

SCIENCE

FLORIDA



Sunshine State Standards

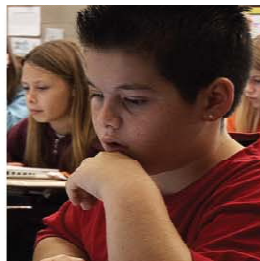
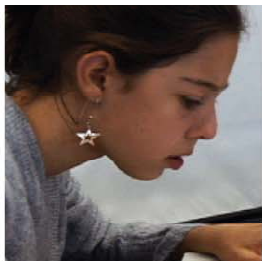


Table of Contents

Overview

History	2
A Commitment to Excellence.....	2
Science Standards Revision Process.....	4
Access Points for Students for Significant Cognitive Disabilities	5
Structure of Standards Documents.....	5
Acknowledgements	6
Science Standards Framers Committee	6
National Experts Who Presented Research to the Framers.....	7
Science Standards Writing Committee.....	7
Science Access Point Writing Team	9
Science Standards Expert Review Panelists.....	11
Other Reviewers	12

K-8 Science Standards

Definitions/Codes	13
--------------------------------	-----------

Grade K.....	15
---------------------	-----------

Big Idea 1 – The Practice of Science	15
Big Idea 5 – Earth in Space and Time.....	16
Big Idea 8 – Properties of Matter.....	16
Big Idea 9 – Changes in Matter.....	17
Big Idea 10 – Forms of Energy.....	17
Big Idea 12 – Motion of Objects	17
Big Idea 13 – Forces and Changes in Motion	17
Big Idea 14 – Organization and Development of Living Organisms	18

Grade 1	19
----------------------	-----------

Big Idea 1 – The Practice of Science	19
Big Idea 5 – Earth in Space and Time.....	20
Big Idea 6 – Earth Structure.....	20
Big Idea 8 – Properties of Matter.....	21
Big Idea 12 – Motion of Objects	21
Big Idea 13 – Forces and Changes in Motion	21
Big Idea 14 – Organization and Development of Living Organisms	22
Big Idea 16 – Heredity and Reproduction	22
Big Idea 17 – Interdependence	22

Grade 2 23

Big Idea 1 – The Practice of Science 23
Big Idea 6 – Earth Structures 24
Big Idea 7 – Earth Systems and Patterns 24
Big Idea 8 – Properties of Matter..... 25
Big Idea 9 – Changes in Matter..... 25
Big Idea 10 – Forms of Energy..... 26
Big Idea 13 – Forces and Changes in Motion 26
Big Idea 14 – Organization and Development of Living Organisms 26
Big Idea 16 – Heredity and Reproduction 27
Big Idea 17 – Interdependence 27

Grade 3 28

Big Idea 1 – The Practice of Science 28
Big Idea 3 – The Role of Theories, Laws, Hypotheses, and Models 29
Big Idea 5 – Earth in Space and Time..... 29
Big Idea 6 – Earth Structures 30
Big Idea 8 – Properties of Matter..... 30
Big Idea 9 – Changes in Matter..... 31
Big Idea 10 – Forms of Energy..... 31
Big Idea 11 – Energy Transfer and Transformations..... 32
Big Idea 14 – Organization and Development of Living Organisms 32
Big Idea 15 – Diversity and Evolution of Living Organisms 33
Big Idea 17 – Interdependence 33

Grade 4 34

Big Idea 1 – The Practice of Science 34
Big Idea 2 – The Characteristics of Scientific Knowledge 35
Big Idea 3 – The Role of Theories, Laws, Hypotheses, and Models 35
Big Idea 5 – Earth in Space and Time..... 36
Big Idea 6 – Earth Structures 37
Big Idea 8 – Properties of Matter..... 38
Big Idea 9 – Changes in Matter..... 38
Big Idea 10 – Forms of Energy..... 39
Big Idea 11 – Energy Transfer and Transformations..... 39
Big Idea 12 – Motion of Objects 40
Big Idea 16 – Heredity and Reproduction 40
Big Idea 17 – Interdependence 41

Grade 5 42

Big Idea 1 – The Practice of Science 42
Big Idea 2 – The Characteristics of Scientific Knowledge 43

Big Idea 5 – Earth in Space and Time.....	43
Big Idea 7 – Earth Systems and Patterns	44
Big Idea 8 – Properties of Matter.....	45
Big Idea 9 – Changes in Matter.....	45
Big Idea 10 – Forms of Energy.....	46
Big Idea 11 – Energy Transfer and Transformations.....	46
Big Idea 13 – Forces and Changes in Motion	47
Big Idea 14 – Organization and Development of Living Organisms	47
Big Idea 15 – Diversity and Evolution of Living Organisms	48
Big Idea 17 – Interdependence	48

Grade 6 49

Big Idea 1 – The Practice of Science	49
Big Idea 2 – The Characteristics of Scientific Knowledge	50
Big Idea 3 – The Role of Theories, Laws, Hypotheses, and Models	50
Big Idea 6 – Earth Structures	51
Big Idea 7 – Earth Systems and Patterns	51
Big Idea 11 – Energy Transfer and Transformations.....	52
Big Idea 12 – Motion of Objects	53
Big Idea 13 – Forces and Changes in Motion	53
Big Idea 14 – Organization and Development of Living Organisms	54
Big Idea 15 – Diversity and Evolution of Living Organisms	55

Grade 7 56

Big Idea 1 – The Practice of Science	56
Big Idea 2 – The Characteristics of Scientific Knowledge	57
Big Idea 3 – The Role of Theories, Laws, Hypotheses, and Models	57
Big Idea 6 – Earth Structures	58
Big Idea 10 – Forms of Energy.....	59
Big Idea 11 – Energy Transfer and Transformations.....	59
Big Idea 15 – Diversity and Evolution of Living Organisms	60
Big Idea 16 – Heredity and Reproduction	61
Big Idea 17 – Interdependence	62

Grade 8 63

Big Idea 1 – The Practice of Science	63
Big Idea 2 – The Characteristics of Scientific Knowledge	64
Big Idea 3 – The Role of Theories, Laws, Hypotheses, and Models	64
Big Idea 4 – Science and Society.....	64
Big Idea 5 – Earth in Space and Time.....	65
Big Idea 8 – Properties of Matter.....	67
Big Idea 9 – Changes in Matter.....	68
Big Idea 18 – Matter and Energy Transformations.....	68

9-12 Science Standards: Bodies of Knowledge

Introduction	69
Nature of Science	70
Standard 1 – The Practice of Science	70
Standard 2 – The Characteristics of Scientific Knowledge	72
Standard 3 – The Role of Theories, Laws, Hypotheses, and Models.....	73
Standard 4 – Science and Society	73
Earth and Space Science	74
Standard 5 – Earth in Space and Time	74
Standard 6 – Earth Structures.....	76
Standard 7 – Earth Systems and Patterns	77
Physical Science	79
Standard 8 – Matter	79
Standard 10 – Energy	81
Standard 12 – Motion.....	84
Life Science	86
Standard 14 – Organization and Development of Living Organisms.....	86
Standard 15 – Diversity and Evolution of Living Organisms.....	89
Standard 16 – Heredity and Reproduction	91
Standard 17 – Interdependence.....	93
Standard 18 – Matter and Energy Transformations	95

Overview

Sunshine State Standards: Science

History

The Sunshine State Standards were first approved by the State Board of Education in 1996 as a means of identifying academic expectations for student achievement in Florida. These original standards were written in several subject areas and were divided into four separate grade clusters (PreK-2, 3-5, 6-8, 9-12). This format was chosen to provide flexibility to school districts in designing curriculum based on local needs.

