Integrated Faith Standards for Academic Curriculum

Science Curriculum

Kindergarten – Grade 8

*Revised 2022

"Education is an important mission, which draws young people to what is good, beautiful, and true."

Pope Francis

Science is crucial for all students to master; not only those who seek careers in science, engineering, and medicine, but all citizens who live in the 21st century. These standards are created for students who live in a world where scientific understanding is not just an asset, but a necessity.

In studying science, we desire that our students in Catholic Schools will be able to:

- Demonstrate the mental practices of precise, determined, meticulous, and accurate questioning, inquiry, and reasoning of the Scientific Method.
- Learn that science involves exploration and particular procedures and ways of developing and organizing knowledge in an ongoing journey of discovery.
- Respond to the beauty, harmony, proportion, and wholeness existing in Nature.
- Appreciate how scientific hypothesis, investigation, and experimentation relate to other areas of study, especially the interplay of scientific research and theological and philosophical analysis.
- Articulate how scientific theories such as the Big Bang and evolution reflect the glory of the Creator.
- Communicate the significant contributions that the Catholic Church has made to the advancement of science, including the sponsorship of the first universities and such acclaimed scientists as Fr. Gregor Mendel, Fr. Georges Lemaître, Louis Pasteur, Nicholas Copernicus, Blaise Pascal, Galileo Galilei, Luigi Galvani, and Leonardo da Vinci.

The proposed Diocesan Curriculum Standards for Science adapted and reprinted from the *Indiana Academic Science Standards* will guide us in creating a science and engineering curriculum modeled on Design Process and the Scientific Method, enabling our students to approach the world with logic, reason, inquiry, and wonder. "Every scientist, through personal study and research, completes himself and his own humanity. ... Scientific research constitutes the way for the personal encounter with truth, and perhaps the privileged place for the encounter itself with God, the Creator of heaven and earth. Science shines forth in all its value as a good capable of motivating our existence, as a great experience of freedom for truth, as a fundamental work of service. Through research each scientist grows as a human being and helps others to do likewise." – Pope Saint John Paul II.

Scientific Process Standards

The Nature of Scientific knowledge is scientists' best explanations for the data from many investigations. Ideas about objects in the microscopic world that we cannot directly sense are often understood in terms of concepts developed to understand objects in the macroscopic world that we can see and touch. Student work should align with this process of science and should be guided by those principles. Students should also understand that scientific knowledge is gained from observation of natural phenomena and experimentation by designing and conducting investigations guided by theory and by evaluating and communicating the results of those investigations according to accepted procedures. These concepts should be woven throughout daily work.

- Develop explanations to inquiries based on reproducible data and observations gathered during laboratory investigations.
- Recognize that their explanations must be based both on their data and other known information from investigations of others.
- Clearly communicate their ideas and results of investigations verbally and in written form using tables, graphs, diagrams and photographs.

- Regularly evaluate the work of their peers and in turn have their work evaluated by their peers.
- Apply standard techniques in laboratory investigations to measure physical quantities in appropriate units and convert quantities to other units as necessary.
- Use analogies and models (mathematical and physical) to simplify and represent systems that are difficult to understand or directly experience due to their size, time scale or complexity. Recognize the limitations of analogies and models.
- Focus on the development of explanatory models based on their observations during laboratory investigations.
- Explain that the body of scientific knowledge is organized into major theories, which are derived from and supported by the results of many experiments and allow us to make testable predictions.
- Recognize that new scientific discoveries often lead to a re-evaluation of previously accepted scientific knowledge and of commonly held ideas.
- Describe how scientific discoveries lead to the development of new technologies and conversely how technological advances can lead to scientific discoveries through new experimental methods and equipment.
- Explain how scientific knowledge can be used to guide decisions on environmental and social issues.

Basic Principles Underlying All Standards to be Used for the Planning of Curriculum for the Diocese of Manchester

- A passion for mission should inform every curriculum decision.
- All knowledge reflects God's Truth, Beauty, and Goodness.
- Curriculum and instruction enable deeper incorporation of the children into the Church, the formation of community within the school, and respect for the uniqueness and dignity of each person as created in the image and likeness of God.
- Education fosters growth in Christian virtue and contributes to development and formation of the whole person for the good of the society of which he/she is a member, and in recognition of their destiny, an eternal life in Christ.
- Each subject is to be examined in the context of the Catholic faith through Scripture and Tradition and is to be illuminated by Gospel values.
- Learning and formation are interconnected, as are the natural and spiritual development of each student.
- Curriculum and instruction seek to promote a synthesis of faith, life, and culture, forming students as disciples of Jesus.
- All curricula must support a commitment to strong and consistent Catholic identity.
- Curriculum will assist the student's ability to think critically, problem solve, innovate, and lead towards a supernatural vision.

In a Catholic School, Curricular Formation…

1. Involves the integral formation of the whole person, body, mind, and spirit, in light of his or her ultimate end and the good of society.[i]
2. Promotes human virtues and the dignity of the human person as created in the image and likeness of God and modeled on the person of JesusChrist.[ii]
3. Seeks to know and understand objective reality, which includes transcendent Truth, is knowable by reason and faith, and finds its origin, unity, and end in God.
4. Develops a Catholic worldview and enables a deeper incorporation of the student into the heart of the Catholic Church.[iii]
5. Encourages a synthesis of faith, life, and culture.[iv]

Posing Questions for Science and Defining Problems for Engineering

K-8.EP.PQ-1.0 A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work, and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.

