**St. Theodore School**

**8th Grade Curriculum**

**Religion:**

* Articulate how the Bible was inspired by God and illustrate the many different literary styles found within the Bible
* Use Scripture for prayer and liturgy
* Transfer ideas from Scripture to daily life
* Diagram the major historical events of the Church
* Defend how the most current teachings of the Church were set out during the most recent council gathering - Vatican Council II
* Justify why knowledge of the history of the Church is essential to a proper understanding of the faith
* Discuss the impact of the history of the Church in the United States
* Argue how tradition is ongoing and yet evolving
* Characterize the lives of modern saints
* Explain how there is only one true God who is revealed as three distinct persons: God the Father, God the Son, and God the Holy Spirit
* Justify how Jesus is Christ, the Messiah, the anointed one sent by God
* Demonstrate how the Resurrection is God's victory over sin and death and a source of life
* Explain why Jesus' passion, death, resurrection, and glorification is called the Paschal Mystery
* Argue why, by the grace of Baptism, each person is called to share in the life of the Blessed Trinity here on earth and after death in eternal life
* Defend why God created the world to show His glory
* Deduce why the Incarnation is the mystery of the union of the divine and human natures in the person of Jesus, the Second Person of the Blessed Trinity
* Explain how, through the power of the Holy Spirit, God gave the world Jesus through Mary
* Explain how the Sacraments are actions of the risen Christ acting through His Church to love, heal, and call each person to change
* Express how, through the Sacrament of Baptism, each person is called to serve, witness, and proclaim the Good News
* Debate how the Eucharist, that was instituted by Christ at the Last Supper, is the real presence of Christ among the faithful
* The Eucharistic Liturgy (the Mass) is the communal celebration of the Paschal Mystery in which each person is called to full and active participation
* Discuss how the Church gathers at the Eucharistic Liturgy to celebrate the life, death, and resurrection of Jesus
* Justify why the Eucharistic Liturgy is the central prayer of the Catholic community
* Argue for the real presence of Christ in the bread and wine offered at the Eucharistic Liturgy
* Compare and contrast the liturgical seasons, feasts, and solemnities of the Church year
* Compare and contrast the liturgical ministries (acolyte, lector, Eucharistic minister, greeter...)
* Compare and contrast the two main parts of the Eucharistic celebration, the Liturgy of the Word, the Liturgy of the Eucharist, as well as two smaller rites, the Introductory Rite and the Concluding Rite
* Justify the importance of song, silence, response, gesture, and movement in the Eucharistic Liturgy
* Explain how Christ is present in the person of the minister, in the Eucharistic elements, in the Word, and in the gathered assembly
* Describe and defend why the primary liturgical symbols are the altar, the ambo, the assembly, the presider's chair, and the baptismal font
* Defend the need for ritual
* Evaluate one's responsibility to fully and actively participate in the Eucharistic Liturgy
* Compare and contrast the liturgical seasons and how the scripture and environment reflect the season
* Articulate how the lectionary contains the readings for the three-year cycle of the Sunday Eucharistic Liturgy
* Explain the importance of environment and art and how it relates to liturgical seasons and enhances worship
* Explain the seasons of the Church year: Advent/Christmas, Lent/Easter, and Ordinary Time
* Determine how the Eucharistic Liturgy prepares the faithful for how to be in the world--a people of welcome, service, and prayer
* We Pray Catholic prayer and traditions are an important aspect of the life of the church
* Explain the need to show our appreciation for the Word of God by attentive listening and responding to it in life
* Defend the need for active and conscious participation in liturgy and other prayer experiences
* Experience all forms of prayer: formal, informal, spontaneous, reflective, personal, Jesus prayer, music and movement, guided meditation, and communal
* Experience community prayer by praying in a group, attending prayer services or liturgies, and visiting the church
* Locate and use a variety of liturgical planning resources for liturgies and other prayer experiences
* Compose prayers for specific events, celebrations, and prayer services
* Learn the responses of the liturgy as prayer