As Florida moved toward greater accountability for student achievement at each grade level, the Sunshine State Standards were further defined with specific “Grade Level Expectations” added over time. As time went on, two realities appeared that magnified the need to increase the level of rigor, coherence, and clarity in Florida’s academic standards. First, it was recognized that the level of rigor in the 1996 standards was inadequate to address the increased levels of achievement attained by our students. Second, ample evidence from both national and international measures of student achievement indicated the urgent need for higher levels of challenge for all students. This could not occur without a serious effort to increase the level of rigor and expectations across the board for all Florida students.

The Department of Education recognized the need for a systematic approach to review and revise all of the academic standards, and on January 17, 2006, the State Board of Education adopted a six-year cycle that set forth a schedule for the regular review and revision of all K-12 content standards. This action went beyond increasing the rigor of the standards; it included this alignment of the new standards with assessments, instructional materials, professional development, and teacher licensure exams. This way, the new standards and their higher levels of rigor will be fully integrated into the entire culture of K-12 instruction. This move sets the stage for higher levels of rigor and higher academic achievement for years to come.

A Commitment to Excellence

In 2006, the Florida legislature boldly stated its commitment to higher and more challenging standards for Florida’s children by passing HB 7087. Florida law now reads:

§1001.03(1) ...The state board shall establish a schedule to facilitate the periodic review of the standards to ensure adequate rigor, relevance, logical student progression, and integration of reading, writing, and mathematics across all subject areas.

This is a commitment that is shared by educators across Florida, as evidenced by the overwhelming level of public feedback for this revision process. Our goal is to move forward with confidence and a sense of purpose as we begin implementing these revised rigorous science content standards.

Many people were involved in the review and revision of the science standards. We extend our thanks to all of the educators and members of the public for their active interest in this important work. We look forward to continuing to work with all stakeholders as partners in implementing these higher expectations for all Florida students.

Dr. Eric J. Smith
Commissioner of Education

Science Standards Revision Process

In May 2007, the Office of Mathematics and Science convened a committee of framers to consider the framework for the revision of the Sunshine State Standards for science content. Taking into account research in science and science education, a major goal of the revision of the Sunshine State Standards was to strive for consensus among content experts, educational experts, researchers, parents, teachers, and members of the business and workforce community.

Experts in national and international science curriculum provided their analyses of the 1996 Sunshine State Standards for science benchmarks and grade level expectations to the framers. These experts also presented research on the content standards used by other states and countries that lead the world in student achievement for science. There was agreement by all reviewers that Florida's standards fit the description of "a mile wide and an inch deep" and lacked coherence. The content of these presentations can be found online at www.flstandards.org. Combined with their own expertise in science and science education, the framers used the research presented to define the structure and provide recommendations that would become the guiding principles for the writers of the science content standards to follow.

From June 2007 to October 2007, the writers committee met to write the new standards and benchmarks according to the structure set by the framers. This was an iterative process, with the framers reviewing the work and providing comments back to the writers. Responding to calls for clarity, coherence, and minimal redundancy, the number of K-8 grade level expectations was reduced from an average of more than 65 per grade to an average of about 30 benchmarks per grade. High school benchmarks went from a 9-12 grade band in the 1996 standards to specific benchmarks for content in four Bodies of Knowledge: Nature of Science, Life Science, Earth Science, and Physical Science.

From October 2007 to January 2008, the drafts of the standards were provided to the public via online sources and through public forums in various locations around the state. Online reviewers were able to rate the benchmarks and provide comment. Online reviewers provided 262,524 ratings of 480 draft standards and benchmarks. Of these reviewers, 10,017 interested persons completed the visitor profile. These reviewers identified themselves, in descending order of numbers of reviewers, as teachers, parents, other interested persons, district staff, and administrators. Additionally, experts in science and science education provided an in-depth review of the drafts and made comments and proposed revisions.

In January 2008, the benchmarks were revised based on the considerable input from the committees and other reviewers. The names of the framers, speakers, writers, and expert review panelists are included in the Acknowledgment section of this document.

Access Points for Students with Significant Cognitive Disabilities

As part of the revision to the Sunshine State Standards, Access Points for students with significant cognitive disabilities have been developed. These Access Points are expectations written for students with significant cognitive disabilities to access the general education curriculum. Embedded in the Sunshine State Standards, access points reflect the core intent of the standards with reduced levels of complexity. The three levels of complexity include participatory, supported, and independent with the participatory level being the least complex. The new Florida Alternate Assessment will measure achievement on the Access Points.

The Access Points for the Science Sunshine State Standards were developed through the cooperative efforts of writing teams composed of Florida educators and parents under the direction of staff from the Accommodations and Modifications for Students with Disabilities Project, the Accountability and Assessment for Students with Disabilities Project, and the Florida Department of Education

Structure of the Standards Documents

The new world-class Sunshine State Standards for science are organized by grade level for grades K-8 and by Bodies of Knowledge for grades 9-12. This structure was determined by the Framers Committee based on review of the issues presented by experts and research in curriculum standards. The Bodies of Knowledge do not comprise courses. Standards and benchmarks will be used from the various Bodies of Knowledge to write specific science courses at the secondary level.

Several documents were used by the writers in drafting the new science content standards including: 2009 Framework for the Science portion of the National Assessment for Educational Progress (NAEP); the Atlas of Science Literacy from the American Association for the Advancement of Science (AAAS); the Science Benchmarks from Project 2061 of the AAAS; the National Research Council's National Science Education Standards; and Science Curriculum Standards from Massachusetts, Singapore, South Carolina, and Indiana (K-8).

Eighteen Big Ideas thread throughout all grade levels and build in rigor and depth as students advance. Each grade level includes benchmarks from the four Bodies of Knowledge (Nature of Science, Life Science, Earth Science, and Physical Science). With people from many aspects of the education, business, and research communities involved with writing, reviewing, and revising the science content standards, this 2008 revision is truly the work of Florida stakeholders. The Office of Mathematics and Science is incredibly grateful for the intensity of the work that was performed in writing these content standards.

Mary Jane Tappen
Executive Director, Florida Department of Education's Office of Mathematics and Science

Acknowledgments

The Office of Mathematics and Science gratefully acknowledges the cooperation and assistance received from individuals and groups throughout Florida during this revision process. Without such cooperation, these revisions would not have been possible.