Developing and Using Models and Tools

K-8.EP.MT-1.0 A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions, and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include but are not limited to the following: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include but are not limited to the following: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.

Constructing and Performing Investigations

K-8.EP.CPI-1.0 Scientists and engineers construct and perform investigations in the field or laboratory, working collaboratively and individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters, generating quality data. Scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.

Analyzing and Interpreting Data

K-8.EP.AID-1.0 Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering make analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to the following: “Does this make sense?” “Could my results be duplicated?” and/or “Does the design solve the problem with the given constraints?”

Using Mathematics and Computational Thinking

K-8.EP.MCT-1.0 In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

Constructing Explanations (for Science) and Designing Solutions (for Engineering)

K-8.EP.CEDS-1.0 Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, and connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.

Engaging in Argument from Evidence

K-8.EP.AE-1.0 Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.

Obtaining, Evaluating, and Communicating Information

K-8.EP.OEC-1.0 Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.

Kindergarten through Grade 6 Science Catholic Integrated Faith Standards

Scientific Topics – General Standards

K6.S.IF-GS.1.1	Exhibit care and concern at all stages of life for each human person as animage and likeness of God.
K6.S.IF-GS.1.2	Describe the unity of faith and reason with confidence that there exists no contradiction between the God of nature and the God of faith.
K6.S.IF-GS.1.3	Value the human body as the temple of the Holy Spirit.

Scientific Topics – Intellectual Standards

K6.S.IF-IS.2.1	Explain what it means to say that God created the world and all matter outof nothing at a certain point in time; how it manifests His wisdom, glory, and purpose; and how He holds everything in existence according to His plan.
K6.S.IF-IS.2.2	Describe the relationships, elements, underlying order, harmony, andmeaning in God's creation.
K6.S.IF-IS.2.3	Explain how creation is an outward sign of God's love and goodness and, therefore, is ,"sacramental" in nature.
K6.S.IF-IS.2.4	Give examples of the beauty evident in God's creation.
K6.S.IF-IS.2.5	Explain the processes of conservation, preservation, overconsumption, and stewardship in relation to caring for that which God has given to sustain and delight us.
K6.S.IF-IS.2.6	Describe God's relationship with man and nature.
K6.S.IF-IS.2.7	Describe how science and technology should always be at the service ofhumanity and, ultimately, to God, in harmony with His purposes.
K6.S.IF-IS.2.8	Explain how science properly limits its focus to how things physically exist and is not designed to answer issues of meaning, the value of things, or the mysteries of the human person.
K6.S.IF-IS.2.9	Describe how the use of the scientific method to explore and understand nature differs, yet complements, the theological and philosophical questionsone asks in order to understand God and His works.
K6.S.IF-IS.2.10	Analyze the false assumption that science can replace faith.
K6.S.IF-IS.2.11	List the basic contributions of significant Catholics to science such as Galileo, Copernicus, Mendel, and others.

Scientific Topics – Dispositional Standards

K6.S.IF-IS.3.1	Display a sense of wonder and delight about the natural universe and itsbeauty.
K6.S.IF-IS.3.2	Share concern and care for the environment as a part of God's creation.
K6.S.IF-IS.3.3	Accept the premise that nature should not be manipulated simply at man's will or only viewed as a thing to be used, but that man must cooperate withGod's plan for himself and for nature.
K6.S.IF-IS.3.4	Accept that scientific knowledge is a call to serve and not simply a meansto gain power, material prosperity, or success.

Physical Science

K.SC.PS-1.0	Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.
K.SC.PS-2.0	Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.
K.SC.PS-3.0	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
K.SC.PS-4.0	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

Earth and Space Science

K.SC.ESS-1.0	Use observations of the sun, moon, and planets to describe patterns that can be predicted.
K.SC.ESS-2.0	Observe and compare properties of sand, silt, clay, and organic matter.
K.SC.ESS-3.0	Observe a variety of biomes and describe the recognizable living and nonliving items.
K.SC.ESS-4.0	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment.
K.SC.ESS-5.0	Explains how humans have a responsibility as Stewards of the Earth.

Life Science

K.SC.LS-1.0	Develop representations to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
K.SC.LS-2.0	Develop a model representing how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
K.SC.LS-3.0	Make observations of plants and animals to compare the diversity of life in different habitats and how they meet their basic needs for food, water, and shelter.
K.SC.LS-4.0	Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

Engineering

K.SC.EN-1.0	Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of an improved object or tool.
K.SC.EN-2.0	Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function.
K.SC.EN-3.0	Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.

Physical Science

1.SC.PS-1.0	Characterize materials as solid, liquid, or gas and investigate their properties, record observations, and explain the choices to others based on evidence (i.e., physical properties).
1.SC.PS-2.0	Predict and experiment with methods (sieving, evaporation) to separate solids and liquids based on their physical properties.
1.SC.PS-3.0	Plan and conduct investigations to provide evidence for a relationship between vibration and sound.
1.SC.PS-4.0	Conduct an experiment to determine how light is transmitted through different objects.