* Explain why prayer is central in a Catholic Christian life, particularly in celebration of the liturgy
* Defend how the Psalms, which are prayers Jesus prayed while on earth, remain an important part of Catholic worship today
* Articulate the practical role of prayer in sustaining a God-centered life
* Justify how each person develops a relationship with God through personal prayer
* Recite and explain the traditional prayers of the Church: Sign of the Cross, Our Father, Hail Mary, Grace before Meals, Doxology (Glory to the Father...), Act of Contrition, Apostles Creed, and Nicene Creed
* Acknowledge and show appreciation for the traditional prayers of the Church: the Rosary, Prayer of St. Francis, Acts of Faith, Hope, & Love, Prayer of the Holy Spirit, Hail Holy Queen, Psalm 23, and Stations of the Cross
* Explain how moral values come from the teachings of Jesus
* Describe the communal aspect of sin
* Prove how the Ten Commandments, Jesus' Great Commandment of Love, the Beatitudes, and Jesus' teachings are the foundation to be used in the process of making good, moral decisions
* Assess how Christian values help each person make social, economic, and political choices that build the kingdom of God
* The Catholic Social Teachings can be applied to personal and societal situations
* Describe how Jesus faced prejudice during His life on earth and defend His response as model for Christians today
* Demonstrate how Jesus models love, respect, and reverence for human life
* Examine the importance of participating in society and contributing to the common good, and defend the need to advance the common good in society
* Compare and contrast how the Church has addressed social justice issues and how more needs to be done
* Justify why, as Christians, each person is called to put the poor first
* Communicate why the Beatitudes are a blueprint for a Christian life
* Dramatize what it means to be a sign of contradiction to society's values
* Explain how, by virtue of Baptism and Confirmation, every Christian is called to service and that this call is fulfilled through a variety of lifestyles and ministries
* Demonstrate how being a Christian influences our values and priorities
* Document the underlying issues of labor disputes and legislation in place to protect workers
* Defend the need to be committed to world peace and how to work for it
* Show how a consumer culture impacts each person and the earth and how we can use our personal talents to care for the earth
* Describe how God calls each person by name
* Articulate and examine reasons for believing in God
* The Church is the People of God, the Body of Christ, and the Community of Faith
* Explain the history, work, and role of religious orders and the call to religious life today
* Demonstrate how, through baptism, each person is called to be active participants in the community of faith
* Articulate how the Catholic Church is a global community
* Show how the heritage of various cultures enrich the experience and tradition of the Church
* Express how each Christian, single, married, cleric, or religious, is called by Baptism to follow Christ and minister to others
* Show how lay women and men contribute to their faith community through their parish community, as well as their daily witness to Gospel values
* Explain how ordained priesthood, diaconate, and religious life are specific responses to the Baptismal call to minister in a special way to God's people
* Describe how all family members develop in mind, body, and spirit through communication
* Defend how life within the Catholic Christian family is the responsibility of each member
* Explain the need for respect of the reproductive function of the human body
* Explain the nature and importance of sexuality as a divine gift, a fundamental component of personality, and an enrichment of the whole person - body, emotions, soul
* Justify how chastity is a virtue that develops a person's authentic maturity and makes him or her capable of guiding the sexual instinct in the service of love and integrating it into his or her psychological and spiritual development
* Explain the human and Christian values that sexuality is intended to express
* Defend the need to respect the moral norms regarding sexuality that are taught by the Church
* Justify why chastity is a virtue that develops a person's authentic maturity and makes him or her capable of guiding the sexual instinct in the service of love and integrating it into his or her psychological and spiritual development
* Examine the human and Christian values that sexuality is intended to express
* Identify the moral norms regarding sexuality that are taught by the Church