We would like to express special thanks to the many local educators, parents, and business people who participated in the current revision process by serving on curriculum committees and reacting to draft documents, as well as those who took the time to review and rate the drafts online. These people include, but are not limited to, the following:

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FLORIDA SCIENCE STANDARDS

K-8 GRADE-LEVEL STANDARDS

Big Ideas

The revised science standards include big ideas that flow throughout all grade levels and build in rigor as students move to higher grade levels. The eighteen big ideas used throughout this document are organized as follows:

Body of Knowledge: The Nature of Science

Big Idea 1: The Practice of Science

Big Idea 2: The Characteristics of Scientific Knowledge

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

Big Idea 4: Science and Society

Body of Knowledge: Earth and Space Science

Big Idea 5: Earth in Space in Time

Big Idea 6: Earth Structures

Big Idea 7: Earth Systems and Patterns

Body of Knowledge: Physical Science

Big Idea 8: Properties of Matter

Big Idea 9: Changes in Matter

Big Idea 10: Forms of Energy

Big Idea 11: Energy Transfer and Transformations

Big Idea 12: Motion of Objects

Big Idea 13: Forces and Changes in Motion

Body of Knowledge: Life Science

Big Idea 14: Organization and Development of Living Organisms

Big Idea 15: Diversity and Evolution of Living Organisms

Big Idea 16: Heredity and Reproduction

Big Idea 17: Interdependence

Big Idea 18: Matter and Energy Transformations

The numbering for the big ideas is consistent throughout the document. Not all big ideas are addressed at each grade level, so the numbering scheme is not consecutive for each grade level.

Benchmark Coding Scheme

SC.	5.	N.	1.	1
Subject	Grade Level	Body of Knowledge	Big Idea	Benchmark

Body of Knowledge Key:

N ~ Nature of Science

E ~ Earth and Space Science

P ~ Physical Science

L ~ Life Science

Access Points Coding Scheme

SC.	5.	P.	1.	In.a
Subject	Grade Level	Body of Knowledge	Big Idea	Access Point

Access Points Key:

In ~ Independent

Su ~ Supported

Pa ~ Participatory

K-8 SCIENCE STANDARDS GRADE K

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.K.N.1.1	Collaborate with a partner to collect information.
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses.
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted.
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features.
SC.K.N.1.5	Recognize that learning can come from careful observation.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.N.1.In.a Identify a partner to obtain information. SC.K.N.1.In.b Identify information about objects and actions in the natural world through observation. SC.K.N.1.In.c Observe, explore, and create a visual representation of real objects.	SC.K.N.1.Su.a Collect a designated item with a partner. SC.K.N.1.Su.b Identify information about objects in the natural world through observation. SC.K.N.1.Su.c Observe, explore, and match pictures to real objects.	SC.K.N.1.Pa.a Share objects with a partner. SC.K.N.1.Pa.b Recognize common objects in the natural world through observation.

GRADE K

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.K.E.5.1	Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up.
SC.K.E.5.2	Recognize the repeating pattern of day and night.
SC.K.E.5.3	Recognize that the Sun can only be seen in the daytime.
SC.K.E.5.4	Observe that sometimes the Moon can be seen at night and sometimes during the day.
SC.K.E.5.5	Observe that things can be big and things can be small as seen from Earth.
SC.K.E.5.6	Observe that some objects are far away and some are nearby as seen from Earth.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.K.E.5.In.a Identify that objects can fall to the ground unless something stops them.</p> <p>SC.K.E.5.In.b Identify daily activities in a 24-hour period, such as eating breakfast and going to bed, and associate activities with morning and night.</p> <p>SC.K.E.5.In.c Identify the Sun in the daytime.</p> <p>SC.K.E.5.In.d Identify the Moon in the sky at night.</p> <p>SC.K.E.5.In.e Observe big and small things in the sky.</p> <p>SC.K.E.5.In.f Identify an item that is far away and an item that is nearby.</p>	<p>SC.K.E.5.Su.a Recognize that objects fall to the ground.</p> <p>SC.K.E.5.Su.b Identify one common activity that occurs in the day and one that occurs in the night.</p> <p>SC.K.E.5.Su.c Recognize the Sun in the daytime.</p> <p>SC.K.E.5.Su.d Recognize the Moon in the sky at night.</p> <p>SC.K.E.5.Su.e Recognize the size of items as either big or small.</p> <p>SC.K.E.5.Su.f Recognize familiar objects that are far away or nearby.</p>	<p>SC.K.E.5.Pa.a Track a falling object.</p> <p>SC.K.E.5.Pa.b Recognize one common activity that occurs during the day.</p> <p>SC.K.E.5.Pa.c Associate the Sun with daytime.</p> <p>SC.K.E.5.Pa.d Associate the Moon with night.</p> <p>SC.K.E.5.Pa.e Recognize items that are big.</p> <p>SC.K.E.5.Pa.f Recognize items as nearby.</p>

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.P.8.In.a Sort objects by observable properties, such as size, shape, or color.	SC.K.P.8.Su.a Match objects by an observable property, such as size or color.	SC.K.P.8.Pa.a Recognize two common objects that are identical to each other.

GRADE K

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.P.9.In.a Recognize that the shape of objects, such as paper, changes when cut, torn, or crumpled.	SC.K.P.9.Su.a Recognize that the shape of objects, such as paper, changes when cut or torn.	SC.K.P.9.Pa.a Recognize a change in an object.

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.K.P.10.1	Observe that things that make sound vibrate.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.P.10.In.a Identify objects that create specific sounds.	SC.K.P.10.Su.a Match sounds to specific objects.	SC.K.P.10.Pa.a Recognize and respond to common sounds.

BIG IDEA 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.P.12.In.a Identify ways that things move, such as fast or slow.	SC.K.P.12.Su.a Recognize that things move.	SC.K.P.12.Pa.a Track objects in motion.

BIG IDEA 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.K.P.13.1	Observe that a push or a pull can change the way an object is moving.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.P.13.In.a Demonstrate pushing or pulling of an object to make it move.	SC.K.P.13.Su.a Recognize that pushing or pulling an object makes it move.	SC.K.P.13.Pa.a Track the movement of objects that are pushed or pulled.

GRADE K

BIG IDEA 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.K.L.14.1	Recognize the five senses and related body parts.
SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.
SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.K.L.14.In.a Recognize the senses of sight, hearing, and smell and related body parts. SC.K.L.14.In.b Identify a behavior of an animal or plant in a book or other media that is not real. SC.K.L.14.In.c Identify differences in characteristics of plants and animals.	SC.K.L.14.Su.a Recognize the senses of sight and hearing and related body parts. SC.K.L.14.Su.b Distinguish a real animal and an animal that is not a living thing, such as a toy animal. SC.K.L.14.Su.c Match identical animals and plants.	SC.K.L.14.Pa.a Recognize and respond to one type of sensory stimuli. SC.K.L.14.Pa.b Distinguish between a plant and animal.

GRADE 1

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation .

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted.
SC.1.N.1.4	Ask "how do you know?" in appropriate situations.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.N.1.In.a Request information about the environment. SC.1.N.1.In.b Use careful observation to identify objects based on size, shape, color, or texture. SC.1.N.1.In.c Draw pictures about investigations conducted. SC.1.N.1.In.d Ask a question about a science investigation.	SC.1.N.1.Su.a Ask questions about common objects in the environment. SC.1.N.1.Su.b Recognize differences in objects through observation of size, shape, or color SC.1.N.1.Su.c Contribute to group recordings of observations.	SC.1.N.1.Pa.a Recognize common objects in the environment. SC.1.N.1.Pa.b Recognize common objects as the same.