Earth and Space Science

1.SC.ESS-1.0	Make observations to determine the effect of sunlight on Earth's surface and use tools and materials to investigate temperatures in different conditions.
1.SC.ESS-2.0	Describe and compare objects seen in the night and day sky, observing that the sun and moon move across the sky.
1.SC.ESS-3.0	Describe in words and pictures the changes in weather from month to month and season to season and how they form patterns over time.
1.SC.ESS-4.0	Identify how humans interact with and use resources such as land, water, air and/or other living things.
1.SC.ESS-5.0	Incorporate Creation story and making of sun, separating night from day and correlate to what we use the sun for and objects found in the sky.

Life Science

1.SC.LS-1.0	Describe and compare the life cycle of common living plants and animals.
1.SC.LS-2.0	Describe and compare the physical features of common living plants and animals.
1.SC.LS-3.0	Use observations to identify basic survival needs of common living plants and animals.
1.SC.LS-4.0	Gather evidence from observations of animals and plants to define several characteristics of living things that distinguish them from non-living things.

Engineering

1.SC.EN-1.0	Pose questions, make observations, and obtain information about a situation people want to change.
1.SC.EN-2.0	Using a physical model to investigate how the shape of an object helps it function.
1.SC.EN-3.0	Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.

Physical Science

2.SC.PS-1.0	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
2.SC.PS-2.0	Predict the result of combining solids and liquids in pairs. Mix, observe, gather, record, and discuss evidence of whether the result may have different properties than the original materials.
2.SC.PS-3.0	Construct an argument with evidence that some changes caused by heating and cooling can be reversed and some cannot.
2.SC.PS-4.0	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
2.SC.PS-5.0	Demonstrate and compare how objects can move in different ways and describe the position or motion of an object relative to a point of reference.

Earth and Space Science

2.SC.ESS-1.0	Use tools to observe and measure weather phenomena like precipitation, changes in temperature, wind speed, and direction and chart or graph weather observations such as cloud type and type of precipitation on a daily basis over a period of weeks to identify patterns and cycles of weather.
2.SC.ESS-2.0	Investigate the severe weather of a region and its impact on the community, looking at forecasting to prepare for, and respond to, severe weather.
2.SC.ESS-3.0	Investigate how wind or water change the shape of the land, and design solutions for prevention.
2.SC.ESS-4.0	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
2.SC.ESS-5.0	Ask questions and design class investigations on the effects of the sun heating the surface of the earth.
2.SC.ESS-6.0	Discuss the story of Noah's Ark and what happened to plant, animals, and humans not on the Ark.

Life Science

2.SC.LS-1.0	Determine patterns and behavior (adaptations) of parents and offspring that help offspring to survive.
2.SC.LS-2.0	Compare and contrast details of the body and structures within the life cycles of plants and animals.
2.SC.LS-3.0	Classify living organisms according to variations in specific physical features (e.g., body coverings, appendages) and describe how features may provide an advantage for survival in different environments.
2.SC.LS-4.0	Explain God's role as the Author of Creation.

Engineering

2.SC.EN-1.0	Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.
2.SC.EN-2.0	Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.
2.SC.EN-3.0	Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.

Diocesan Standards for Computer Science allow for students to be prepared in the ever-changing computer science areas providing inquiry-based, hands-on experiences based on two components: Concepts and Practices. The expectation is for students who attend schools with the capacity to support Computer Science and/or Robotics to work through the standards in multi-subject areas. As students move through grade levels, they will work with and experience the standards at those grade bands (K-2, 3-5, and 6-8). The standards are based on the five core concepts: Data and Information (DI); Computing Devices and Systems (CD); Programs and Algorithms (PA); Networking and Communication (NC); and Impact and Culture (IC).

Data and Information

K-2.CS.DI-1.0	Use technology resources to solve age-appropriate problems and communicate thoughts, ideas, or stories in a step-by-step manner.
K-2.CS.DI-2.0	Understand how to arrange (sort) information into useful order, such as sorting students by birth date, without using a computer.
K-2.CS.DI-3.0	Recognize that software is created to control computer operations.

Computing Devices and Systems

K-2.CS.CDS-1.0	Use standard input and output devices to operate computers and other technologies.

Programs and Algorithms

K-2.CS.PA-1.0	Use technology and developmentally appropriate multimedia resources to conduct age-appropriate research and support learning across the curriculum.
K-2.CS.PA-2.0	Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.
K-2.CS.PA-3.0	Arrange information using concept mapping tools and a set of statements that accomplish a simple task.

Networking and Communication

K-2.CS.NC-1.0	Use technology to work cooperatively and collaboratively with peers, teachers, and others.
K-2.CS.NC-2.0	Gather information and communicate electronically with others with support from teachers, family members, or student partners.

Impact and Culture

K-2.CS.IC-1.0	Practice responsible digital citizenship (legal and ethical behaviors) in the use of technology.
K-2.CS.IC-2.0	Identify positive and negative social and ethical behaviors for using technology.

Physical Science

3.SC.PS-1.0	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3.SC.PS-2.0	Identify types of simple machines and their uses. Investigate and build simple machines to understand how they are used.
3.SC.PS-3.0	Describe evidence to support the idea that light and sound are forms of energy.
3.SC.PS-4.0	Generate sound energy using a variety of materials and techniques, and recognize that it passes through solids, liquids, and gases (i.e., air).
3.SC.PS-5.0	Investigate and recognize properties of sound that include pitch, loudness (amplitude), and vibration as determined by the physical properties of the object making the sound.
3.SC.PS-6.0	Investigate how light travels through matter. Observe and describe how light is absorbed, changes direction, reflects back, and passes through objects.

