



ARCHDIOCESE
of MILWAUKEE

Office for Schools

Curriculum Guide

Grade 8

What is a Curriculum Guide?

Academic excellence is a hallmark of Catholic schools in the Archdiocese of Milwaukee. To assist schools in maintaining academic excellence, the archdiocese's Office for Schools has developed curriculum guides for grades 4K-8th that identify what we want our students to know and be able to do at the end of each grade based on national, state, and local standards. With these guides as a template, each individual school develops a plan to clearly articulate what is taught, how it is taught, and how student achievement is assessed for each grade. This process of "fine tuning" results in a school specific standards-based curriculum that guides teaching and learning.

Characteristics of an Eighth Grade Child

- ✓ Continues to develop autonomy within the context of being in a family structure
- ✓ Needs a certain degree of privacy
- ✓ Experiences changes during puberty that may cause worry about his/her developing body
- ✓ Grows in recognition of his/her uniqueness as he/she experiences affirming and positive relationships with persons of both genders
- ✓ Experiences highs and lows in friendships
- ✓ Uses music, movies, TV, and video games as pastimes
- ✓ Uses sports, musical instruments, and drama as creative outlets for developing talents
- ✓ Experiences internet, email, and writing on the computer as everyday highlights
- ✓ Needs discussion, reflection, and prayer to organize the experiences and information gathered in life

RELIGION

CREED

- Can relate emerging self-knowledge to the ways in which God relates to us theologically, morally, and through our spiritual sensibilities
- Connects creedal beliefs of the Catholic Church to lived experience
- Describes the ways in which God relates to us through the Tradition: prayer, angels, sacraments, Scripture, and Church teaching, and develops a way of explaining and incorporating these into an understanding of God in the world
- Recognizes major portions of the New Testament in the history of the Catholic Church
- Is able to describe and relate modern examples of the marks of the Church
- Describes the basic Church hierarchy and can relate it to current individuals who hold these offices
- Demonstrates and can describe the challenge and role of lay leadership in the Church
- Can describe the origins and current state of other Christian traditions and the role of ecumenism and inter-religious dialogue in Christian life
- Describes the Paschal Mystery and redemption from sin
- Can participate in a dialogue between faith and science as a template of the relationship between reason and faith
- Is able to describe a path to holiness as lived by people from multiple faith traditions
- Identifies one's self as being a unique creation, made in God's image
- Describes the contribution of Mary, saints, and holy people to faith tradition
- Is able to narrate and discuss key passages from the Gospels that reveal Jesus' ministry
- Tells stories from Scripture that describe the person and ministry of Jesus Christ: The Rich Man and Lazarus (Lk 16: 19-31); The Money Changers in the Temple (Mk 11: 15-18; Mk 13: 23); The Baptism of Jesus (Lk 3: 10-22); The Last Judgment (Mt 25: 31-46); Jesus Announces His Mission (Lk 4: 14-23); Jesus, The Second Adam (1 Co 15: 36-49); The Temptation (Mt 4: 1-11)

LITURGY AND SACRAMENTS

- Experiences the ritual nature of life and associates it with the rituals of Church; e.g., family meals and the Eucharist, seasons of nature, and seasons of the Church Year
- Can conduct a personal examination of conscience
- Demonstrates the skills of reconciliation in the community
- Relates the symbolic nature of the sacraments to symbols in life
- Experiences the risen Christ acting through the sacramental life of the Church
- Identifies, reflects, and describes the personal and communal importance of sacramental actions in Scripture: Commissioning (Mt 28: 16-20; Jer 1: 4-8; Jn 14: 23-28; Acts 2: 1-13); Ritual Meals (2 Chr 35: 1-19; Mt 26: 26-29; Lk 24: 13-32; Jn 6: 28-35); Forgiveness (Mt 18: 21-35; Jn 20: 19-23); Healing (Mk 1: 29-34; Lk 5: 17-26; Jas 5: 13-15); Marriage (Gn 2: 22-24; Mt 19: 1-6; Jn 2: 1-11); Ministry (Lev 8: 1-13; Mt 28: 18-20; Mark 6: 7-13)
- Recognizes and encourages others about the importance of participating regularly in Sunday Eucharist and knows that Christ is present in the assembly, Word, presider, and especially in the consecrated Bread and Wine

MORAL LIFE

- Describes experiences of how external factors can form the conscience and signal what is right and wrong, as well as how to behave
- Views one's growing sense of moral understanding as a part of an emerging identity
- Associates and practices Reconciliation as a key part of the Christian moral life
- Organizes activities that demonstrate how a Christian ought to respond to social, economic, and political situations

- Integrates the skills of justice and peacemaking into their actions
- Articulates and can provide positive and negative examples of the principles of Catholic Social Teaching
- Is conscious of racial, ethnic, and class differences and makes definite efforts to be inclusive in relationships, reaching out to those not included or marginalized
- Designs, executes, and provides substantial reflection on a service project that addresses a need in the community
- Identifies aspects of the person of Jesus in the Gospels that most directly relate to the person he/she is becoming

CHRISTIAN PRAYER

- Prays, practices, constructs, and dramatizes Marian devotions and other devotions; e.g., Stations of the Cross
- Prays and develops prayers blessing God for all he has bestowed
- Creates, composes, and articulates spontaneous prayer to deepen one's relationship with God
- Prays and analyzes the Nicene Creed
- Connects Scripture stories to life issues through prayer; e.g., Life of the Christian (Acts 2: 42-47; 4: 32-35); Light under the Bushel Basket (Mt 5: 14-16); Justice of God (Lk 6: 36-38); Kingdom Parable and Actions (Lk 10: 29-37, 19: 1-10; Mark 2: 13-17); Share My Mission (Mt 28: 16-20)
- Prays Scriptures of the day and can navigate Scripture and resources related to Scriptural prayer
- Reflects upon and expresses a relationship with God experienced through prayerful retreats and the Daily Examen
- Recognizes and experiences belonging to a community which prays with and for each other