**Communication Arts:**

* Draw conclusions, infer, and analyze by citing the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text
* Using appropriate text, determine the theme(s) of a text and analyze its development over the course of a text
* Analyze how specific word choices and sentence structures contribute to meaning and tone
* Analyze how literary devices are used to develop setting, reveal character, advance the plot, and contribute to meaning
* Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors
* Explain how themes reflect historical and/or cultural contexts
* Read and comprehend literature, including stories, dramas, and poems, independently and proficiently
* Compare and contrast information presented in different mediums and analyze how the techniques unique to each medium contribute to meaning in literary and informational texts
* Read and comprehend informational text independently and proficiently
* Explain the central/main idea(s) of an informational text and analyze its development over the course of a text
* Analyze how an author's choice concerning a text's form or overall structure contributes to meaning
* Identify and explain the author's use of symbols in literature and their effect on the overall meaning of a story or character development
* Read a wide range of literature from many periods in many genres to build an understanding of the many dimensions of the human experience (i.e. moral, philosophical, ethical, aesthetic)
* Participate as knowledgeable, reflective, and creative members of a variety of literacy communities
* Establish a personal connection within various forms of literature in regards to personal faith, family, and community
* Analyze and interpret characters' motivations and roles in connection to real-world situations and people or groups
* Analyze how differences in the points of view of the characters and the audience or reader create dramatic irony
* Understand how literature serves as a vehicle through which different perspectives of the human experience can add valuable insight and knowledge
* Conduct research to answer a question (including self-generated question)
	+ a. gather relevant, credible sources, print and digital
	+ b. integrate information using a standard citation system
	+ c. gather relevant information from multiple print/digital sources, using search terms effectively
	+ d. assess the credibility and accuracy of each source
	+ e. quote/paraphrase the data and conclusions of others, avoiding
	+ plagiarism and following standard format for citation

Use the writing process to produce clear/coherent writing in which:

a. development/organization/style/voice are appropriate to task/purpose/audience

b. topics are introduced and a clear focus throughout the text is evident

* Develop narratives, including poems, about real/imagined experiences that establish/maintain a consistent point of view and include: a. clearly identified characters b. well-structured event sequences c. narrative techniques d. relevant descriptive details
* Develop informative/explanatory writing to: a. examine a topic with relevant facts, examples, and details b. establish relationships between ideas/supporting evidence
* Develop argumentative writing by:

a. introducing and supporting a claim with clear reasons and relevant evidence

b. acknowledging counterclaims

c. establishing relationships among claims, counterclaims, and supporting evidence

* Review, revise, and edit writing with consideration for the task, purpose, and audience

a. introduce the topic/maintain focus throughout the text b. choose precise language and make symmetrical choices appropriate for style, task, and audience

* Introduce the topic, maintain a clear focus throughout the text, provide a conclusion that follows from the text; add or delete content and change organization to achieve one's purpose
* Use a variety of appropriate transitions to clarify relationships, connect ideas and claims, and signal time shifts
* Use technology, including the Internet, to produce/publish writing, present the relationships between information and ideas efficiently, and interact/collaborate with others
* Demonstrate a command of the conventions of standard English grammar and usage:
	+ a. explain the verbs in general and their function in particular sentences
	+ b. form and use verbs in the active/passive tense
	+ c. form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood
	+ d. recognize and correct inappropriate shifts in verb voice and mood
	+ e. use punctuation to indicate a pause/break
	+ f. use an ellipse to indicate an omission a,b,c
* Respond to others' questions and comments with relevant evidence, observations, and ideas
* Acknowledge new information expressed by others, including those presented in diverse media and, when warranted, qualify or justify their own views in light of evidence presented
* Speak audibly and to the point using conventions of language as appropriate to task, purpose, and audience when presenting, including appropriate volume, clear articulation, and accurate pronunciation at an understandable pace
* Make consistent eye contact with a range of listeners when speaking, using effective gestures to communicate a clear viewpoint and engage listeners
* Plan and deliver appropriate presentations based on the task, audience, and purpose integrating multimedia into presentations to clarify information, strengthen claims and evidence, and add interest
* Effectively participate in Socratic seminars including reading, note-taking, and question planning