GRADE 1

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky.
SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object.
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them.
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.E.5.In.a Identify that there are many stars in the sky. SC.1.E.5.In.b Observe and recognize that an object will fall when it is dropped. SC.1.E.5.In.c Identify that magnifiers enlarge the appearance of objects. SC.1.E.5.In.d Recognize positive and harmful effects of sunlight.	SC.1.E.5.Su.a Recognize that there are many stars in the sky. SC.1.E.5.Su.b Indicate the location of an object before and after it falls. SC.1.E.5.Su.c Match a magnified item to its original item. SC.1.E.5.Su.d Recognize a positive effect and a negative effect of sunlight.	SC.1.E.5.Pa.a Associate stars with the night sky. SC.1.E.5.Pa.b Track objects that fall to the ground. SC.1.E.5.Pa.c Recognize a familiar object enlarged by magnification. SC.1.E.5.Pa.d Recognize effects of sunlight, such as warming and giving light.

BIG IDEA 6: Earth Structures

Humans continue to explore the composition and structure of the surface of the Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface.
SC.1.E.6.2	Describe the need for water and how to be safe around water.
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.E.6.In.a Identify rocks, water, and living things in the environment. SC.1.E.6.In.b Identify reasons people need water and safe practices around water. SC.1.E.6.In.c Distinguish between events that happen slowly and those that happen fast.	SC.1.E.6.Su.a Recognize rocks and living things in the environment. SC.1.E.6.Su.b Identify reasons people need water. SC.1.E.6.Su.c Distinguish between actions that are fast or slow.	SC.1.E.6.Pa.a Recognize living things in the environment. SC.1.E.6.Pa.b Recognize one way people use water. SC.1.E.6.Pa.c Recognize an action as fast or slow.

GRADE 1

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.P.8.In.a Sort objects by observable properties, such as size, shape, color, or texture.	SC.1.P.8.Su.a Sort objects by an observable property, such as size, shape, or color.	SC.1.P.8.Pa.a Identify common classroom objects by one observable property, such as size or color.

BIG IDEA 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.P.12.In.a Demonstrate and identify that objects can move in different ways, such as up and down, in a straight line, and back and forth.	SC.1.P.12.Su.a Demonstrate that objects can move in different ways, such as up and down.	SC.1.P.12.Pa.a Track objects moving up and down.

BIG IDEA 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.P.13.In.a Identify the effect that a push or pull has on an object, such as changing the way an object moves.	SC.1.P.13.Su.a Demonstrate and recognize that pushing or pulling of an object makes it move.	SC.1.P.13.Pa.a Apply a push to move an object.

GRADE 1

BIG IDEA 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.1.L.14.1	Make observations of living things and their environment using the five senses.
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.
SC.1.L.14.3	Differentiate between living and nonliving things.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.L.14.In.a Use sight, hearing, and smell to make observations. SC.1.L.14.In.b Identify the leaf, flower, and stem of a plant. SC.1.L.14.In.c Identify characteristics of living and nonliving things, including whether they need food or water.	SC.1.L.14.Su.a Use sight and hearing to make observations. SC.1.L.14.Su.b Recognize the leaf and flower of a plant. SC.1.L.14.Su.c Distinguish common living and nonliving things in the environment.	SC.1.L.14.Pa.a Recognize and respond to different types of sensory stimuli. SC.1.L.14.Pa.b Recognize that plants have leaves. SC.1.L.14.Pa.c Recognize self and others as living things.

BIG IDEA 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.

B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.L.16.In.a Match offspring of specific animals to adult animals.	SC.1.L.16.Su.a Recognize that baby plants and animals have parents.	SC.1.L.16.Pa.a Recognize one's own parents.

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.1.L.17.In.a Observe and recognize that plants and animals need water and food.	SC.1.L.17.Su.a Observe and recognize that plants and animals need water.	SC.1.L.17.Pa.a Observe and recognize that people need water.

GRADE 2

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.
SC.2.N.1.2	Compare the observations made by different groups using the same tools.
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.N.1.In.a Ask questions and make observations about things in the natural world. SC.2.N.1.In.b Identify information about objects based on observation. SC.2.N.1.In.c Recognize that the results of a scientific activity should be the same when repeated. SC.2.N.1.In.d Recognize that scientists work to solve problems.	SC.2.N.1.Su.a Answer yes and no questions and make observations about common objects and actions in the natural world. SC.2.N.1.Su.b Identify characteristics of objects based on observation. SC.2.N.1.Su.c Recognize that science activities can be repeated. SC.2.N.1.Su.d Recognize that people work in science.	SC.2.N.1.Pa.a Request a change or help to solve a problem in the environment. SC.2.N.1.Pa.b Use senses to recognize objects. SC.2.N.1.Pa.c Recognize common objects in different environments.

GRADE 2

BIG IDEA 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.
SC.2.E.6.2	Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.E.6.In.a Sort rocks according to size and shape. SC.2.E.6.In.b Identify components of soil, such as dead plants and pieces of rock. SC.2.E.6.In.c Recognize soil types based on color (dark or light) and texture (size of particles).	SC.2.E.6.Su.a Sort rocks according to size. SC.2.E.6.Su.b Identify small pieces of rock in the soil. SC.2.E.6.Su.c Sort soil samples according to physical properties, such as color (dark or light) or texture (size of particles).	SC.2.E.6.Pa.a Recognize the ground in the environment. SC.2.E.6.Pa.b Distinguish examples of soil from other substances.

BIG IDEA 7: Earth Systems and Patterns

Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE	BENCHMARK
SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).
SC.2.E.7.4	Investigate that air is all around us and that moving air is wind.
SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather related events.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.E.7.In.a Identify common weather patterns associated with each season. SC.2.E.7.In.b Identify that the Sun heats the outside air and water. SC.2.E.7.In.c Recognize that water in an open container will disappear (evaporate). SC.2.E.7.In.d Identify effects of wind. SC.2.E.7.In.e Identify harmful consequences of being outside in severe weather, such as lightning, hurricanes, or tornados.	SC.2.E.7.Su.a Recognize types of weather and match to the weather outdoors. SC.2.E.7.Su.b Recognize that items outside are heated by the Sun. SC.2.E.7.Su.c Recognize that wet things will dry when they are left in the air. SC.2.E.7.Su.d Recognize effects of wind. SC.2.E.7.Su.e Recognize reasons for staying inside during severe weather, such as hurricanes and thunderstorms.	SC.2.E.7.Pa.a Recognize daily outdoor temperature as hot or cold. SC.2.E.7.Pa.b Distinguish between items that are wet and items that are dry. SC.2.E.7.Pa.c Indicate awareness of air moving. SC.2.E.7.Pa.d Recognize where to go to avoid severe weather, such as thunder and lightning.