ENGLISH LANGUAGE ARTS

Language

- Define verbals such as gerunds, participles, and infinitives
- Recognize verbs in active voice and passive voice
- Identify verb moods such as indicative, imperative, interrogative, conditional, and subjunctive
- Recognize inappropriate verb voice and mood
- Explain the function of phrases and clauses in general and in specific sentences
- Form and use verbs in active and passive voice
- Correct misplaced and dangling modifiers
- Use the following verb moods correctly: indicative, imperative, interrogative, conditional, and subjunctive
- Correct inappropriate shifts in verb voice and mood
- Demonstrate command of standard English grammar and usage when writing
- Demonstrate command of standard English grammar and usage when speaking
- Know that a dash is two hyphens without a space between them or on either side
- Recall and apply spelling rules
- Know that an ellipsis is three or four dots within a sentence
- Identify and correct misspelled words
- Apply correct capitalization
- Apply correct punctuation
- Apply correct spelling
- Use punctuation (commas, ellipsis, dash) to indicate a pause or a break
- Use commas to set off words or phrases that make a distinct break in the flow of thought
- Use an ellipsis to slow a reader down and/or indicate a long stretch of omitted time
- Use a dash to set off material that is parenthetical or summary in nature
- Recognize language conventions for writing, speaking, reading, and listening
- Recognize when verbs are in active or passive voice
- Recognize when verbs are in conditional and subjunctive mood
- Apply knowledge of language conventions when writing, reading, and listening
- Determine when to use verbs in active or passive voice
- Determine when to use verbs in the conditional and subjunctive mood
- Use knowledge of language when speaking
- Use knowledge of language conventions when speaking
- Use verbs in active or passive voice
- Use verbs in the conditional and subjunctive mood
- Recognize that many words have more than one meaning
- Identify common, grade-appropriate Greek and Latin affixes and roots
- Determine the meaning of a word or phrase by using context clues
- Determine the meaning of a word or phrase by using common Greek and Latin affixes and roots
- Verify the initial determination of the meaning of a word
- Clarify the intended meaning of multiple-meaning words and phrases
- Choose from a range of vocabulary strategies to determine or clarify the meaning of an unknown word or phrase
- Consult general and specialized reference materials, both print and digital, to find pronunciation
- Consult general and specialized reference materials, both print and digital, to determine or clarify precise meaning or part of speech
- Recognize the meaning of figurative language
- Recognize the different types of relationships between words
- Define the meaning of the terms connotation and denotation
- Analyze text to locate figures of speech
- Analyze the relationship between particular words
- Distinguish among the connotations of words with similar denotations
- Demonstrate the relationship between words to find meaning
- Identify general academic and domain-specific words and phrases
- Gather vocabulary knowledge important to comprehension or expression

- Apply and use knowledge of vocabulary when considering words and phrases important to comprehension or expression
- Select appropriate resources to aid in gathering vocabulary knowledge

Reading Standards for Informational Text

- Recognize the difference between explicitly stated and inferred information
- Determine supporting details for what is explicitly stated
- Determine supporting details for inferences made
- Make inferences about what is said in the text
- Identify the central idea of a text
- Identify ideas that support the central idea of a text
- Determine the relationship between the central ideas and supporting ideas
- Analyze the development of the central idea over the course of the text
- Provide an objective summary of the text
- Define compare and contrast
- Define analogies
- Define categorization
- Identify individuals, events, and ideas in a text
- Compare how individuals, ideas, and events are connected
- Contrast the distinctions between individuals, ideas, and events
- Identify figurative, connotative, and technical words and phrases
- Identify words and phrases that include analogies and allusions to other texts
- Determine the meaning of figurative, connotative, and technical words and phrases
- Analyze the impact of word choice on meaning and tone
- Analyze the impact of analogies and allusions on the meaning and tone of other texts
- Identify different roles of sentences
- Identify the structure of a specific paragraph in an informational text
- Analyze the role that a particular sentence plays in developing and refining the key concept
- Analyze the structure of specific sentences in developing a paragraph
- Determine the author’s point of view or purpose
- Identify evidence the author uses to support his/her viewpoint or purpose
- Identify conflicting evidence or viewpoints presented in a given text
- Compare and contrast the author’s evidence and/or viewpoints to any conflicting evidence and/or viewpoints
- Analyze the techniques the author uses to respond to conflicting evidence
- Support your analysis of evidence with examples
- Identify different mediums including print, digital, video, and multimedia
- Define evaluate
- Evaluate the advantages and disadvantages of using print in a presentation
- Evaluate the advantages and disadvantages of using digital in a presentation
- Evaluate the advantages and disadvantages of using video in a presentation
- Evaluate the advantages and disadvantages of using multimedia in a presentation
- Use different mediums
- Define and identify relevant/irrelevant evidence in informational text
- Define and identify sufficient/insufficient evidence in informational text
- Define and identify sound/unsound reasoning in informational text
- Delineate the argument and specific claims of a text
- Classify evidence as relevant/irrelevant in informational text
- Classify reasoning as sound/unsound in informational text
- Classify evidence as sufficient/insufficient in informational text
- Evaluate an argument in a text based on sound reasoning, relevance, and sufficient evidence
- Identify differences or conflicting information between two texts
- Recognize facts or interpretations
- Identify criteria for analyzing texts
- Analyze two or more texts for conflicting information as to how the texts disagree in facts or interpretation
- Identify and understand key ideas and details

- Identify and understand craft and structure
- Identify and understand integration of knowledge
- Comprehend key ideas and details
- Comprehend craft and structure