Earth and Space Science

3.SC.ESS-1.0	Obtain and combine information to determine seasonal weather patterns across the different regions of the United States.
3.SC.ESS-2.0	Determine solutions that could be implemented to reduce the impact of weather-related hazards.
3.SC.ESS-3.0	Observe the detailed characteristics of rocks and minerals. Identify and classify rocks as being composed of different combinations of minerals.
3.SC.ESS-4.0	Determine how fossils are formed, discovered, layered over time, and used to provide evidence of the organisms and the environments in which they lived long ago.
3.SC.ESS-5.0	Describe how the properties of earth materials make them useful to humans in different ways. Describe ways that humans have altered these resources to meet their needs for survival.

Life Science

3.SC.LS-1.0	Analyze evidence that plants and animals have traits inherited from parents and that variations of these traits exists in a group of similar organisms.
3.SC.LS-2.0	Plan and conduct an investigation of plant growth over time, taking measurements, collecting data in appropriate units, and displaying the data in graphs. Examine factors that might influence plant growth, development, and reproduction.
3.SC.LS-3.0	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, and behavior.
3.SC.LS-4.0	Construct an argument that some animals form groups that help members survive.
3.SC.LS-5.0	Identify the importance of community in our faith as members of the Body of Christ.

Engineering

3.SC.EN-1.0	Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
3.SC.EN-2.0	Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3.SC.EN-3.0	Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Physical Science

4.SC.PS-1.0	Investigate transportation systems and devices that operate on or in land, water, air, and space and recognize the forces (lift, drag, friction, thrust, and gravity) that affect their motion.
4.SC.PS-2.0	Define the relationship of the distance traveled and time required to travel a given distance as they relate to the speed of that object, and investigate the effects of forces on speed and direction of an object.
4.SC.PS-3.0	Investigate how multiple simple machines work together to perform everyday tasks.
4.SC.PS-4.0	Describe and investigate the different ways in which energy can be generated and/or converted from one from of energy to another form of energy (i.e., heat, light, and electricity), including demonstrating how electrical current can pass through a complete circuit.
4.SC.PS-5.0	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. Identify materials that are conductors and insulators and their relationship to how energy is transferred.

Earth and Space Science

4.SC.ESS-1.0	Investigate how the moon appears to move through the sky and changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar and lunar eclipses.
4.SC.ESS-2.0	Obtain and combine information to describe that energy and fuels are derived from natural resources and how they affect the environment.
4.SC.ESS-3.0	Describe how weathering, erosion, and deposition reshape earth's surface over a long period of time and how earthquakes, volcanoes, and landslides make sudden changes to the shape of the land.
4.SC.ESS-4.0	Describe ways in which humans have changed the natural environment. Explain whether these changes have been detrimental or beneficial.
4.SC.ESS-5.0	Discuss how the Catholic Social Teachings and the Corporal and Spiritual Works of Mercy could be used in service to those impacted by natural disasters in our community and the world.

Life Science

4.SC.LS-1.0	Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.
4.SC.LS-2.0	Design investigations to explore how organisms meet some of their needs by responding to stimuli from their environments. Describe how changes to the environment may lead a plant or animal to move to a new location, die, or survive and reproduce.
4.SC.LS-3.0	Construct a model that demonstrates the differences and similarities in plant and animal cells. Describe how various organelles function to support survival and growth.

Engineering

4.SC.EN-1.0	Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
4.SC.EN-2.0	Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
4.SC.EN-3.0	Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Physical Science

5.SC.PS-1.0	Describe and measure the volume and mass of a sample of a given material.
5.SC.PS-2.0	Demonstrate that regardless of how parts of an object are assembled the mass of the whole object is identical to the sum of the mass of the parts; however, the volume can differ from the sum of the volumes (Law of Conservation of Mass).
5.SC.PS-3.0	Determine if matter has been added or lost by comparing mass when melting, freezing, or dissolving a sample of a substance (Law of Conservation of Mass).
5.SC.PS-4.0	Describe the difference between weight and mass. Understand that weight is dependent on gravity and mass is the amount of matter in a given substance or material.

Earth and Space Science

5.SC.ESS-1.0	Analyze the scale of our solar system and its components: our solar system includes the sun, moon, seven other planets and their moons, and many other objects like asteroids and comets.
5.SC.ESS-2.0	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
5.SC.ESS-3.0	Investigate ways our community, scientific organizations, and federal agencies monitor and educate us on balancing the needs of our planet and the needs of mankind as stewards of the Earth.
5.SC.ESS-4.0	Identify the four major Earth systems (geosphere, biosphere, hydrosphere, and atmosphere), describe the composition of each, and develop a model describing ways they interact.