**Math: Pre-Algebra**

* Generate equivalent representations of rational numbers, including converting decimals which repeat into fractions and fractions into repeating decimals
* Estimate the value and compare the size of irrational numbers and approximate their locations on a number line
* Know and apply the properties of integer exponents to generate equivalent expressions
* Investigate concepts of square and cube roots a. Solve equations of the form x2 = p and x3 = p, where p is a positive rational number b. Evaluate square roots of perfect squares less than or equal to 625 and cube roots of perfect cubes less than or equal to 1000
* c. Recognize that square roots of non-perfect squares are irrational
* Express very large and very small quantities in scientific notation and approximate how many times the larger one is than the other
* Use scientific notation to solve problems
* a. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used b. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities
* Understand the connections between proportional relationships, lines, and linear equations
* Graph proportional relationships a. Compare two different proportional relationships
* b. Interpret and draw conclusions of the unit rate as slope
* Apply concepts of slope and y-intercept to graphs, equations, and proportional relationships
* a. Explain why the slope (m) is the same between any two distinct points on a non-vertical line in the Cartesian coordinate plane
* b. Derive the equation y=mx for a line through the origin and the equation y=mx + b for a line intercepting the vertical axis at b
* Write linear equations in point-slope form { y- y1 = m(x - x1) } and standard form { ax + by = c } using points and slope in the Cartesian coordinate plane
* a. Find slope using the slope formula as change in y over change in x
* Analyze and solve linear equations and inequalities and pairs of simultaneous linear equations
* Solve linear equations and inequalities in one variable
	+ a. Create and identify linear equations with one solution, infinitely many solutions, or no solutions
	+ b. Apply linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and combining like terms
* Identify parallel and perpendicular lines in the Cartesian coordinate plane by assessing their slopes
* Analyze and solve systems of linear equations
	+ a. Graph systems of linear equations and recognize the intersection as the solution of the system
	+ b. Explain why solution(s) to a system of two linear equations in two variables correspond to point(s) of intersection of the graphs
	+ c. Explain why systems of linear equations can have one solution, no solution, or infinitely many solutions d. Solve systems of two linear equations
* Understand congruence and similarity using physical models, transparencies, or geometry software
* Verify experimentally the congruence properties of rigid transformations a. Verify that angle measure, betweenness, collinearity, and distance are preserved under rigid transformations
	+ b. Investigate if orientation is preserved under rigid transformations
* Understand that two-dimensional figures are congruent if a series of rigid transformations can be performed to map the preimage to the image
* a. Describe a possible sequence of rigid transformations between two congruent figures
* Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates
* Understand that two-dimensional figures are similar if a series of transformations (rotations, reflections, translations, and dilations) can be performed to map the preimage to the image
* Explore angle relationships and establish informal arguments
* a. Derive the sum of the interior angles of a triangle
* b. Explore the relationship between the interior and exterior angles of a triangle
* c. Construct and explore the angles created when parallel lines are cut by a transversal
* d. Use the properties of similar figures to solve problems
* Understand and apply the Pythagorean Theorem
* Use models to demonstrate a proof of the Pythagorean Theorem and its converse
* Use the Pythagorean Theorem to determine unknown side lengths in right triangles in problems in two- and three-dimensional contexts
* Use the Pythagorean Theorem to find the distance between points in a Cartesian coordinate system
* Solve problems involving volume of cones and spheres
* Solve problems involving surface area and volume
	+ a. Understand the concept of surface area and find surface area of cones
	+ b. Understand the concepts of volume and find the volume of cones and spheres
* Construct and interpret scatter plots of bivariate measurement data to investigate patterns of association between two quantities
* Generate and use a trend line for bivariate data, and informally assess the fit of the line
* Interpret the parameters of a linear model of bivariate measurement data to solve problems
* Understand the patterns of association in bivariate categorical data displayed in a two-way table a. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects
* b. Use relative frequencies calculated for rows or columns to describe possible association between the two variables
* Define, evaluate, and compare functions
* Explore the concept of functions (the use of function notation is not required)
* a. Understand that a function assigns to each input exactly one output
* b. Determine if a relation is a function
* c. Graph a function
* Compare characteristics of two functions each represented in a different way
* Investigate the differences between linear and nonlinear functions
* a. Interpret the equation y = mx + b as defining a linear function, whose parameters are the slope (m) and the y-intercept (b)
* b. Recognize that the graph of a linear function has a constant rate of change
* c. Give examples of nonlinear functions
* Use functions to model relationships between quantities
* Use functions to model linear relationships between quantities
* a. Explain the parameters of a linear function based on the context of a problem
* b. Determine the parameters of a linear function
* c. Determine the x-intercept of a linear function
* Describe the functional relationship between two quantities from a graph or a verbal description