Reading Standards for Literature

- Identify explicitly stated key ideas
- Identify evidence that strongly supports the key idea
- Recognize the difference between inference and what is explicitly stated
- Make inferences about what a text says but is not directly stated
- Evaluate evidence about what most strongly supports key ideas
- Cite evidence used to make inferences from the text
- Understand theme and central idea of a text
- Know the literary elements (characters, setting, plot)
- Objectively summarize a text
- Analyze the development of a theme or central idea over the course of a text
- Analyze the relationship between the theme and literary elements of the text
- Provide an objective summary of the text
- Identify elements of literature dialogue
- Identify elements of literature plot
- Identify elements of literature characterization
- Analyze lines of dialogue for propelling action
- Analyze lines of dialogue for revealing characters
- Analyze lines of dialogue for provoking decisions
- Analyze incidents for propelling action
- Analyze incidents for revealing character
- Analyze incidents for provoking decisions
- Identify figurative and connotative words and phrases
- Identify meaning and tone of a text
- Identify specific words that impact meaning and tone
- Identify analogies
- Identify allusions to other texts
- Determine the figurative and connotative meanings of words and phrases as they are used in the text
- Analyze the impact of word choices, analogies, and allusions on meaning and tone
- Identify structural elements of two or more texts
- Compare and contrast the structure of two texts
- Analyze how the structure of each text contributes to its meaning and style
- Determine the author's point of view or purpose
- Identify evidence the author uses to support his/her characters' viewpoint/purpose
- Identify conflicting evidence or viewpoints presented in a given text
- Compare and contrast the author's evidence and/or viewpoints to conflicting evidence and/or viewpoints
- Analyze the techniques the author uses to respond to conflicting evidence
- Support your analysis with examples
- Recognize choices directors and actors make
- Define evaluate
- Compare and contrast the text of a story or drama and the live or filmed production
- Analyze the faithfulness or departure between the text of a story or drama and the live or filmed production
- Evaluate the outcome/impact of choices made by directors and actors
- Not applicable to literature
- Identify theme
- Identify patterns of events
- Identify character types
- Compare and contrast themes in modern fiction to myth/traditional story/religious work
- Compare and contrast patterns of events in modern fiction to myth/traditional story/religious work
- Compare and contrast character types in modern fiction to myth/traditional story/religious work

- Evaluate how myths, traditional stories, or religious works are rendered new
- Identify/understand key ideas and details
- Identify/understand craft and structure
- Identify/understand integration of knowledge
- Comprehend key ideas and details
- Comprehend craft and structure

Speaking and Listening Standards

- Identify key ideas from reading material or research
- Describe components of a collegial discussion and planning
- Recognize key ideas and new information during discussions
- Analyze texts, issues, and others' opinions
- Synthesize ideas, issues, and arguments to formulate personal opinion and questions for others
- Evaluate personal views and the views of others
- Track progress toward specific goals and deadlines, defining individual roles as needed
- Evaluate new information and personal views, as well as the views of others
- Formulate comments, questions, and responses based on evidence, observations, and ideas
- Engage in a variety of discussions by listening and sharing acquired and prior knowledge
- Demonstrate collegial rules during discussion
- Articulate personal ideas clearly
- Pose relevant questions that connect the ideas of several speakers
- Respond to questions and comments with relevant details
- Acknowledge new information posed and use evidence to justify personal viewpoints
- Identify the author's purpose in information presented
- Identify the author's motives for the presentation of information
- Analyze the purpose of information presented in diverse media
- Evaluate the motives behind the presentation of the information
- Define and identify a speaker's argument and claims
- Define and identify sound reasoning
- Define and identify unsound reasoning
- Define and identify relevant evidence
- Define and identify irrelevant evidence
- Define and identify sufficient evidence
- Define and identify insufficient evidence
- Identify a speaker's argument and specific claims
- Evaluate the soundness of the speaker's reasoning
- Evaluate the relevance and sufficiency of the speaker's evidence
- Distinguish between sound and unsound reasoning in a speaker's argument
- Distinguish between relevant and irrelevant evidence in a speaker's argument
- Distinguish between sufficient and insufficient evidence in a speaker's argument
- Identify claims and findings
- Identify appropriate eye contact
- Identify adequate volume
- Identify clear pronunciation
- Determine salient (key) points
- Determine relevant evidence
- Determine sound, valid reasoning
- Determine well-chosen details
- Organize points and details in a coherent manner
- Present claims and findings emphasizing salient points with relevant evidence
- Present claims and findings emphasizing salient points with sound, valid reasoning
- Present claims and findings emphasizing salient points with well-chosen details
- Demonstrate appropriate eye contact
- Demonstrate adequate volume
- Demonstrate clear pronunciation

- Integrate multimedia and visual displays
- Determine when to integrate multimedia and visual display to clarify information
- Determine when to integrate multimedia and visual displays to strengthen claims and evidence
- Determine when to integrate multimedia and visual displays to add interest
- Integrate multimedia components/visual displays in a presentation to clarify information
- Integrate multimedia components/visual displays in a presentation to strengthen claims and evidence
- Integrate multimedia components/visual displays in a presentation to add interest
- Describe qualities of formal speech
- Describe qualities of informal speech
- Determine if formal or informal speech is appropriate in the context of a given situation
- Adapt speech to a given context or task when speaking
- Demonstrate correct use of formal English when speaking

Writing Standards

- Identify an accurate, credible source
- Identify and explain phrases and clauses that create cohesion and clarify relationships
- Identify and explain alternate, counter, or opposing claims
- Identify relevant evidence
- Identify and explain argument
- Identify and explain a concluding statement
- Identify and explain formal style
- Determine how to introduce claims and acknowledge alternate or opposing claims
- Organize reasons and evidence logically
- Build support for claims using logical reasoning and relevant evidence
- Build support for claims by distinguishing between relevant and irrelevant evidence
- Evaluate sources for credibility and accuracy
- Create cohesion and clarify relationships among claim(s), counterclaims, reasons, and evidence
- Plan a concluding statement following the argument
- Write an argument to support claims with clear, logical reasons, and relevant evidence
- Write an argument which introduces claims, acknowledges, and distinguishes claim(s) from alternate or opposing claims
- Write an argument which demonstrates logical organization or reasons and evidence
- Write an argument which cites credible and accurate sources of information
- Write an argument which demonstrates an understanding of the topic or text
- Write an argument which uses words, phrases, and clauses to create cohesion and clarify relationships among claim(s), counterclaims, reasons and evidence
- Write an argument which establishes and maintains a formal style
- Write an argument which provides a concluding statement that follows and supports the argument presented
- Identify a topic
- Identify transitions
- Identify precise language and domain-specific vocabulary
- Identify formal style
- Identify a conclusion for a topic that follows and supports the information or explanation presented
- Organize ideas, concepts, and information into broader categories
- Analyze and organize relevant content using facts, definitions, concrete details, and quotations to develop the topic
- Select appropriate and varied transitions to create cohesion and clarify relationships
- Determine precise language and domain-specific vocabulary
- Determine an effective, supportive conclusion for the topic or section
- Develop a topic with relevant, well-chosen facts
- Develop a topic using definitions, concrete details, quotations, examples, and other information
- Apply formatting, graphics, and multimedia to aid comprehension
- Use appropriate and varied transitions to clarify the relationships between ideas and concepts and create cohesion
- Use precise language and domain-specific vocabulary