Life Science

5.SC.LS-1.0	Develop a model to describe how matter is transferred and transformed among plants, animals, decomposers, and the environment.
5.SC.LS-2.0	Observe and classify common local organisms as producers, consumers, decomposers, or predator and prey based on their relationships and interactions with other organisms in their ecosystem.
5.SC.LS-3.0	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Engineering

5.SC.EN-1.0	Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
5.SC.EN-2.0	Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
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Data and Information

3-5.CS.DI-1.0	Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
3-5.CS.DI-2.0	Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
3-5.CS.DI-3.0	Demonstrate how a string of bits can be used to represent alphanumeric information and how 1's and 0's represent information.
3-5.CS.DI-4.0	Describe how a simulation can be used to solve a problem.
3-5.CS.DI-5.0	Understand the connections between computer science and other fields.

Computing Devices and Systems

3-5.CS.CDS-1.0	Demonstrate proficiency with keyboards and other input and output devices.
3-5.CS.CDS-2.0	Understand the pervasiveness of computers and computing in daily life (e.g., voicemail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
3-5.CS.CDS-3.0	Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use.
3-5.CS.CDS-4.0	Recognize that computers model intelligent behavior (as found in robotics, speech and language recognition, and computer animation).

Programs and Algorithms

3-5.CS.PA-1.0	Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) to solve problems, keep on task, collaborate, and communicate.
3-5.CS.PA-2.0	Use digital tools to gather, manipulate, and modify data for use by a program.
3-5.CS.PA-3.0	Implement problem solutions using a block-based visual programming language (e.g., begin coding).

Networking and Communication

3-5.CS.NC-1.0	Use online resources (e.g., online discussions, collaborative web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products.
3-5.CS.NC-2.0	Use productivity technology tools (e.g., word processing, spreadsheet, presentation software) for individual and collaborative writing, communication, and publishing activities.

Impact and Culture

3-5.CS.IC-1.0	Discuss basic issues related to academic integrity, informational literacy when using technology and information, and the consequences of inappropriate use.
3-5.CS.IC-2.0	Identify the impact of technology (e.g., social networking, cyber bullying, mobile computing and communication, web technologies, cyber security, and virtualization) on personal life and society.
3-5.CS.IC-3.0	Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
3-5.CS.IC-4.0	Understand ethical issues that relate to computers and networks (e.g., equity of access, security, privacy, copyright, and intellectual property).

Literacy in Science/Technical Subjects: Read and Comprehend Science and Technical Texts Independently and Proficiently and Write Effectively for a Variety of Discipline-Specific Tasks, Purposes, and Audiences

6-8.SSO.LST-1.0	Read and comprehend science and technical texts within a range of complexity developmentally appropriate for grades 6-8 independently and proficiently by the end of grade 8.
6-8.SSO.LST-2.0	Write over a variety of timeframes for a range of discipline-specific tasks, purposes, and audiences.

Key Ideas and Textual Support (Reading): Extract and Construct Meaning from Science and Technical Texts Using a Variety of Comprehension Skills

6-8.SSO.ITS-1.0	Demonstrate information literacy by citing specific textual evidence to support analysis of science and technical texts, and exercise academic integrity by attending to the precise details of explanations or descriptions, especially when citing source material.
6-8.SSO.ITS-2.0	Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.
6-8.SSO.ITS-3.0	Follow a precise multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Structural Elements and Organization (Reading): Build Understanding of Science and Technical Texts, Using Knowledge of Structural Organization and Author's Purpose and Message

6-8.SSO.SEO-1.0	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
6-8.SSO.SEO-2.0	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
6-8.SSO.SEO-3.0	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Synthesis and Connection of Ideas (Reading): Build Understanding of Science and Technical Texts by Synthesizing and Connecting Ideas and Evaluating Specific Claims

6-8.SSO.SCI-1.0	Integrate quantitative or technical information expressed in words from scientific literature and present the information visually (e.g., in a flowchart, diagram, model, graph, or table).
6-8.SSO.SCI-2.0	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text to determine information literacy.
6-8.SSO.SCI-3.0	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Writing Genres (Writing): Write for Different Purposes and to Specific Audiences or People

6-8.SSO.WG-1.0 Write arguments focused on discipline-specific content.

6-8.SSO.WG-2.0 Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.

The Writing Process (Writing): Produce Coherent and Legible Documents by Planning, Drafting, Revising, Editing, and Collaborating with Others

6-8.SSO.WP-1.0 Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce and strengthen writing that is clear and coherent, with some guidance and support from peers and adults.

6-8.SSO.WP-2.0 Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.

The Research Process (Writing): Build Knowledge about the Research Process and the Topic under Study by Conducting Short or More Sustained Research

6-8.SSO.RP-1.0 Conduct short research assignments and tasks to answer a question (including a self-generated question) or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

6-8.SSO.RP-2.0 Demonstrate academic integrity and information literacy by gathering relevant information from multiple sources, using search terms effectively; annotating sources; assessing the credibility and accuracy of each source; and quoting or paraphrasing the data and conclusions of others while avoiding plagiarism and following a standard format for citation (e.g., *APA* or *CSE*).

6-8.SSO.RP-3.0 Draw evidence from informational texts to support analysis, reflection, and research.