**Math: Algebra**

* Extend and use properties of rational exponents
* Explain how the meaning of rational exponents extends from the properties of integer exponents
* Rewrite expressions involving radicals and rational exponents using the properties of exponents. Limit to rational exponents with a numerator of 1
* Use units to solve problems
* Use units of measure as a way to understand and solve problems involving quantities. a) Identity, label, and use appropriate units of measure within a problem.
	+ b) Convert units and rates.
	+ c) Use units within problems.
	+ d) Choose and interpret the scale and the origin in graphs and data displays
* Define and use appropriate quantities for representing a given context or problem
* Choose a level of accuracy appropriate to limitations on measurement when reporting quantities
* Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions
* Analyze the structure of polynomials to create equivalent expressions or equations
* Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties. a) Find the zeros of a quadratic function by rewriting it in factored form. b) Find the maximum or minimum value of a quadratic function by completing the square
* Create equations that describe linear, quadratic, and exponential relationships
* Create equations and inequalities in one variable and use them to model and/or solve problems
* Create and graph linear, quadratic, and exponential equations in two variables
* Represent constraints by equations or inequalities and by systems of equations or inequalities, and interpret the data points as a solution or non-solution in a modeling context
* Solve literal equations and formulas for a specified variable that highlights a quantity of interest
* Understand solving equations as a process, and solve equations and inequalities in one variable
* Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original
* Solve problems involving quadratic equations. a) Use the method of
* completing the square to create an equivalent quadratic equation. b)
* Derive the quadratic formula. c) Analyze different methods of solving
* quadratic equations
* Solve systems of equations
* Solve a system of linear equations algebraically and/or graphically
* Solve a system consisting of a linear equation and a quadratic equation
* algebraically and/or graphically
* Justify that the technique of linear combination produces an equivalent
* system of equations
* Represent and solve linear and exponential equations and inequalities
* graphically
* Explain that the graph of an equation in two variables is the set of all its
* solutions plotted in the Cartesian coordinate plane
* Graph the solution to a linear inequality in two variables
* Solve problems involving a system of linear inequalities
* Arithmetic with Polynomials & Rational Expressions
* Perform operations on polynomials
* Add, subtract, and multiply polynomials and understand that polynomials
* follow the same general rules of arithmetic and are closed under these
* operations
* Divide polynomials by monomials
* Interpreting Functions
* Understand the concept of a function and use function notation
* Understand that a function from one set (domain) to another set (range)
* assigns to each element of the domain exactly one element of the range.
* a) Represent a function using function notation. b) Understand that the
* graph of a function labeled f is the set of all ordered pairs (x, y) that
* satisfy the equation y=f (x)
* Use function notation to evaluate functions for inputs in their domains,
* and interpret statements that use function notation in terms of a context
* Interpret linear, quadratic, and exponential functions in terms of the context
* Using tables, graphs, and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities
* Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes
* Determine the average rate of change of a function over a specified interval and interpret the meaning
* Interpret the parameters of a linear or exponential function in terms of the context
* Analyze linear, quadratic, and exponential functions using different representations
* Graph functions expressed symbolically and identify and interpret key features of the graph
* Translate between different but equivalent forms of a function to reveal and explain properties of the function and interpret these in terms of a context
* Compare the properties of two functions given different representations
* Building Functions
* Build new functions from existing functions (linear, quadratic, and exponential)
* Analyze the effect of translations and scale changes on functions Linear, Quadratic, &
* Exponential Models
* Construct and compare linear, quadratic, and exponential models and solve problems
* Distinguish between situations that can be modeled with linear or exponential functions. a) Determine that linear functions change by equal differences over equal intervals. b) Recognize exponential situations in which a quantity grows or decays by a constant percent rate per unit interval
* Describe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically
* Construct linear, quadratic, and exponential equations given graphs, verbal descriptions, or tables
* Use arithmetic and geometric sequences
* Write arithmetic and geometric sequences in recursive and explicit forms, and use them to model situations and translate between the two forms
* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the set of integers
* Find the terms of sequences given an explicit or recursive formula Data & Statistics
* Summarize, represent, and interpret data
* Analyze and interpret graphical displays of data
* Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets
* Interpret differences in shape, center, and spreads in the context of the data sets, accounting for possible effects of outliers
* Summarize data in two-way frequency tables
* Interpret relative frequencies in the context of the data
* Recognize possible associations and trends in the data
* Construct a scatter plot of bivariate quantitative data describing how the variables are related; determine and use a function that models the relationship
* Construct a linear function to model bivariate data represented on a scatter plot that minimizes residuals
* Construct an exponential function to model bivariate data represented on a scatter plot that minimizes residuals
* Interpret the slope (rate of change) and the y-intercept (constant term) of a linear model in the context of the data
* Determine and interpret the correlation coefficient for a linear association
* Distinguish between correlation and causation