- Establish and maintain a formal style
- Provide an effective, concluding statement or section that supports the topic
- Write informative/explanatory texts to examine a topic
- Write informative/explanatory texts to convey ideas
- Write informative/explanatory texts to explain concepts and information
- Write with organization
- Identify various points of view in narratives
- Identify narrative techniques such as dialogue, pacing, description, and reflection
- Recognize transition words, phrases, and clauses
- Recognize how authors use precise words/phrases to help readers visualize or sense the action
- Recognize how authors use description to help readers visualize or sense the action
- Recognize how authors use sensory details to help readers visualize or sense the action
- Identify various points of view in narratives
- Design and organize event sequences that unfold naturally and logically
- Use a variety of transitions to shift from one setting to another
- Analyze the relationships among experiences and events
- Use precise, descriptive, and sensory language to capture the action and to develop experiences and events
- Assemble a conclusion that reflects on experiences and events
- Write a narrative that engages the reader
- Write a narrative that establishes a context and point of view
- Write a narrative that uses dialogue, pacing, and description to develop experiences, events, characters
- Write a narrative that uses a variety of transitions to convey sequence and signal shifts
- Write a narrative that uses appropriate, precise, descriptive sensory language
- Write a narrative that leads to a reflective conclusion
- Analyze the reason for writing to decide the task, purpose, and audience
- Determine suitable idea development strategies
- Determine suitable organization
- Determine suitable style
- Write with clear and coherent idea development
- Write with clear and coherent organization
- Write with clear and coherent style
- Recognize how to plan, revise, edit, and rewrite
- Recognize how to try a new approach
- Determine how well the focus of the purpose has been addressed
- Determine how well the focus of audience has been addressed
- Develop and strengthen writing by planning, revising, editing, and rewriting
- Develop and strengthen writing by trying a new approach
- Identify publishing and collaboration options that use technology
- Know how to collaborate effectively
- Determine the best technology tools for producing and publishing writing appropriate to the purpose and audience
- Determine the best technology options for communicating and collaborating with others for an intended purpose
- Evaluate the relationship between information presented and ideas expressed
- Select technology to present information and ideas
- Use technology (Internet) to produce, revise, edit, and publish writing
- Use technology to interact and collaborate with others
- Use technology to present information and ideas
- Identify reliable sources of information
- Apply appropriate inquiry methods to conduct a research project
- Apply multiple avenues of exploration
- Determine which facts/examples best answer a question
- Draw conclusions about the validity of sources
- Formulate questions that would allow for other avenues of exploration
- Conduct short research projects that answer questions
- Conduct short research projects that draw on several sources

- Conduct short research projects that generate focused questions that allow for multiple avenues of exploration
- Recognize a standard format for a citation
- Determine the relevance of information gathered from print and digital sources
- Assess the credibility and accuracy of a source
- Quote or paraphrase the data conclusions of others and avoid plagiarism
- Use search terms effectively
- Gather relevant information from multiple sources
- Identify key ideas and details that support conclusions
- Cite textual evidence to analyze explicit text
- Draw evidence from key ideas and details as support for research
- Analyze key ideas and details as evidence of understanding text
- Reflect on key ideas and details as evidence of support and understanding
- Identify discipline-specific tasks, audiences, and purposes
- Determine appropriate organizational structure for various types of writing based upon task, purpose, and audience
- Write over shortened time frames
- Write over extended time frames

MATH

In 8th grade, your child will learn a number of skills and ideas that he or she must know and understand to be ready for college and career. Your child will continue to learn how to write and reason with algebraic expressions. Your child also will make a thorough study of linear equations with one and two variables. Building on previous work with relationships between quantities, your child will be introduced to the idea of a mathematical function. And your child will prepare for high school geometry by understanding congruence (same shape and size) and similarity of geometric figures.

HELP YOUR CHILD LEARN AT HOME

Ask your child to share with you any work he or she is doing in math class that strikes him or her as interesting. Some possibilities might include:

- Solving interesting problems involving cylinders and spheres, such as figuring out how much water fits inside a garden hose, or how many earths would fit inside the sun.
- Analyzing data with a scatter-plot, for example to decide whether exercise and obesity are related.
- Solving “just for fun” algebra puzzles, such as: “I’m thinking of two numbers. The difference between the numbers is 40. Twice the smaller number is 20 more than the larger number. What are my numbers?”

EXPRESSIONS AND EQUATIONS

- Explain the properties of integer exponents to generate equivalent numerical expressions
- Apply the properties of integer exponents to produce equivalent numerical expressions
- Know that the square root of 2 is irrational
- Evaluate square roots of small perfect squares
- Evaluate cube roots of small perfect cubes
- Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number
- Express numbers as a single digit times an integer power of 10
- Compare quantities to express how much larger one is compared to the other
- Use scientific notation to estimate very large and/or very small quantities
- Interpret scientific notation that has been generated by technology
- Choose appropriate units of measure when using scientific notation
- Use scientific notation to express very large and very small quantities
- Perform operations using numbers expressed in scientific notations

- Compare two different proportional relationships represented in different ways
- Interpret the unit rate of proportional relationships as the slope of the graph
- Graph proportional relationships
- Identify characteristics of similar triangles
- Analyze patterns for points on a line that passes through the origin
- Analyze patterns for points on a line that does not pass through or include the origin
- Derive an equation of the form $y = mx$ for a line through the origin
- Derive an equation of the form $y = mx + b$ for a line intercepting the vertical axis at b (the y -intercept)
- Determine the y -intercept of a line
- Find the slope of a line
- Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane
- Identify examples of linear equations in one variable with one solution
- Identify examples of linear equations in one variable with infinitely many solutions
- Identify examples of linear equations in one variable with no solution
- Solve linear equations with rational number coefficients
- Solve equations whose solutions require expanding expressions using the distributive property and/or collecting like terms
- Show how to transform given equations into simpler forms, until the result is an equivalent equation of the form $x = a$, $a = a$, or $a = b$
- Identify the solution(s) to a system of two linear equations in two variables as the point(s) of intersection of their graphs
- Identify cases in which a system of two equations with two unknowns has no solution
- Identify cases in which a system of two equations with two unknowns has an infinite number of solutions
- Estimate the point(s) of intersection for a system of two equations with two unknowns by graphing the equations
- Solve a system of two equations (linear) with two unknowns algebraically
- Solve simple cases of systems of two linear equations with two variables by inspection
- Estimate the point(s) of intersection for a system of two equations with two unknowns by graphing the equations