Physical Science

6.SC.PS-1.0	Understand that the properties and behavior of matter can be explained by a model that depicts particles representing atoms or molecules in motion.
6.SC.PS-2.0	Explain the properties of solids, liquids and gases using drawings and models that represent matter as particles in motion whose state can be represented by the relative positions and movement of the particles.
6.SC.PS-3.0	Using a model in which matter is composed of particles in motion, investigate that when substances undergo a change in state, mass is conserved.
6.SC.PS-4.0	Describe and demonstrate how potential and kinetic energy can be transferred from one form to another.
6.SC.PS-5.0	Explain that energy may be manifested as heat, light, electricity, mechanical motion, and sound and is often associated with chemical reactions.
6.SC.PS-6.0	Investigate the properties of light, sound, and other energy waves and how they are reflected, absorbed, and transmitted through materials and space.
6.SC.PS-7.0	Distinguish between the terms position, distance, and displacement, as well as the terms speed and velocity.
6.SC.PS-8.0	Describe the motion of an object graphically showing the relationship between time and position.

Earth and Space Science

6.SC.ESS-1.0	Describe the role of gravity and inertia in maintaining the regular and predictable motion of celestial bodies.
6.SC.ESS-2.0	Design models to describe how Earth's rotation, revolution, tilt, and interaction with the sun and moon cause seasons, tides, changes in daylight hours, eclipses, and phases of the moon.
6.SC.ESS-3.0	Compare and contrast the Earth, its moon, and other planets in the solar system, including comets and asteroids. (Comparisons should be made in regard to size, surface features, atmospheric characteristics, and the ability to support life.)

Life Science

6.SC.LS-1.0	Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.
6.SC.LS-2.0	Describe the role of photosynthesis and cellular respiration in the flow of energy in food chains, energy pyramids, and food webs. Create diagrams to show how the energy in animals' food used for bodily processes was once energy from the sun.
6.SC.LS-3.0	Describe specific relationships (predator/prey, consumer/producer, parasite/host) and symbiotic relationships between organisms. Construct an explanation that predicts how patterns of interactions develop between organisms in an ecosystem.
6.SC.LS-4.0	Investigate and use data to explain how changes in biotic and abiotic components in ecosystems can be beneficial or detrimental to native species.
6.SC.LS-5.0	Research invasive species and discuss their impact on ecosystems.

Engineering

6.SC.EN-1.0	Identify the criteria and constraints of a design to ensure a successful solution, accounting for relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
6.SC.EN-2.0	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.
6.SC.EN-3.0	Analyze data from investigations 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.
6.SC.EN-4.0	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

Scientific Topics – General Standards

7-12.SCI.IF-GS.1.1 Exhibit care and concern at all stages of life for each human person as animage and likeness of God.

7-12.SCI.IF-GS.1.2 Describe the unity of faith and reason with confidence that there exists no contradiction between the God of nature and the God of faith.

7-12.SCI.IF-GS.1.3 Value the human body as the temple of the Holy Spirit.

7-12.SCI.IF-GS.1.4 Share how the beauty and goodness of God is reflected in nature and the study of the natural sciences.

Scientific Topics – Intellectual Standards

7-12.SCI.IF-IS.2.1 Articulate how science properly situates itself within other academic disciplines (e.g., history, theology) for correction and completion in order to recognize the limited material explanation of reality to which it is properly attuned.

7-12.SCI.IF-IS.2.2 Demonstrate confidence in human reason and in one's ability to know the truth about God's creation and the fundamental intelligibility of the world.

7-12.SCI.IF-IS.2.3 Analyze how the pursuit of scientific knowledge, for utilitarian purposes alone or for the misguided manipulation of nature, thwarts the pursuit of authentic Truth and the greater glory of God.

7-12.SCI.IF-IS.2.4 Relate how the search for truth, even when it concerns a finite reality of the naturalworld or of man, is never-ending and always points beyond to something higher than the immediate object of study.

7-12.SCI.IF-IS.2.5 Explain the processes of conservation, preservation, overconsumption, and stewardship as it relates to creation and to caring for that which God has given to sustain and delight us.

7-12.SCI.IF-IS.2.6 Evaluate the relationship between God, man, and nature, and the proper role in the totality of being and creation.

7-12.SCI.IF-IS.2.7 Describe humanity's natural situation in, and dependence upon, physical reality and how man carries out his role as a cooperator with God in the work of creation.

7-12.SCI.IF-IS.2.8 Evaluate the errors present in the belief system of scientific naturalism or scientism[2] (which includes materialism[3] and reductionism[4]), which posits that scientific exploration and explanation is the only valid source of meaning.

7-12.SCI.IF-IS.2.9 Distinguish the difference between the use of the scientific method and the theological inquiry to know and understand God's creation and use of universal truths.

7-12.SCI.IF-IS.2.10 Articulate the limitations of science (the scientific method and constraints of the physical world) to know and understand God and transcendent reality.

7-12.SCI.IF-IS.2.11 Identify key Catholic scientists such as Copernicus, Mendel, DaVinci, Bacon, Pasteur, Volta, St. Albert the Great, and others and the witness and evidence they supply against the false claim that Catholicism is not compatible with science. List the basic contributions of significant Catholics to science such as Galileo, Copernicus, Mendel, and others.

7-12.SCI.IF-IS.2.12 Analyze and articulate the Church's approach to the theory of evolution.

7-12.SCI.IF-IS.2.13 Relate how the human soul is specifically created by God for each human being, does not evolve from lesser matter, and is not inherited from our parents.

7-12.SCI.IF-IS.2.14 Explain how understanding the physiological properties of a human being does not address the existence of the transcendent spirit of the human person (see Appendix E).