GRADE 2

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.2.P.8.1	Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.
SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas.
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container.
SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states.
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time.
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.P.8.In.a Identify objects by observable properties, such as, size, shape, color, temperature (hot or cold), weight (heavy or light), and texture. SC.2.P.8.In.b Identify objects and materials as solid or liquid. SC.2.P.8.In.c Recognize that solids have a definite shape and liquids take the shape of their container. SC.2.P.8.In.d Describe and compare outside daily temperatures as warm or cold. SC.2.P.8.In.e Compare the volume of liquid in a variety of containers.	SC.2.P.8.Su.a Identify objects by observable properties, such as size, shape, and color. SC.2.P.8.Su.b Recognize water in solid or liquid states. SC.2.P.8.Su.c Recognize that solids have a definite shape. SC.2.P.8.Su.d Identify outside temperatures as warm or cold. SC.2.P.8.Su.e Recognize different volumes of liquids in identical containers.	SC.2.P.8.Pa.a Match objects by one observable property, such as size or color. SC.2.P.8.Pa.b Recognize water as a liquid. SC.2.P.8.Pa.c Recognize different containers that hold liquids. SC.2.P.8.Pa.d Recognize common objects or materials as warm or cold.

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.

Access Points for Students with Significant Cognitive Disabilities		
<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.P.9.In.a Explore and identify that observable properties of materials can be changed.	SC.2.P.9.Su.a Recognize changes in observable properties of materials.	SC.2.P.9.Pa.a Recognize that the appearance of an object or material has changed.

GRADE 2

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.P.10.In.a Identify ways people use electricity in their lives.	SC.2.P.10.Su.a Recognize a way people use electricity in their lives.	SC.2.P.10.Pa.a Activate a device that uses electricity.

BIG IDEA 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects.
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them.
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up.
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.P.13.In.a Observe and identify that pushing or pulling an object can change the direction of movement of the object. SC.2.P.13.In.b Observe and recognize that magnets can move some objects. SC.2.P.13.In.c Identify and demonstrate that an object will fall to the ground when dropped. SC.2.P.13.In.d Identify that pushing or pulling an object with more force will make the object go faster or farther.	SC.2.P.13.Su.a Identify that pushing or pulling an object makes it move. SC.2.P.13.Su.b Use magnets to cause objects to move. SC.2.P.13.Su.c Recognize that an object will fall to the ground when dropped. SC.2.P.13.Su.d Recognize that pushing or pulling an object with more force will make the object go faster or farther.	SC.2.P.13.Pa.a Recognize that pushing and pulling an object makes it move. SC.2.P.13.Pa.b Indicate that an object has fallen.

BIG IDEA 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.L.14.In.a Identify major external body parts, such as hands and legs, and their uses.	SC.2.L.14.Su.a Match external body parts, such as a foot, to their uses.	SC.2.L.14.Pa.a Recognize one or more external body parts.

GRADE 2

BIG IDEA 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.

B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.L.16.In.a Observe and recognize the major stages in the life cycles of plants and animals.	SC.2.L.16.Su.a Observe and recognize the sequence of stages in the life cycles of common animals.	SC.2.L.16.Pa.a Recognize that offspring can be matched with their parents, such as a human baby with adult humans and a puppy with dogs.

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.
SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.2.L.17.In.a Identify the basic needs of living things, including water, food, and air. SC.2.L.17.In.b Recognize that many different kinds of living things are found in different habitats.	SC.2.L.17.Su.a Recognize that living things have basic needs, including water and food. SC.2.L.17.Su.b Recognize that many kinds of living things are found in the environment.	SC.2.L.17.Pa.a Recognize that animals need water. SC.2.L.17.Pa.b Recognize common living things in the immediate environment.

GRADE 3

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups.
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.
SC.3.N.1.4	Recognize the importance of communication among scientists.
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations.
SC.3.N.1.6	Infer based on observation.
SC.3.N.1.7	Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.N.1.In.a Ask questions, explore, observe, and identify outcomes. SC.3.N.1.In.b Work with a group to make observations and identify results. SC.3.N.1.In.c Record observations to describe findings using written or visual formats, such as picture stories. SC.3.N.1.In.d Recognize that scientists share their knowledge and results with each other.	SC.3.N.1.Su.a Ask literal questions, explore, observe, and share information. SC.3.N.1.Su.b Work with a partner to make observations. SC.3.N.1.Su.c Record observations to describe findings using dictated words and phrases and pictures. SC.3.N.1.Su.d Recognize that people work in different kinds of jobs related to science.	SC.3.N.1.Pa.a Explore, observe, and recognize common objects in the natural world. SC.3.N.1.Pa.b Assist with investigations with a partner. SC.3.N.1.Pa.c Recognize that people share information.

GRADE 3

BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence.
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work.
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.N.3.In.a Recognize meanings of words used in science, such as energy, temperature, and gravity. SC.3.N.3.In.b Use models to identify how things work. SC.3.N.3.In.c Identify that models are representations of things found in the real world.	SC.3.N.3.1.Su.a Recognize meanings of words used in science, such as telescope, environment, and solid. SC.3.N.3.1.Su.b Recognize that models represent real things.	SC.3.N.3.1.Pa.a Recognize common objects related to science by name, such as ice, animal, and plant. SC.3.N.3.1.Pa.b Recognize a model of a real object.

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light.
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light.
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.
SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.
SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.E.5.In.a Recognize that stars in the sky look different from each other. SC.3.E.5.In.b Recognize that the Sun is a star that gives off its own light. SC.3.E.5.In.c Recognize that the Sun is the closest star to Earth. SC.3.E.5.In.d Observe and describe ways to keep an object from falling due to gravity. SC.3.E.5.In.e Recognize that stars appear larger and closer when seen through a telescope.	SC.3.E.5.Su.a Recognize that all stars except the Sun appear very small. SC.3.E.5.Su.b Recognize that the Sun gives off light. SC.3.E.5.Su.c Recognize that the Sun is a star. SC.3.E.5.Su.d Observe and recognize ways to stop a falling object, such as catching a ball. SC.3.E.5.Su.e Recognize a telescope as a tool to view stars in space.	SC.3.E.5.Pa.a Recognize stars in the sky. SC.3.E.5.Pa.b Recognize that the Sun is bright. SC.3.E.5.Pa.c Recognize that an object can be stopped from falling. SC.3.E.5.Pa.d Match a familiar object enlarged by magnification.

GRADE 3

BIG IDEA 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.E.6.In.a Identify that energy from the Sun heats objects.	SC.3.E.6.Su.a Recognize that many things will get hot when left in the Sun.	SC.3.E.6.Pa.a Distinguish between hot and cold objects.

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.
SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.8.In.a Observe and identify the colder/hotter temperature measured on a thermometer. SC.3.P.8.In.b Measure the weight of solids or liquids. SC.3.P.8.In.c Group objects by two observable properties, such as size and shape or color and texture.	SC.3.P.8.Su.a Recognize that a thermometer measures temperature (cold and hot). SC.3.P.8.Su.b Sort solid objects by weight (heavy and light). SC.3.P.8.Su.c Sort objects by an observable property, such as size, shape, color, and texture.	SC.3.P.8.Pa.a Recognize the temperature of items, such as food, as cool or warm. SC.3.P.8.Pa.b Recognize the larger of two objects. SC.3.P.8.Pa.c Match objects by an observable property, such as size, shape, and color.

GRADE 3

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.9.In.a Describe changes in the state of water as a result of freezing and melting.	SC.3.P.9.Su.a Identify that water can change from solid to liquid state by heating.	SC.3.P.9.Pa.a Recognize that ice can change to water.

