Math Diocesan Learning Standards

The Mathematics curriculum of the Diocese of Kansas City-St. Joseph Catholic Schools is designed to reveal the inherent order, symmetry, and logic of the universe. In a faith-based context, mathematics is more than a tool for calculation; it is a language that describes the precision of creation and a discipline that sharpens the mind toward the pursuit of objective truth.

I. Mathematics as a Reflection of Order

We believe that the laws of mathematics are discovered, not merely invented. These laws reflect the consistency and reliability of a well-ordered universe. Our standards emphasize:

- Logical Reasoning: Developing the discipline to follow a sequence of thought to its necessary conclusion.
- Universal Truths: Recognizing that mathematical principles remain constant across cultures and time, providing a foundation for objective understanding.

II. Intellectual Virtue and Perseverance

The study of mathematics is a primary vehicle for developing "habits of mind" that serve the whole person.

- Struggle and Growth: We view the process of solving complex problems as an exercise in perseverance and patience.
- Precision and Integrity: Mathematics demands a commitment to accuracy. Students learn that shortcuts or negligence lead away from the truth, while careful attention to detail leads to clarity.

III. Beauty in Pattern and Proportion

Beyond utility, there is an aesthetic dimension to mathematics. Our curriculum encourages students to appreciate:

- The "Divine" Proportion: Exploring the presence of mathematical patterns (such as the Fibonacci sequence or fractals) in nature and art.
- Symmetry and Elegance: Finding beauty in the simplicity of a balanced equation or the structural logic of a geometric proof.

V. Mathematics in Service to Humanity

Our standards ensure that students do not see mathematics in isolation. We emphasize its application in:

- Stewardship: Using data and finance to manage resources responsibly and ethically.
- Social Justice: Applying statistical analysis to understand and address societal needs.
- Advancement: Utilizing STEM competencies to innovate for the common good and the flourishing of human life.

"Mathematics is the alphabet with which God has written the universe."

KINDERGARTEN

Math Standard Categories:

- Counting & Cardinality (CC)
- Operations & Algebraic Thinking (OA)
- Number & Operations in Base Ten (NBT)
- Measurement & Data (MD)
- Geometry (G)

Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Scripture

- "But you have disposed all things by measure and number and weight." *(Wisdom 11:20)*
- "Teach us to number our days, that we may gain a heart of wisdom." *(Psalm 90:12)*
- "When he weighed out the wind, and measured out the waters;" *(Job 28:25)*
- "This is how you shall build it: the length of the ark will be three hundred cubits, its width fifty cubits, and its height thirty cubits*." (Genesis 6:15)*
- "Then he made the molten sea; It was made with a circular rim, and measured ten cubits across, five in height, and thirty in circumference." *(1 Kings 7:23)*
- "The one who spoke to me held a gold measuring rod to measure the city, its gates, and its wall." *(Revelation 21:15)*
- "You shall have a true scale and true weights, an honest ephah and an honest hin." *(Leviticus 19:36)*
- "False scales are an abomination to the Lord, but an honest weight, his delight." *(Proverbs 11:1)*

Saints, Blessed Individuals, Catholic Clergy and Bishops, Key Lay Catholic Contributors

Patron Saints of Mathematics

- St. Hubert of Liège
- St. Barbara

Catholic Saints with Mathematical Legacies

- St. Isidore of Seville (c. 560–636)
- St. Abbo of Fleury (945–1004)
- St. Albert the Great (1200–1280)

Blessed Individuals

- Blessed Ramon Llull (1232–1315)
- Blessed Nicholas of Cusa (1401–1464)
- Blessed Francesco Faà di Bruno (1825–1888)

Catholic Clergy & Bishops (Mathematicians)

- Bishop Robert Grosseteste (c. 1175–1253)
- Archbishop Thomas Bradwardine (1290–1349)
- Bishop Johannes Müller von Königsberg (1436–1476) – *Also widely known as Regiomontanus.*

Key Lay Catholic Contributors

- Leonardo Bonacci / Leonardo Pisano Bigollo (Fibonacci) (c. 1170–1250)
- Johannes Widmann (1460–1498)
- Gerolamo Cardano (1501–1576)
- René Descartes (1596–1650)
- Pierre de Fermat (1601–1665)
- Blaise Pascal (1623–1662)
- Maria Gaetana Agnesi (1718–1799)
- Augustin-Louis Cauchy (1789–1857)

CODE	CATEGORY	STANDARD	iREADY ASSESSMENT	Newman and Lumen Standards
		Counting and Cardinality		
Through the foundational study of counting and cardinality, students discover that the universe is not random but ordered and measurable, recognizing that every quantity, sequence, and individual element of creation has a distinct place, value, and purpose in God's design.				
K.CC.1	Counting & Cardinality	1.Count to 100 by ones and by tens. Identify the numbers that we see in our faith each day. Examples: count number of days in Advent/Lent - how many have passed/how many are left; numbers in our world; numbers of Apostles.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	DS3, DS5 7.1, 7.2
K.CC.2	Counting & Cardinality	2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1.)	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS2, DS3, DS5 7.1, 7.2
K.CC.3	Counting & Cardinality	3. Recognize and write numbers from 0 to 31 *(e.g. 31 days in a month)*.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS4, DS3, DS5 7.1, 7.2
K.CC.4	Counting & Cardinality	4. Compare two numbers between 1 and 10 presented as written numerals.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	DS3 7.1, 7.2
K.CC.5 K.CC.5.A	Counting & Cardinality	5. Understand the relationship between numbers and quantities. A. Connect counting to cardinal and ordinal numbers to 5.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS1, DS3 7.1, 7.2
K.CC.6	Counting & Cardinality	6. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	DS3, DS5 7.1, 7.2
K.CC.7	Counting & Cardinality	7. Recognize that the last number name said tells the number of objects counted. (*The number of objects is the same regardless of their arrangement or the order in which they were counted.)*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS1, DS3 7.1, 7.2
K.CC.8 K.CC.8.A	Counting & Cardinality	8. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration. A. Given a number from 1-20, count out that many objects.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS1. GS4, DS3, DS5 7.1, 7.2