**Science**

* Develop models to describe the atomic composition of simple molecules
* and extended structures. [Clarification Statement: Emphasis is on
* developing models of molecules that vary in complexity. Examples of
* Simple molecules could include ammonia and methanol. Examples of
* extended structures could include sodium chloride or diamonds.
* Examples of molecular-level models could include drawings, 3D ball and
* stick structures, or computer representations showing different molecules
* with different types of atoms.
* Gather, analyze, and present information to describe that synthetic
* materials come from natural resources and how they impact society.
* [Clarification Statement: Emphasis is on natural resources that undergo a
* chemical process to form the synthetic material. Examples of new
* materials could include new medicine, foods, and alternative fuels.]
* (\*Should be taught through the lens of Catholicism. As Catholics, we
* believe that God wishes us to be good stewards of the Earth.)
* Wave Properties
* Use mathematical representations to describe a simple model for waves
* that includes how the amplitude of a wave is related to the energy in a
* wave. [Clarification Statement: Emphasis is on describing waves with
* both qualitative and quantitative thinking.]
* Develop and use a model to describe that waves are reflected, absorbed,
* or transmitted through various materials. [Clarification Statement:
* Emphasis is on both light and mechanical waves. Examples of models
* could include drawings, simulations, and written descriptions.]
* Analyze and interpret data on the properties of substances before and
* after the substances interact to determine if a chemical reaction has
* occurred. [Clarification Statement: Examples of reactions could include
* burning sugar or steel wool, fat reacting with sodium hydroxide, and
* mixing zinc with hydrogen chloride.]
* Develop and use a model to describe how the total number of atoms
* remains the same during a chemical reaction and thus mass is
* conserved. [Clarification Statement: Emphasis is on law of conservation
* of matter and on physical models or drawings, including digital forms that
* represent atoms.]
* Construct, test, and modify a device that either releases or absorbs
* thermal energy by chemical processes. [Clarification Statement:
* Emphasis is on the design, controlling the transfer of energy to the
* environment, and modification of a device using factors such as type and
* concentration of a substance. Examples of designs could involve
* chemical reactions such as dissolving ammonium chloride or calcium
* chloride.]
* NGSS Forces & Interactions pg 38 (MO =Forces & Motion)
* Apply physics principles to design a solution that minimizes the force of
* an object during a collision and develop an evaluation of the solution.
* s.fi.8.2 Plan and conduct an investigation to provide evidence that the change in
* an object’s motion depends on the sum of the forces on the object and
* the mass of the object. [Clarification Statement: Emphasis is on balanced
* (Newton’s First Law) and unbalanced forces in a system, qualitative
* comparisons of forces, mass and changes in motion (Newton’s Second
* Law), frame of reference, and specification of units.]
* Analyze diagrams and collect data to determine the factors that affect the
* strength of electric and magnetic forces. [Clarification Statement:
* Examples of devices that use electric and magnetic forces could include
* electromagnets, electric motors, or generators. Examples of data could
* include the effect of the number of turns of wire on the strength of an
* electromagnet, or the effect of increasing the number or strength of
* magnets on the speed of an electric motor.]
* Conduct an investigation and evaluate the experimental
* design to provide evidence that electric and magnetic fields exist
* between objects exerting forces on each other even though the objects
* are not in contact. [Clarification Statement: Examples of this
* phenomenon could include the interactions of magnets,
* electrically charged strips of tape, and electrically-charged pitch balls.
* Examples of investigations could include first-hand experiences or
* simulations.]
* Construct and present arguments using evidence to support the claim