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change.
SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.10.In.a Recognize forms of energy, such as light, heat, electrical, and energy of motion. SC.3.P.10.In.b Recognize examples of the use of energy, such as electrical (radio, freezer) and energy of motion (bowling, wind). SC.3.P.10.In.c Identify that light may come from different sources, such as the Sun or electric lamp.	SC.3.P.10.Su.a Recognize objects that use electricity (television) and the energy of motion (bowling ball). SC.3.P.10.Su.b Recognize examples of sources of light, such as the Sun or a flashlight.	SC.3.P.10.Pa.a Recognize the change in the motion of an object. SC.3.P.10.Pa.b Distinguish light and dark.

GRADE 3

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

BENCHMARK CODE	BENCHMARK
SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat.
SC.3.P.11.2	Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.P.11.In.a Identify that objects that give off light often give off heat. SC.3.P.11.In.b Observe and identify that heat is produced when objects are rubbed together.	SC.3.P.11.Su.a Recognize objects that give off both heat and light, such as a light bulb. SC.3.P.11.Su.b Observe and recognize that rubbing objects together causes heat.	SC.3.P.11.Pa.a Recognize sources of light. SC.3.P.11.Pa.b Recognize sources of heat.

BIG IDEA 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.
SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.14.In.a Identify the major parts of a plant, including seed, root, stem, leaf, and flower, and their functions. SC.3.L.14.In.b Identify behaviors of plants that show they are growing.	SC.3.L.14.Su.a Identify the major parts of a plant, such as the root, stem, leaf, and flower. SC.3.L.14.Su.b Recognize that plants grow toward light and roots grow down in the soil.	SC.3.L.14.Pa.a Recognize the leaf and flower of a plant. SC.3.L.14.Pa.b Recognize that plants grow.

GRADE 3

BIG IDEA 15: Diversity and Evolution of Living Organisms

A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.

B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.

BENCHMARK CODE	BENCHMARK
SC.3.L.15.1	Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.
SC.3.L.15.2	Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.15.In.a Classify animals by a similar physical characteristic, such as fur, feathers, and number of legs. SC.3.L.15.In.b Classify parts of plants into groups based on physical characteristics, such as classifying leaves by shape.	SC.3.L.15.Su.a Sort common animals by observable characteristics. SC.3.L.15.Su.b Sort common plants by observable characteristics.	SC.3.L.15.Pa.a Match animals that are the same. SC.3.L.15.Pa.b Match plants that are the same.

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.3.L.17.1	Describe how animals and plants respond to changing seasons.
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.3.L.17.In.a Identify changes in the appearance of animals and plants throughout the year. SC.3.L.17.In.b Recognize that most plants make their own food.	SC.3.L.17.Su.a Recognize that the appearance of some plants in the environment changes throughout the year. SC.3.L.17.Su.b Recognize that plants need light to grow.	SC.3.L.17.Pa.a Recognize clothing worn by humans in different weather (seasons). SC.3.L.17.Pa.b Recognize that plants need water.

GRADE 4

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.
SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence.
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support.
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence.
SC.4.N.1.8	Recognize that science involves creativity in designing experiments.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.N.1.In.a Ask a question about the natural world and use selected reference material to find information, observe, explore, and identify findings. SC.4.N.1.In.b Compare own observations with observations of others. SC.4.N.1.In.c Relate findings to predefined science questions. SC.4.N.1.In.d Communicate observations and findings through the use of pictures, writing, or charts. SC.4.N.1.In.e Recognize that scientists perform experiments, make observations, and gather evidence.	SC.4.N.1.Su.a Ask a question about the natural world, explore materials, observe, and share information. SC.4.N.1.Su.b Identify information based on observations of self and others. SC.4.N.1.Su.c Answer questions about objects and actions related to science. SC.4.N.1.Su.d Record observations using drawings, dictation, or pictures. SC.4.N.1.Su.e Recognize ways that scientists collect evidence, such as by observations or measuring.	SC.4.N.1.Pa.a Explore, observe, and select an object or picture to solve a simple problem. SC.4.N.1.Pa.b Recognize differences in objects or pictures. SC.4.N.1.Pa.c Select an object or picture to represent observed events. SC.4.N.1.Pa.d Recognize that people share information about science.

GRADE 4

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK	
SC.4.N.2.1	Explain that science focuses solely on the natural world.	
Access Points for Students with Significant Cognitive Disabilities		
<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.N.2.In.a Identify that science focuses on the natural world.	SC.4.N.2.Su.a Recognize that science focuses on the natural world.	SC.4.N.2.Pa.a Associate science with the natural world in the local environment.

BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK	
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.	
Access Points for Students with Significant Cognitive Disabilities		
<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.N.3.In.a Identify different types of models, such as a replica, a picture, or an animation.	SC.4.N.3.Su.a Recognize different types of models, such as a replica or a picture.	SC.4.N.3.Pa.a Match a model that is a replica to a real object.

GRADE 4

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons.
SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month.
SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.
SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.4.E.5.In.a Identify that there are many stars in the sky with some that create patterns.</p> <p>SC.4.E.5.In.b Label three phases of the moon, including full, half (quarter), and crescent.</p> <p>SC.4.E.5.In.c Recognize that Earth revolves around the Sun.</p> <p>SC.4.E.5.In.d Recognize that the Sun appears to rise and set because of Earth's rotation in a 24-hour day.</p> <p>SC.4.E.5.In.e Identify objects and people related to the space program in Florida.</p>	<p>SC.4.E.5.Su.a Recognize a pattern of stars in the sky, such as the Big Dipper.</p> <p>SC.4.E.5.Su.b Identify a full moon and a half (quarter) moon.</p> <p>SC.4.E.5.Su.c Recognize that Earth is always turning (rotating).</p> <p>SC.4.E.5.Su.d Recognize that the side of Earth facing the Sun has daylight.</p> <p>SC.4.E.5.Su.e Recognize an object or person related to the space program in Florida.</p>	<p>SC.4.E.5.Pa.a Recognize that there are many stars in the sky.</p> <p>SC.4.E.5.Pa.b Recognize a full moon as a circle.</p> <p>SC.4.E.5.Pa.c Identify morning, noon, and night.</p> <p>SC.4.E.5.Pa.d Recognize a space-related object.</p>

