand 3	MEASUREMENT			
	Measure and use units for length, weight, temperature and time			
M.UN.03.01	[Core] Know and use common units of measurements in length, weight, and time.			
M.UN.03.02	[Core] Measure in mixed units within the same measurement system for length, weight, and time: feet and inches, meters and centimeters, kilograms and grams, pounds and ounces, liters and milliliters, hours and minutes, minutes and seconds, years and months.			
M.UN.03.03	[Core] Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.			
M.UN.03.04	[Core] Know benchmark temperatures such as freezing (32°F , 0°C); boiling (212°F , 100°C); and compare temperatures to these, e.g., cooler, warmer.			
	Understand meaning of area and perimeter and apply in problems			
M.UN.03.05	[Core] Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.			
M.UN.03.06	[Ext] Use square units in calculating area by covering the region and counting the number of square units.			
M.UN.03.07	[Ext] Distinguish between units of length and area and choose a unit appropriate in the context.			

SOM – GLCES Code	Objectives	Complete	Date	Chapter
M.UN.03.08	[Ext] Visualize and describe the relative sizes of one square inch and one square centimeter.			
	Estimate perimeter and area			
M.TE.03.09	[Fut] Estimate the perimeter of a square and rectangle in inches and centimeters; estimate the area of a square and rectangle in square inches and square centimeters.			
	Solve measurement problems			
M.PS.03.10	[Fut] Add and subtract lengths, weights, and times using mixed units within the same measurement system.			
M.PS.03.11	[Core] Add and subtract money in dollars and cents.			
M.PS.03.12	[Ext] Solve applied problems involving money, length, and time.			
M.PS.03.13	[Ext] Solve contextual problems about perimeters of rectangles and areas of rectangular regions.			
Strand 4	GEOMETRY			
	Recognize the basic elements of geometric objects			
G.GS.03.01	[Ext] Identify points, line segments, lines, and distance.			
G.GS.03.02	[Fut] Identify perpendicular lines and parallel lines in familiar shapes and in the classroom.			
G.GS.03.03	[Ext] Identify parallel faces of rectangular prisms in familiar shapes and in the classroom.			
	Name and explore properties of shapes			
G.GS.03.04	[Ext] Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus, based on their component parts (angles, sides, vertices, line segment) and on the number of sides and vertices.			

SOM – GLCES Code	Objectives	Complete	Date	Chapter
G.SR.03.05	[Core] Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.			
	Explore and name three-dimensional solids			
G.GS.03.06	[Core] Identify, describe, build, and classify familiar three-dimensional solids, e.g., cube, rectangular prism, sphere, pyramid, cone, based on their component parts (faces, surfaces, bases, edges, vertices).			
G.SR.03.07	[Ext] Represent front, top, and side views of solids built with cubes.			
Strand 5	DATA AND PROBABILITY			
	Use bar graphs			
D.RE.03.01	[Ext] Read and interpret bar graphs in both horizontal and vertical forms.			
D.RE.03.02	[Core] Read scales on the axes and identify the maximum, minimum, and range of values in a bar graph.			
D.RE.03.03	[Core] Solve problems using information in bar graphs, including comparison of bar graphs.			