FUNCTIONS

- Identify cases in which a system of two equations with two unknowns has no solution
- Identify cases in which a system of two equations with two unknowns has an infinite number of solutions
- Estimate the point(s) of intersection for a system of two equations with two unknowns by graphing the equations
- Solve a system of two equations (linear) with two unknowns algebraically
- Solve simple cases of systems of two linear equations with two variables by inspection
- Identify functions algebraically including slope and y -intercept
- Identify functions using graphs, tables and verbal descriptions
- Compare and contrast two functions with different representations
- Draw conclusions based on different representations of functions
- Recognize that a linear function is graphed as a straight line
- Recognize the equation $y = mx + b$ is the equation of a function whose graph is a straight line where m is the slope and b is the y -intercept
- Compare the characteristics of linear and nonlinear functions using various representations
- Provide examples of nonlinear functions using multiple representations
- Recognize that slope is determined by the constant rate of change
- Recognize that the y -intercept is the initial value where $x = 0$
- Determine the rate of change from two (x, y) values, a verbal description, values in a table, or graph
- Determine the initial value from two (x, y) values, a verbal description, values in a table, or graph
- Construct a function to model a linear relationship between two quantities

- Relate the rate of change and initial value to real-world quantities in a linear function in terms of the situation modeled and in terms of its graph or a table of values
- Analyze a graph and describe the functional relationship between two quantities using the qualities of the graph
- Interpret the relationship between x and y values by analyzing a graph
- Sketch a graph, given a verbal description of its qualitative features

GEOMETRY

- Define and identify rotations, reflections, and translations
- Identify corresponding sides and corresponding angles
- Identify center of rotation
- Identify direction and degree of rotation
- Identify line of reflection
- Understand prime notation to describe an image after a translation, reflection, or rotation
- Use physical models, transparencies, or geometry software to verify the properties of rotations, reflections, and translations
- Define congruency
- Identify symbols for congruency
- Describe the sequence of rotations, reflections, translations that exhibits the congruence between 2-D figures using words
- Apply the concept of congruency to write congruent statements
- Reason that a 2-D figure is congruent to another if the second can be obtained by a sequence of rotations, reflections, translations
- Define dilations as a reduction or enlargement of a figure
- Identify scale factor of the dilation
- Describe the effects of dilations, translations, rotations, and reflections on 2-D figures using coordinates
- Define similar figures as corresponding angles are congruent and corresponding sides are proportional
- Recognize symbol for similar
- Describe the sequence of rotations, reflections, translations, or dilations that exhibits the similarity between 2-D figures using words and/or symbols
- Apply the concept of similarity to write similarity statements
- Reason that a 2-D figure is similar to another if the second can be obtained by a sequence of rotations, reflections, translations, or dilation
- Define similar triangles
- Define and identify transversals
- Identify angles created when a parallel line is cut by a transversal (alternate interior, alternate exterior, corresponding, vertical, adjacent, etc.)
- Justify that the sum of interior angles equals 180
- Justify that the exterior angle of a triangle is equal to the sum of the two remote interior angles
- Use Angle-Angle Criterion to prove similarity among triangles (Give an argument in terms of transversals, why this is so)
- Define key vocabulary: square root, Pythagorean Theorem, right triangle, legs a & b, hypotenuse, sides, right angle, converse, base, height, proof
- Identify the legs and hypotenuse of a right triangle
- Explain a proof of the Pythagorean Theorem
- Recall the Pythagorean Theorem and its converse
- Apply Pythagorean Theorem in solving real-world problems dealing with two- and three-dimensional shapes
- Solve basic mathematical Pythagorean Theorem problems and its converse to find missing lengths of sides of triangles in two or three dimensions
- Recall the Pythagorean Theorem and its converse

- Determine how to create a right triangle from two points on a coordinate graph
- Use the Pythagorean Theorem to solve for the distance between the two points
- Identify and define vocabulary: cone, cylinder, sphere, radius, diameter, circumference, area, volume, pi, base, height
- Knows formulas for volume of cones, cylinders, and spheres
- Compare the volume of cones, cylinders, and spheres
- Determine and apply appropriate volume formulas in order to solve mathematical and real-world problems for the given shape
- Given the volume of a cone, cylinder, or sphere, find the radii, height, or approximate using pi

STATISTICS AND PROBABILITY

- Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association
- Interpret scatter plots for bivariate (two different variables such as distance and time) measurement data to investigate patterns of association between two quantities
- Construct scatter plots for bivariate measurement data
- Know straight lines are used to model relationships between two quantitative variables
- Informally assess the model fit by judging the closeness of the data points to the line
- Formulate a straight line within scatter plot data
- Interpret the meaning of slope and intercept of a linear equation in terms of the situation
- Solve problems using the equation of a linear model
- Find the slope and intercept of a linear equation
- Recognize patterns shown in comparison of two sets of data
- Know how to construct a two-way table
- Interpret the data in the two-way table to recognize patterns
- Use relative frequencies of the data to describe relationships (positive, negative, or no correlation)

THE NUMBER SYSTEM

- Define irrational numbers
- Show that the decimal expansion of rational numbers repeats eventually
- Convert a decimal expansion which repeats eventually into a rational number
- Show informally that every number has a decimal expansion
- Compare the size of irrational numbers using rational approximations
- Estimate the value of expressions involving irrational numbers using rational approximations
- Approximate irrational numbers as rational numbers
- Approximately locate irrational numbers on a number line

SOCIAL STUDIES

ECONOMICS

Production/Consumption/Distribution:

- Describe how personal economic decisions impact global economy (e.g., starting new business initiatives, boycotts, and earning power of workers)
- Analyze the impact of personal decisions on global issues (e.g., trade agreements, recycling, and conserving the environment)
- Determine the location of natural resources and explain how they generate trade and economic patterns
- Describe effects of investments in infrastructure (e.g., education, health care, public safety, transportation, etc.) on the economy
- Identify and explain various points of view concerning economic issues (e.g., taxation, unemployment, inflation, the national debt, and distribution of income)
- Compare the standard of living in various societies

Exchange:

- Interpret and explain the development of money in history
- Differentiate among the various economic & political systems (e.g., feudalism, capitalism, communism, etc.)
- Distinguish and explain basic economic concepts (e.g., supply and demand; production, exchange, and consumption; labor, wages, and capital; inflation and deflation; public and private goods and services; market economy and command economy)
- Identify the economic roles of institutions (e.g., corporations and businesses, banks, labor unions, and the Federal Reserve System)

HISTORY

Time:

- Interpret the past using a variety of primary and secondary sources
- Compare ancient and present-day communities around the World
- Analyze the cause and effect relationship of different events over time

People:

- Identify and describe significant people in the major eras in the United States and World History
- Examine the impact of immigration on the United States and World History
- Summarize major issues associated with the history, culture, and tribal sovereignty of the indigenous peoples of Americas
- Research the political values of freedom, democracy, equality, & justice as embodied in important documents (e.g. the Magna Carta, Declaration of Independence, U.S. Constitution, and the Bill of Rights)
- Organize and analyze information to place people in historical perspective

Events:

- Analyze significant events and the major eras of the United States and the World (See Appendix)
- Describe the relationship between and among significant events in the United States and World History
- Critically analyze current events in the United States and the World
- Explain the interpretation of historical events according to various viewpoints
- Identify major scientific discoveries and technological innovations and describe their social and economic effects on society
- Explain the need for laws and policies to regulate science and technology

GEOGRAPHY

Location:

- Identify past & present countries in the World
- Explain relative and absolute location of places using appropriate geographic terminology
- Locate and identify physical features in the World

Map Skills:

- Use maps, charts, and graphs to display and compare information
- Use an atlas to estimate distance, calculate scale, identify dominant patterns of climate and land use, and compute population density
- Construct mental maps of selected locales, regions, states, and countries and draw maps from memory, representing relative location, direction size, and shape
- Create different types of maps (e.g., political, physical, and thematic)

Regions:

- Identify past & present World regions
- Identify United State regions throughout history

Place:

- Identify components of culture (e.g., religion, art, language, customs, and cuisine)
- Understand the different characteristics of climate, landforms, bodies of water, cities, governments, and other characteristics of place

Human Environment Interaction:

- Describe and analyze ways in which people interact with, modify and adapt with the environment
- Research the causes and consequences of global issues (e.g., urbanization, extinction of species, consumption of natural resources, and World events)
- Identify changing boundaries and major land acquisitions of the United States

Movement:

- Explain the movement of people, ideas, products, and diseases in the World
- Evaluate the impact of science and technology on the United States and the World

POLITICAL SCIENCE**Citizenship:**

- Demonstrate ways in which a citizen may participate in public policy debates
- Identify individual responsibilities to local, state, national and global communities
- Explain the role and impact of civil actions
- Locate, organize, and use relevant information to understand issues

Laws:

- Explain how laws are developed, changed, and enforced
- Analyze and discuss important political documents (e.g., the Magna Carta, Constitution, Bill of Rights, and landmark decisions of the Supreme Court)

Government:

- Explain the role of political parties and interest groups in American politics
- Identify and explain the different forms of government, including the basic principles of democracy
- Explain how legislative, executive, and judicial powers are separated and balanced at the federal level
- Describe and explain how the federal system separates the powers of federal, state, and local government
- Distinguish how the powers of government are acquired, maintained, justified, and sometimes abused
- Describe the role and effects of international organizations and political alliances throughout the World
- Analyze how various groups of people and cultures govern themselves

BEHAVIORAL SCIENCE**Individual:**

- Describe and explain how various factors influence individual identity

Institution:

- Describe cooperation and interdependence among groups, societies, and nations
- Demonstrate knowledge of the World's religions

Society:

- Compare and contrast the components of various region's culture
- Explain impact of World events globally
- Describe the reflection of cultural values and ideas in art and architecture
- Describe cultural contributions of racial and ethnics groups in the United States and the World
- Identify examples of bias and stereotyping and how they contribute to conflict
- Analyze cultural conflicts in Unites States History
- Give examples of media influence on behavior and decision-making of individuals and groups

CATHOLIC SOCIAL TEACHINGS**Life and Dignity of the Human Person:**

- Analyzes social issues based on whether human dignity is valued or harmed
- Identifies elements of human dignity based on Catholic Social Teaching
- Acts to transform human dignity
- Uses conflict resolution skills
- Identifies abuses of human dignity found in American Society
- Identifies Biblical passages related to human dignity

The Call to Family, Community, and Participation:

- Models responsible behavior to family and community through service
- Is involved in service projects beyond the local community
- Uses the church's social teachings as a lens to look at the moral and human dimensions of public issues

The Rights and Responsibilities of the Human Person:

- Articulates the component parts of human dignity
- Identifies actions that would be considered abuses of human rights (local, national, international)
- Practices peaceful conflict resolution strategies within the family, school, and community
- Researches social data and church teaching as a way to begin to transform injustice

Option for the Poor and the Vulnerable:

- Shares personal resources to help the poor and vulnerable
- Can discuss laws and policies that can benefit the poor and vulnerable members of society
- Practices behaviors that help others
- Can articulate the causes of poverty and the systems which prevent people from overcoming poverty
- Does research on the 20th and the 21st century people who have fought for justice, e.g. Archbishop Romero, Dorothy Day, Martin Luther King
- Clearly articulates the difference between justice and charity

Dignity of Work and the Rights of Workers:

- Can discuss the role work can play as a contribution to self and society
- Can articulate the importance of intrinsic values
- Demonstrates putting forth the best effort in school, recreation, and work
- Demonstrates respect for the basic rights and responsibilities at school and neighborhood
- Gives examples of the basic rights and responsibilities of workers in at least three different job areas

Solidarity of the Human Family:

- Models attitudes and behaviors that accept and value differences (racial, ethnic, economic, etc.)
- Displays an awareness of responsibility to others throughout the world
- Demonstrates the polices, and behaviors that support a peaceful world

Care for God's Creation:

- Displays individual and group actions to protect and preserve the environment
- Takes an active role in programs and laws that support and help all forms of life

SCIENCE

Dear Parents:

A strong foundation in science, technology, engineering, and mathematics is essential for preparing our students to be well informed citizens as well as prepared for college and the work force. Our traditional science programs have focused on content, facts, and vocabulary, but have lacked the ability for students to engage in the actual application of scientific concepts. The Next Generation Science Standards (NGSS) have refocused K-12 science education to focus on the big ideas through an emphasis on firsthand experiences such as investigation, design, and modeling, to help make more meaningful connections to the concepts that will stay with our children for a lifetime.