GRADE 4

BIG IDEA 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.4.E.6.1	Identify the three categories of rocks: igneous, (formed from molten rock); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).
SC.4.E.6.2	Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.
SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.
SC.4.E.6.4	Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).
SC.4.E.6.5	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.4.E.6.In.a Recognize that rocks are classified by the way they are formed, such as sedimentary.</p> <p>SC.4.E.6.In.b Identify physical properties (hardness, streak color, and luster) of common minerals, such as rock salt, talc, gold, and silver.</p> <p>SC.4.E.6.In.c Recognize that some natural resources used by humans are non-renewable, such as oil.</p> <p>SC.4.E.6.In.d Identify that wind and water cause physical weathering and erosion of rocks.</p> <p>SC.4.E.6.In.e Identify tools used to observe things that are far away and things that are very small.</p> <p>SC.4.E.6.In.f Identify natural resources found in Florida, including solar energy, water, and limestone.</p>	<p>SC.4.E.6.Su.a Sort rocks according to observable characteristics, including color, shape, and size.</p> <p>SC.4.E.6.Su.b Sort common minerals, such as rock salt, talc, gold, and silver, by their physical properties (luster and color).</p> <p>SC.4.E.6.Su.c Recognize that some natural resources can run out (non-renewable).</p> <p>SC.4.E.6.Su.d Recognize examples of weathering or erosion in the environment.</p> <p>SC.4.E.6.Su.e Recognize tools that will make things look larger, such as a telescope and a magnifier.</p> <p>SC.4.E.6.Su.f Recognize natural resources found in Florida, such as solar energy and water.</p>	<p>SC.4.E.6.Pa.a Distinguish rocks from other substances found on the Earth's surface.</p> <p>SC.4.E.6.Pa.b Recognize common minerals, such as rock salt, talc, gold, and silver.</p> <p>SC.4.E.6.Pa.c Recognize the universal symbol for recycling.</p> <p>SC.4.E.6.Pa.d Recognize the effect of weathering on an object.</p> <p>SC.4.E.6.Pa.e Recognize that something has been magnified.</p> <p>SC.4.E.6.Pa.f Recognize water as a resource in Florida.</p>

GRADE 4

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.
SC.4.P.8.2	Identify properties and common uses of water in each of its states.
SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts.
SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.P.8.In.a Compare objects and materials based on physical properties, such as size, shape, color, texture, weight, hardness, odor, taste, and temperature. SC.4.P.8.In.b Identify properties and uses of water in solid and liquid states. SC.4.P.8.In.c Identify that a whole object weighs the same as all of its parts together. SC.4.P.8.In.d Identify objects a magnet will attract.	SC.4.P.8.Su.a Sort objects by physical properties, such as size, shape, color, texture, weight (heavy or light), and temperature (hot or cold). SC.4.P.8.Su.b Identify uses of water in solid or liquid states. SC.4.P.8.Su.c Recognize that the parts of an object can be put together to make a whole. SC.4.P.8.Su.d Demonstrate that magnets can attract other magnets.	SC.4.P.8.Pa.a Match objects with similar observable properties, such as size, shape, color, or texture. SC.4.P.8.Pa.b Identify ice as a solid. SC.4.P.8.Pa.c Recognize that some objects have parts. SC.4.P.8.Pa.d Recognize that objects can stick together.

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.P.9.In.a Observe and describe properties of materials that have been changed into other materials, such as decayed leaves of a plant.	SC.4.P.9.Su.a Indicate differences in materials that have been changed into other materials, such as rust on a can.	SC.4.P.9.Pa.a Recognize changes in observable properties of materials.

GRADE 4

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.4.P.10.1	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.
SC.4.P.10.2	Investigate and describe that energy has the ability to cause motion or create change.
SC.4.P.10.3	Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.
SC.4.P.10.4	Describe how moving water and air are sources of energy and can be used to move things.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.4.P.10.In.a Identify forms of energy, such as light, heat, electrical, and energy of motion.</p> <p>SC.4.P.10.In.b Describe the results of applying electrical energy (turn on lights, make motors run); heat energy (burn wood, change temperature); and energy of motion (go faster, change direction).</p> <p>SC.4.P.10.In.c Recognize that vibrations cause sound and identify sounds as high or low (pitch).</p> <p>SC.4.P.10.In.d Identify machines that use energy from moving water or air, including a windmill and a waterwheel.</p>	<p>SC.4.P.10.Su.a Recognize uses of different forms of energy, including electricity (computer, freezer); heat (camp fire, stove); and energy of motion (rollercoaster, pinball machine).</p> <p>SC.4.P.10.Su.b Recognize the results of using electrical energy (turning on television); heat energy (burning wood); and energy of motion (rolling ball).</p> <p>SC.4.P.10.Su.c Recognize sounds as high or low (pitch).</p> <p>SC.4.P.10.Su.d Identify objects that use energy from moving air, such as a pinwheel or sailboat.</p>	<p>SC.4.P.10.Pa.a Recognize a source of heat energy (fire, heater).</p> <p>SC.4.P.10.Pa.b Recognize objects that create sounds.</p> <p>SC.4.P.10.Pa.c Recognize that moving air can move objects.</p>

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

BENCHMARK CODE	BENCHMARK
SC.4.P.11.1	Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.
SC.4.P.11.2	Identify common materials that conduct heat well or poorly.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.4.P.11.In.a Identify that a hot object will make a cold object warm when they touch.</p> <p>SC.4.P.11.In.b Identify materials that are strong conductors of heat, such as metal.</p>	<p>SC.4.P.11.Su.a Recognize that a hot object can make a cold object warm when they touch.</p> <p>SC.4.P.11.Su.b Recognize a common material that is a strong conductor of heat, such as metal.</p>	<p>SC.4.P.11.Pa.a Recognize a temperature change from cold to warm.</p> <p>SC.4.P.11.Pa.b Recognize common objects that conduct heat.</p>

GRADE 4

BIG IDEA 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.4.P.12.1	Recognize that an object in motion always changes its position and may change its direction.
SC.4.P.12.2	Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.P.12.In.a Identify that the position of an object changes when the object is in motion. SC.4.P.12.In.b Identify speed as how long it takes to travel a certain distance.	SC.4.P.12.Su.a Recognize that movement causes an object to change position. SC.4.P.12.Su.b Identify objects that move at different speeds.	SC.4.P.12.Pa.a Recognize that an object can move in different directions, such as left to right, straight line, and zigzag. SC.4.P.12.Pa.b Recognize an object as moving fast or slow.

BIG IDEA 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.

B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.4.L.16.1	Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.
SC.4.L.16.4	Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.L.16.In.a Identify that insects spread pollen to help flowering plants make seeds. SC.4.L.16.In.b Identify behaviors that animals have naturally (inherit) and behaviors that animals learn. SC.4.L.16.In.c Identify similarities in the major stages in the life cycles of common Florida plants and animals.	SC.4.L.16.Su.a Recognize that many flowering plants grow from their own seeds. SC.4.L.16.Su.b Recognize behaviors of common animals. SC.4.L.16.Su.c Recognize the major stages in life cycles of common plants and animals.	SC.4.L.16.Pa.a Recognize that many plants have flowers and leaves. SC.4.L.16.Pa.b Recognize similarities between self and parents. SC.4.L.16.Pa.c Match offspring of animals with parents.

GRADE 4

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.4.L.17.1	Compare the seasonal changes in Florida plants and animals to those in other regions of the country.
SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.
SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.4.L.17.In.a Identify seasonal changes in Florida plants and animals. SC.4.L.17.In.b Recognize that animals cannot make their own food and they must eat plants or other animals to survive. SC.4.L.17.In.c Recognize that plants (producers) use energy from the Sun to make their food and animals (consumers) eat plants or other animals for their food. SC.4.L.17.In.d Recognize things that people do to help or hurt the environment, such as recycling and pollution.	SC.4.L.17.Su.a Recognize seasonal changes in some Florida plants, such as the presence of flowers and change in leaf color. SC.4.L.17.Su.b Recognize that animals (consumers) eat plants or other animals for their food. SC.4.L.17.Su.c Recognize ways that people can help improve the environment, such as cleaning up trash.	SC.4.L.17.Pa.a Recognize a seasonal change in the appearance of a common plant. SC.4.L.17.Pa.b Recognize that animals eat food. SC.4.L.17.Pa.c Recognize ways that people can help improve the immediate environment, such as cleaning up trash.