7-12.SCI.IF-IS.2.15 Explain the supernatural design hypothesis in terms of the Borde-Vilenkin-Guth Proof, the Second Law of Thermodynamics, entropy, and anthropic coincidences (fine tuning of initial conditions and universal constants) (see Appendix E).

7-12.SCI.IF-IS.2.16 Articulate the details of the Galileo affair to counter the assumption that the Church is anti-science.

7-12.SCI.IF-IS.2.17 Demonstrate an understanding of the moral issues involving in vitro fertilization, human cloning, human genetic manipulation, and human experimentation and what the Church teaches regarding work in these areas.

Scientific Topics – Dispositional Standards

7-12.SCI.IF-IS.3.1 Display a deep sense of wonder and delight about the natural universe.

7-12.SCI.IF-IS.3.2 Share how natural phenomena have more than a utilitarian meaning and purpose and exemplify the handiwork of the Creator.

7-12.SCI.IF-IS.3.3 Subscribe to the premise that nature should not be manipulated at will, but should be respected for its natural purpose and end as destined by the creator God.

7-12.SCI.IF-IS.3.4 Share concern and care for the environment as part of God's creation.

7-12.SCI.IF-IS.3.5 Adhere to the idea of the simultaneous complexity and simplicity of physical reality.

Physical Science

7.SC.PS-1.0	Draw, construct models, or use animations to differentiate between atoms, elements, molecules, and compounds
7.SC.PS-2.0	Describe the properties of solids, liquids, and gases. Develop models that predict and describe changes in particle motion, density, temperature, and state of a pure substance when thermal energy is added or removed.
7.SC.PS-3.0	Investigate the Law of Conservation of Mass by measuring and comparing the mass of a substance before and after a change of state.
7.SC.PS-4.0	Describe and investigate the four fundamental forces of nature (strong nuclear force, weak nuclear force, gravitational force, and electromagnetic force).
7.SC.PS-5.0	Investigate and demonstrate Newton's laws of motion and their relationship to motion, acceleration, force, and mass.
7.SC.PS-6.0	Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed. (Law of Conservation of Energy)
7.SC.PS-7.0	Compare and contrast the three types of heat transfer: radiation, convection, and conduction.

Earth and Space Science

7.SC.ESS-1.0	Identify and investigate the properties of minerals. Identify and classify a variety of rocks based on physical characteristics from their origin, and explain how they are related using the rock cycle (i.e., Sedimentary, igneous, and metamorphic rocks).
7.SC.ESS-2.0	Outline the immensity of geologic time using evidence from rock strata and fossil records to organize Earth's 4.6-billion-year-old history.
7.SC.ESS-3.0	Describe how the earth is a layered structure composed of lithospheric plates, a mantle, and a dense core. Describe the physical and chemical properties of each layer.
7.SC.ESS-4.0	Explain how convection currents in the mantle cause lithospheric plates to move and cause fast changes like earthquakes and volcanic eruptions and slow changes like the creation of mountains and formation of new ocean floors
7.SC.ESS-5.0	Using simulations or demonstrations, explain plate tectonics and how lithospheric (tectonic) plates have been, and still are, in constant motion, resulting in the creation of landforms on the Earth's surface over time.
7.SC.ESS-6.0	Research common synthetic materials (i.e., plastics, composites, polyester, and alloys) to gain an understanding that synthetic materials do come from natural resources and have an impact on society.
7.SC.ESS-7.0	Describe the positive and negative environmental impacts of obtaining and utilizing various renewable and nonrenewable energy resources in the United States.

Life Science

7.SC.LS-1.0	Investigate and observe cells in living organisms and collect evidence showing that living things are made of cells. Compare and provide examples of prokaryotic and eukaryotic organisms. Identify the characteristics of living things.
7.SC.LS-2.0	Create a model to show how the cells in multicellular organisms repeatedly divide to make more cells for growth and repair as a result of mitosis. Explain how regulation of cell growth is related to cancer.
7.SC.LS-3.0	Demonstrate how genetic information is transmitted from parent to offspring through chromosomes via the process of meiosis. Explain how living things grow and develop.
7.SC.LS-4.0	Describe the hierarchy in the human body from organelles to organ systems.
7.SC.LS-5.0	Compare and contrast the form and function of the organelles found in plant and animal cells.

Engineering

7.SC.EN-1.0	Identify the criteria and constraints of a design to ensure a successful solution, accounting for relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
7.SC.EN-2.0	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.
7.SC.EN-3.0	Analyze data from investigations 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.
7.SC.EN-4.0	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

Physical Science

8.SC.PS-1.0	Create models to represent the arrangement and charges of subatomic particles in an atom (protons, neutrons, and electrons). Understand the significance that chemical elements make up all the matter in the universe.
8.SC.PS-2.0	Illustrate how atoms are arranged in simple molecules. Distinguish between atoms, elements, molecules, and compounds.
8.SC.PS-3.0	Use basic information provided for an element (atomic mass, atomic number, symbol, and name) to determine its place on the Periodic Table. Use this information to find the number of protons, neutrons, and electrons in an atom.
8.SC.PS-4.0	Identify organizational patterns (radius, atomic number, atomic mass, properties, and radioactivity) on the Periodic Table.
8.SC.PS-5.0	Explain that elements and compounds have characteristic properties such as density, boiling points, and melting points that remain unchanged regardless of sample size.
8.SC.PS-6.0	Compare and contrast physical change vs. chemical change. Analyze the properties of substances before and after substances interact to determine if a chemical reaction has occurred.
8.SC.PS-7.0	Balance chemical equations to show how the total number of atoms for each element does not change in chemical reactions and as a result, mass is always conserved in a closed system (Law of Conservation of Mass).