K.CC.9	Counting & Cardinality	9. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group *(e.g., by using matching and counting strategies).*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	GS3, DS3, DS5 7.1, 7.2
K.CC.10	Counting & Cardinality	10. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Number and Operations	DS3 7.1, 7.2
Geometry Geometry invites students to investigate the spatial dimensions, shapes, and proportions of reality, training their eyes to recognize the aesthetic beauty, structural order, and divine symmetry woven directly into the fabric of nature and art.				
K.G.1	Geometry	1. Describe objects in the environment using names of shapes and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, next to, on the left and on the right.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	GS1, GS4, DS1, DS2, DS4, DS5 7.1, 7.2
K.G.2	Geometry	2. Correctly name shapes regardless of their orientations or overall size.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	GS4, DS1, DS2 7.1, 7.2
K.G.3	Geometry	3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid"). Recognize the beauty of God's handiwork in geometric patterns, shapes, and forms.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	DS2, DS4 7.1, 7.2
K.G.4	Geometry	4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts *(e.g., number of sides and vertices/ "comers")* and other attributes *(e.g., having sides of equal length)*.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	GS1, GS3, DS1, DS2, DS4 7.1, 7.2
K.G.5	Geometry	5. Model shapes in the world by building shapes from components *(e.g., sticks and clay balls)* and drawing shapes.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	DS1, DS3, DS4 7.1, 7.2
K.G.6	Geometry	6. Compose simple shapes to form larger shapes. *(e.g., "Can you join these two triangles with full sides touching to make a rectangle.*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Geometry	DS1, DS3, DS4 7.1, 7.2
Measurement and Data Mastering measurement and data equips students to quantify and interpret the physical world, transforming abstract numbers into concrete tools for ethical stewardship, responsible resource management, and data-informed service to the common good.				
K.MD.1 K.MD.1.A	Measurement & Data	1. Describe measurable attributes of objects, such as length or weight. A. Describe several measurable attributes of a single object. Recognize God's organization in creation.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Measurement and Data	GS1, GS4, DS2, DS3, DS4, DS5 7.1, 7.2
K.MD.2	Measurement & Data	2. Demonstrate an understanding of the concept of time, using identifiers such as morning, afternoon, day, day, week, month, year, today, tomorrow,	8.1, 8.2, 8.4, 8.5, 9.1 Assessed	GS1, GS4, DS5

		yesterday, before/after and shorter/longer. Recognize God's organization in creation.	Measurement and Data	7.1, 7.2
K.MD.3	Measurement & Data	3. Identify the value of the US coins (penny, nickel, and dime) and their appropriate notation (1¢, 5¢, 10¢).	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Measurement and Data	DS2, DS5 7.1, 7.2
K.MD.4	Measurement & Data	4. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Measurement and Data	DS5 7.1, 7.2
K.MD.5	Measurement & Data	5. Directly compare two objects with a measurable attribute in common, to see which object has "more of'/"less of' the attribute and describe the difference. *(e.g., directly compare the heights of two children and describe one child as taller/shorter.)*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Measurement and Data	GS1, DS2, DS3, DS4 7.1, 7.2
Numbers and Base Ten Operations The study of place value and operations in base ten teaches students to navigate increasingly complex numerical systems with precision, cultivating the essential virtues of patience, accuracy, and intellectual integrity as they seek clarity in their work.				
K.NBT.1 K.NBT.1.A	Numbers & Base Ten Operations	1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8). A. Understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations	DS5 7.1, 7.2
Operations and Algebraic Thinking Operations and algebraic thinking invite students to explore the unyielding laws of cause, effect, and relationship, developing the logical reasoning and perseverance needed to solve complex problems and find balance, harmony, and objective truth within a structured world.				
K.OA.1	Operations & Algebraic Thinking	1. Solve addition and subtraction word problems and add and subtract within 10. *(e.g., by using objects or drawings to represent the problem).*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations Algebra and Algebraic Thinking	GS2, DS5 7.1, 7.2
K.OA.2 K.OA.2.A	Operations & Algebraic Thinking	2. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (*e.g., claps*), acting out situations, verbal explanations, inequalities. A. Explore numerical patterns. expressions, or equations.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations Algebra and Algebraic Thinking	GS2, DS4 7.1, 7.2
K.OA.3	Operations & Algebraic Thinking	3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (*e.g., 5 = 2 + 3 and 5 = 4 + 1)*	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations Algebra and Algebraic Thinking	GS1, GS2, DS5 7.1, 7.2

K.OA.4	Operations & Algebraic Thinking	4. Fluently add and subtract within 5.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations Algebra and Algebraic Thinking	GS2, DS4, DS5 7.1, 7.2
K.OA.5	Operations & Algebraic Thinking	5. Identify and duplicate simple numbers and non-numeric repeating and growing patterns.	8.1, 8.2, 8.4, 8.5, 9.1 Assessed Numbers and Operations Algebra and Algebraic Thinking	DS4, DS5 7.1, 7.2