* that gravitational interactions are attractive and depend on the masses of
* interacting objects. [Clarification statement: Examples of evidence for
* arguments could include data generated from simulations or digital tools
* and charts displaying mass, strength of interaction, distance from the
* sun, and orbital periods of objects within the solar system) (assessment
* boundary: assessment does not include Newton's Law of Gravitation or
* Kepler's Laws.]
* Conduct an investigation and evaluate the experimental
* design to provide evidence that electric and magnetic fields exist
* between objects exerting forces on each other even though the objects
* are not in contact.. [Clarification Statement: Examples of this
* phenomenon could include the interactions of magnets,
* electrically charged strips of tape, and electrically-charged pitch balls.
* Examples of investigations could include first-hand experiences or
* simulations.]
* NGSS Energy pg 40 s.e.8.1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed
* of an object. [Clarification Statement: Emphasis is on descriptive
* relationships between kinetic energy and mass separately from kinetic
* energy and speed. Examples could include riding a bicycle at different
* speeds, rolling different sizes of rocks downhill, and getting hit by a
* wiffle ball versus a tennis ball.]
* Develop a model to describe that when the arrangement of objects
* interacting at a distance changes, different amounts of potential energy
* are stored in the system. [Clarification Statement: Emphasis is on relative
* amounts of potential energy, not on calculations of potential energy.
* Examples of objects within systems interacting at varying distances could
* include: the Earth and either a roller coaster cart at varying positions on a
* hill or objects at varying heights on shelves, changing the
* direction/orientation of a magnet, and a balloon with static electrical
* charge being brought closer to a classmate’s hair. Examples of models
* could include representations, diagrams, pictures, and written
* descriptions of systems.]
* Apply scientific principles to design, construct, and test a device that
* either minimizes or maximizes thermal energy transfer. [Clarification
* Statement: Examples of devices could include an insulated box, a solar
* cooker, and a Styrofoam cup.]
* Plan and conduct an investigation to determine the relationships among
* the energy transferred, the type of matter, the mass, and the change in
* the temperature of the sample. [Clarification Statement: Examples of
* experiments could include comparing final water temperatures after
* different masses of ice melted in the same volume of water with the
* same initial temperature, the temperature change of samples of different
* materials with the same mass as they cool or heat in the environment, or
* the same material with different masses when a specific amount of
* energy is added.]
* Construct, use, and present arguments to support the claim that when
* the kinetic energy of an object changes, energy is transferred to or from
* the object. [Clarification Statement: Examples of empirical evidence used
* in arguments could include an inventory or other representation of the
* energy before and after the transfer in the form of temperature changes
* or motion of objects.]
* Define the criteria and constraints of a design problem with sufficient
* precision to ensure a successful solution, taking into account relevant
* scientific principles and potential impacts on people and the natural
* environment that may limit possible solutions
* Evaluate competing design solutions using a systematic process to
* determine how well they meet the criteria and constraints of the problem
* Analyze data from tests to determine similarities and differences among
* several design solutions to identify the best characteristics of each that
* can be combined into a new solution to better meet the criteria for
* success
* Develop a model to generate data for iterative testing and modification of
* a proposed object, tool, or process such that an optimal design can be
* achieved

**Social Studies**

* American History through 1870
* Beginning settlements through Civil War
* Reconstruction through Modern history
* Civics (Governmental Systems & Principles)
* Settlements