Earth and Space Science

8.SC.ESS-1.0	Research global temperatures over the past century, relating the data to changes in climate over time.
8.SC.ESS-2.0	Create a model to describe how water is cycled through the earth's crust, atmosphere, and bodies of water. Explain how the water cycle is driven by energy from the sun and the force of gravity.
8.SC.ESS-3.0	Recognize and demonstrate how the sun's energy drives convection in the atmosphere and in bodies of water, which results in ocean currents and weather patterns.
8.SC.ESS-4.0	Research how human consumption of finite natural resources and human activities have had an impact on the environment (i.e., causes of air, water, soil, light, and noise pollution). Explain current efforts to reduce and eliminate these impacts and encourage sustainability.

Life Science

8.SC.LS-1.0	Compare and contrast the transmission of genetic information in sexual and asexual reproduction. Research the survival advantages for organisms that undergo each type of reproduction.
8.SC.LS-2.0	Create and analyze Punnett squares to calculate the probability of specific traits being passed from parents to offspring using different patterns of inheritance.
8.SC.LS-3.0	Explain how genetic and environmental factors such as competition, genetic variation, environmental changes, and overproduction increase or decrease a species' ability to survive and reproduce.
8.SC.LS-4.0	Understand the relationship between deoxyribonucleic acid (DNA), genes, and chromosomes
8.SC.LS-5.0	Recognize organisms are classified into taxonomic levels according to shared characteristics. Explain how an organism's scientific name correlates to these shared characteristics.
8.SC.LS-6.0	Explore and predict the evolutionary relationships between species looking at the anatomical differences among modern organisms and fossil organisms.
8.SC.LS-7.0	Examine traits of individuals within a population of organisms that may give them an advantage in survival and reproduction in given environments or when the environments change.
8.SC.LS-8.0	Recognize and describe how new varieties of organisms have come about from selective breeding and genetic modification.
8.SC.LS-9.0	Explain how cells develop through differentiation into specialized tissues and organs in multicellular organisms.
8.SC.LS-10.0	Research and describe the functions and relationships between various cell types, tissues, and organs in the immune system, circulatory system, and digestive system of the human body.

Engineering

8.SC.EN-1.0	Identify the criteria and constraints of a design to ensure a successful solution, accounting for relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
8.SC.EN-2.0	Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.
8.SC.EN-3.0	Analyze data from investigations 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.
8.SC.EN-4.0	Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

Engineering

6-8.CS.EN-1.0 Identify the criteria and constraints of a design to ensure a successful solution, accounting for relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

6-8.CS.EN-2.0 Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.

6-8.CS.EN-3.0 Analyze data from investigations 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.

6-8.CS.EN-4.0 Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

Data and Information

6-8.CS.DI-1.0 Use the basic steps in problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, and evaluation).

6-8.CS.DI-2.0 Represent data in a variety of ways (e.g., text, sounds, pictures, and numbers), and use different visual representations of problems, structures, and data (e.g., graphs, charts, network diagrams, flowcharts).

6-8.CS.DI-3.0 Demonstrate interdisciplinary applications of computational thinking and interact with content-specific models and simulations to support learning and research.

Computing Devices and Systems

6-8.CS.CDS-1.0 Demonstrate an understanding of the relationship between hardware and software.

6-8.CS.CDS-2.0 Apply troubleshooting strategies to identify and solve routine hardware and software problems that occur during everyday computer use.

6-8.CS.CDS-3.0 Describe the major components and functions of computer systems and networks.

6-8.CS.CDS-4.0 Describe what distinguishes humans from machines, focusing on human intelligence versus machine intelligence and ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).

Programs and Algorithms

6-8.CS.PA-1.0 Select appropriate tools and technology resources to support learning and personal productivity, publish individual products, and design, develop, and publish data, accomplish a variety of tasks, and solve problems.

6-8.CS.PA-2.0 Implement problem solutions using a programming language that includes looping behavior, conditional statements, logic, expressions, variables, and functions.

6-8.CS.PA-3.0 Demonstrate dispositions amenable to open-ended problem solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge).

Networking and Communication

6-8.CS.NC-1.0	Collaboratively design, develop, publish, and present products (e.g., videos, podcasts, websites) using technology resources that demonstrate and communicate curriculum concepts.
6-8.CS.NC-2.0	Exhibit dispositions necessary for collaboration: providing useful feedback, integrating feedback, understanding and accepting multiple perspectives, and socialization.

Impact and Culture

6-8.CS.IC-1.0	Exhibit academic integrity and informational literacy when using technology and information and discuss the consequences of misuse.
6-8.CS.IC-2.0	Analyze the positive and negative impacts of technology on one's personal life, society, and our culture.
6-8.CS.IC-3.0	Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
6-8.CS.IC-4.0	Describe ethical issues that relate to computers and networks (e.g., security, privacy, ownership, and information sharing), and discuss how unequal distribution of technological resources in a global economy raises issues of equity, access, and power.

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