The NGSS promote a new way of teaching and learning that allows students to experience science in a meaningful way. This is accomplished by integrating three dimensions of learning as well as technology and engineering principles:

- **Core Disciplinary Concepts:** This is the content that is being covered (ex. Biology).
- **Science and Engineering Practices:** This focuses on the process of how science is conducted in the real world, such as through planning and carrying out investigations.
- **Cross Cutting Concepts:** These are science ideas, like *cause and effect*, that permeate all the sciences.

Your child(ren) will experience instruction in the classroom that emphasizes scientific exploration and experimentation. Children will be engaged in questioning, exploring and discussing possible solutions, investigating science concepts, using argumentation, and being fully active in the learning process. This approach mirrors real-world science practices and engages students in a more meaningful way. Not only will our students be immersed in investigative experiences, but they will also be developing important critical-thinking skills that will cultivate the great thinkers and innovators of tomorrow.

PHYSICAL SCIENCE:

- Develop the historical perspective of the atomic and molecular theory.
- Describe organization of the Periodic Table including how each element is represented.
- Differentiate how all matter is composed of atoms, consisting of protons, neutrons, and electrons.
- Model how molecules form based on the patterns in the periodic table.
- Compare and contrast covalent and ionic bonds.
- Summarize the accomplishments of a contributing scientist in physical science.
- Observe, describe, and identify changes in properties based on chemical reactions.
- Trace the life cycle of a product made of synthetic materials beginning with the natural resources.
- Evaluate the sustainability of a product through its life cycle.
- Compare and contrast the characteristics of particles in a solid, liquid, and a gas.
- Distinguish between the common use and application of the term heat.
- Demonstrate how particle behavior changes as thermal energy is added or removed.
- Recognize how a gain or loss of thermal energy causes a physical change in state.
- Investigate fluid pressure in terms of speed and temperature.
- Illustrate that atoms are conserved in physical and chemical processes.
- Compare and contrast basic chemical reactions.
- Conduct an experiment and collect data to support the law of conservation of thermal energy.
- Articulate Newton's First, Second, and Third Law of Motion and provide examples of each.
- Design a solution to a problem to demonstrate the varying responses of two colliding objects.
- Investigate the motion of objects and collect and analyze to explain changes in motion in terms of unbalanced forces.
- Describe how magnetic field strength changes with distance.
- Develop a testable question and design an experiment to determine factors that can influence the strength of electromagnetic forces.
- Collect data related to strength of interactions, distance from the sun, or orbital periods of objects in the solar system.
- Construct and defend argument on gravitational forces using data collected.

- Design an experiment using a magnet or a compass to demonstrate magnetic fields.
- Apply an understanding of magnetic fields in an experiment to magnetic fields in outer space.
- Conduct an experiment and display collected data to show the relationship between mass, energy, and speed.
- Describe the different types of potential energy.
- Develop a model to explain the relationship between
 - Distance and gravitational potential energy, for example a roller coaster at varying position on a hill or objects at varying heights on shelves.
 - Distance and magnetic potential energy, for example changing the direction/orientation of a magnet.
 - Distance and electrical potential energy, for example a balloon with static electric charge brought closer to a classmate's hair.
- Design and test a device that supports a prediction of the insulating properties of materials.
- Plan an investigation that compares initial and final temperatures of an isolated variable:
 - Same mass of different materials.
 - Different masses of the same material.
 - Same mass of same material in different environments.
- Recognize that energy is not lost, but changes forms.
- Develop an explanation of how kinetic energy is transferred based on an experiment in which objects move.
- Trace the changes in forms and types of energy in a closed system, for example a swinging pendulum, spring, rubber band, or bow and arrow.
- Explain that waves have wavelength, frequency, and amplitude.
- Differentiate between three types of waves.
- Observe and demonstrate that sound is affected by the matter through which it travels.
- Describe how sound travels in waves.
- Demonstrate how the ear is a receptor for sound.
- Identify visible light as one component of the electromagnetic spectrum.
- Model how light interacts with matter by transmission, absorption or reflection.
- Investigate the reflection of light with mirrors and refraction of light with lenses.
- Identify the differences between analog and digital signals.
- Provide evidence to explain why a digital device is more reliable than an analog device.

LIFE SCIENCE:

- Distinguish differences between single-celled and multicellular organisms.
- Provide evidence that living things are made of cells.
- Summarize the accomplishments of a contributing scientist in Life Science.
- Describe the structure and function of different parts of a cell.
- Demonstrate how parts of the cell work together to provide energy for life processes.
- Compare and contrast a variety of body structures/systems within organisms and their role for survival.
- Show the relationship between the levels of organization in living things: cells, tissues, organs, systems.
- Describe the interdependence of a human's interactive systems.
- Recognize an organism's behaviors/physical adaptations.
- Compare and contrast different behaviors and adaptations between species in different environments.
- Analyze the impact of changing one environmental condition on population growth.
- Analyze the impact of one genetic factor on survival.
- Represent the chemical process of photosynthesis.
- Represent the relationship between photosynthesis and respiration.
- Demonstrate how different types of neurons work together to transmit information to and from the brain/spinal cord.
- Recognize interactions between living and nonliving things in an environment.
- Recognize the competition of limited resources among organisms in an environment and analyze the effects on growth and reproduction.

- Identify and classify symbiotic relationships.
- Describe the eight biomes in terms of their distinct biotic and abiotic characteristics.
- Compare and contrast the pattern of interactions between organisms in varying environments.
- Describe how plants are producers.
- Discover that plants influence other life processes.
- Create a model to demonstrate food web interactions in a particular ecosystem.
- Demonstrate energy transfer within a food web utilizing the energy pyramid.
- Trace the cycling of atoms between living and nonliving parts of an ecosystem.
- Understand that through the process of succession, communities change over time.
- Infer changes in populations based on physical or biological components.
- Utilize a graph to analyze population change data.
- Analyze water purification, nutrient recycling, soil erosion to maintain biodiversity and the health of a natural system.
- Compare the benefits and deficits of design solutions for maintaining biodiversity.
- Identify the parts of a chromosome within the nucleus of a cell.
- Identify the chemical and structural properties of DNA and its role in specifying the characteristics of an organism within an organism.
- Describe how chromosomes are contained in both egg and sperm and carry instruction for the new individual.
- Demonstrate how genes can be affected by mutations.
- Create a pedigree chart.
- Describe how DNA makes proteins.
- Understand that sexual and asexual reproduction are necessary for the continuation to the species.
- Describe the stages of the cell cycle.
- Describe the stages of meiosis.
- Model and compute how an inherited trait is determined by one or more genes using a Punnett Square.
- Research types of genetic diseases and create a pedigree to explain the pattern of inheritance.
- Describe the process of genetic engineering and its affects on our society, remembering that God is the Author of all life and has a grand design for creation.
- Diagram sedimentary layers to indicate relative age of fossils.
- Calculate absolute age of a fossil using radioactive half-life formula/chart.
- Compare species within a range on the geological timeline.
- Compare and contrast skeletal systems of modern species, as well as compare/contrast modern to ancient.
- Construct a model to demonstrate relatedness.
- Describe the stages of development of a growing embryo and fetus.
- Identify patterns of similar characteristics.
- Simulate or create a visual to demonstrate the process of natural selection.
- Create data table and/or graph to convey data of predator/prey within an environment.
- Project how current trends in human resource use and population growth will influence the natural environment, and show how current policies affect those trends.
- Recognize how organisms evolve, remembering that God is the Author of all life.
- Know the history of the Theory of Evolution.
- Explain how some of the changes on the earth are contributing to changes in the balance of life and affecting the survival or population growth of certain species.

EARTH SCIENCE:

- Explain the orbital motion of objects in the solar system.
- Describe how the tilt of the earth determines seasons and length of day.
- Draw a diagram or make a model to explain solar and lunar eclipses.
- Summarize the accomplishments of a contributing scientist in Earth Science.
- Understand how humans use technology to explore space.

- Know that billions of galaxies exist in the universe.
- Understand how the force of gravity keeps the planets and other bodies in orbit.
- Describe Newton’s Law of Gravitation.
- Develop a scale model to represent space distances.
- Explain how telescopes are used to make observations and collect data about the solar system and the universe.
- Analyze data collected from various types of telescopes and spacecraft.
- Compare and contrast characteristics of each planet.
- Evaluate the ability of a space object to support life.
- Construct a model to show Earth is comprised of layers including a core, mantle, lithosphere, hydrosphere and atmosphere.
- Demonstrate the movement of energy throughout the system of Earth’s layers.
- Describe the formation of soil including texture, fertility and resistance to erosion.
- Compare and contrast the interrelationships involved in the process of the rock cycle.
- Explain how successive layers of sedimentary rock are affected by folding, breaking and uplifting layers.
- Identify and evaluate the impact of local geologic processes.
- Identify and evaluate the impact of major geologic events.
- Compare and contrast how water, wind, and ice cause weathering and erosion on Earth’s surface.
- Construct an argument to show that the fossils contained in the successive layers of rock can be used to confirm the age, history and changing life forms of the earth.
- Distinguish between landforms that are created through constructive and destructive forces.
- Design a model to demonstrate that Earth’s crust is divided into plates that move in response to mantle movement.
- Demonstrate via model/diagram that the sun’s energy drives the water cycle and that the water cycle is a continuous process of recycling.
- Create an illustration to show the composition and structure of the Earth’s atmosphere.
- Explain how heat, moisture and air movement determine weather.
- Utilize data from weather instrumentation.
- Demonstrate wind flow from high pressure areas to low pressure areas; global atmospheric movement influences local weather.
- Diagram how local lakes affect local weather.
- Analyze how temperature, pressure and the Coriolis Effect cause wind and water currents
- Examine how geographic features affect climate.
- Use maps to explain regional climates.
- Use historical temperature data to investigate factors that influence climate and weather patterns and seasonal changes.
- Identify warm and cold currents on a continental/world map.
- Create essential research questions related to the distribution of natural resources.
- Develop an argument based on evidence to show how human activity is impacting the quality and quantity of natural resources.
- Explain standards and safety procedures used regarding natural disasters.
- Describe technologies used to predict, monitor and minimize the effects of natural hazards.
- Compare and contrast the effects of environmental changes on living things.
- Evaluate the impact of global development/expansion on earth structures.
- Develop/Design a solution to a local environmental issue.
- Identify one natural resource that is impacted by an increase in human population.
- Outline the arguments using evidence to illustrate the human impact on natural resources.
- Analyze tables, graphs, or maps of global regional temperatures and atmospheric levels of gases to generate questions and possible solutions to reduce the impact of global climate change.

SCIENCE AND ENGINEERING PRACTICES:

- Ask questions and define problems.
- Develop and use models (examples can be physical, conceptual, or graphical).
- Plan and carry out investigations.
- Analyze and interpret data.
- Use mathematics and computational thinking.
- Construct explanations (for science) and design solutions (for engineering).
- Engage in an argument based on evidence.
- Obtain, evaluate, and communicate information.

CATHOLIC SOCIAL TEACHINGS:

- Work collaboratively and respect the ideas, roles, and abilities of others.
- Students will be able to demonstrate stewardship inspired by Catholic values in the care of local and global environments.
- Identify the relationships between the roles of science, technology, and Catholic ethics in the global community.
- Understand and appreciate that many different people of varied cultures have made contributions that benefit both science and society.
- Relate heredity and reproduction to Catholic teachings.
- Discuss the theory of evolution in the context of Catholic teaching about the origin of life.
- Compare/describe life from the fossil record with modern life forms and discuss Biblical implications.