GRADE 5

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation.
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.
SC.5.N.1.4	Identify a control group and explain its importance in an experiment.
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.5.N.1.In.a Ask a question about the natural world, use selected reference materials to find information, work with others to carry out a simple experiment, and share results.</p> <p>SC.5.N.1.In.b Identify the basic purpose of an experiment.</p> <p>SC.5.N.1.In.c Recognize that experiments may include activities that are repeated.</p> <p>SC.5.N.1.In.d Recognize that scientists use various methods to perform investigations, such as reviewing work of other scientists, making observations, and conducting experiments.</p> <p>SC.5.N.1.In.e Determine whether descriptions of observations are based on fact or personal belief.</p>	<p>SC.5.N.1.Su.a Ask questions about the natural world, use selected materials to find information, observe, and identify answers to the question.</p> <p>SC.5.N.1.Su.b Identify the result of a simple experiment.</p> <p>SC.5.N.1.Su.c Recognize that experiments can be repeated with other groups.</p> <p>SC.5.N.1.Su.d Recognize ways that scientific evidence can be collected, such as by observing or measuring.</p> <p>SC.5.N.1.Su.e Recognize facts about a scientific observation.</p>	<p>SC.5.N.1.Pa.a Explore, observe, and select an object or picture to respond to a question about the natural world.</p> <p>SC.5.N.1.Pa.b Recognize that people use observation and actions to get answers to questions about the natural world.</p>

GRADE 5

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.N.2.In.a Identify that science knowledge is based on observations and evidence. SC.5.N.2.In.b Recognize that experiments involve procedures that can be repeated the same way by others.	SC.5.N.2.Su.a Recognize that science knowledge is based on careful observations. SC.5.N.2.Su.b Recognize the importance of following correct procedures when carrying out science experiments.	SC.5.N.2.Pa.a Recognize the importance of making careful observations. SC.5.N.2.Pa.b Recognize that a common activity can be repeated.

BIG IDEA 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.E.5.In.a Identify that a galaxy is made of a very large number of stars and the planets that orbit them. SC.5.E.5.In.b Recognize major differences in the characteristics of the planets in the Solar System. SC.5.E.5.In.c Identify that the Solar System includes the Sun, Earth, Moon, and other planets and their moons.	SC.5.E.5.Su.a Recognize that a galaxy is a group of stars. SC.5.E.5.Su.b Recognize that surface of planet Earth is covered by water and land. SC.5.E.5.Su.c Identify that the Sun, Earth, and Moon are part of the Solar System.	SC.5.E.5.Pa.a Recognize that stars are very far away from Earth. SC.5.E.5.Pa.b Recognize Earth as the planet where we live.

GRADE 5

BIG IDEA 7: Earth Systems and Patterns

Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE	BENCHMARK
SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.
SC.5.E.7.3	Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.
SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.
SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.
SC.5.E.7.7	Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.5.E.7.In.a Label the state of water in each stage of the water cycle.</p> <p>SC.5.E.7.In.b Recognize that water evaporates from the ocean, falls as precipitation, and then goes back into the ocean.</p> <p>SC.5.E.7.In.c Identify elements that make up weather, including temperature, precipitation, and wind speed and direction.</p> <p>SC.5.E.7.In.d Describe types of precipitation, including rain, snow, and hail.</p> <p>SC.5.E.7.In.e Recognize weather-related differences in environments, such as swamps and deserts.</p> <p>SC.5.E.7.In.f Identify features of weather in different climate zones, such as tropical and polar.</p> <p>SC.5.E.7.In.g Identify emergency plans and procedures for severe weather.</p>	<p>SC.5.E.7.Su.a Match different states of water (liquid and solid) to changes in temperature.</p> <p>SC.5.E.7.Su.b Observe and recognize that water evaporates over time.</p> <p>SC.5.E.7.Su.c Recognize elements of weather, including temperature, precipitation, and wind.</p> <p>SC.5.E.7.Su.d Identify different types of precipitation, including rain and snow.</p> <p>SC.5.E.7.Su.e Match specific weather conditions with different locations.</p> <p>SC.5.E.7.Su.f Identify what to do in severe weather.</p>	<p>SC.5.E.7.Pa.a Distinguish between water as a liquid and ice as a solid.</p> <p>SC.5.E.7.Pa.b Recognize that wet things will dry when they are left in the air.</p> <p>SC.5.E.7.Pa.c Recognize the weather conditions including hot/cold and raining/not raining during the day.</p> <p>SC.5.E.7.Pa.d Recognize examples of severe weather conditions.</p>

GRADE 5

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.
SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.P.8.In.a Identify basic properties of solids, liquids, and gases, such as color, texture, and temperature. SC.5.P.8.In.b Identify examples of materials that will dissolve in water and those that will not. SC.5.P.8.In.c Identify the observable properties of the parts of a mixture, such as the particle size, shape, and color. SC.5.P.8.In.d Recognize that materials are made of very small parts that cannot be seen without a magnifying glass or a microscope.	SC.5.P.8.Su.a Identify the basic properties of solids and liquids, such as color, texture, and temperature. SC.5.P.8.Su.b Recognize examples of materials that will dissolve in water. SC.5.P.8.Su.c Identify the separate parts of a mixture by color or shape. SC.5.P.8.Su.d Use a magnifying tool to see small parts of an object.	SC.5.P.8.Pa.a Distinguish between water as a solid or liquid. SC.5.P.8.Pa.b Recognize a common substance that dissolves in water. SC.5.P.8.Pa.c Separate a group of objects into its parts.

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.P.9.In.a Observe and identify that heating and cooling can change the properties of materials.	SC.5.P.9.Su.a Recognize changes in properties of materials caused by heating or cooling.	SC.5.P.9.Pa.a Recognize that freezing changes water to ice.

GRADE 5

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change.
SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.5.P.10.In.a Identify forms of energy, including heat, light, sound, electrical, and mechanical.</p> <p>SC.5.P.10.In.b Identify ways energy can cause things to move or create changes.</p> <p>SC.5.P.10.In.c Identify that electrically charged materials will pull (attract) other materials.</p> <p>SC.5.P.10.In.d Demonstrate that electricity can produce heat, light, and sound.</p>	<p>SC.5.P.10.Su.a Recognize uses of electrical energy (popcorn popper, vacuum cleaner), heat energy (grill, heater), light energy (sunlight, flashlight), and mechanical energy (bicycle).</p> <p>SC.5.P.10.Su.b Recognize that energy is required to cause motion.</p> <p>SC.5.P.10.Su.c Recognize that electrically charged materials will pull (attract) other materials.</p> <p>SC.5.P.10.Su.d Recognize examples of electricity as a producer of heat, light, and sound.</p>	<p>SC.5.P.10.Pa.a Recognize a source of light energy (Sun, light bulb).</p> <p>SC.5.P.10.Pa.b Initiate a change in the motion of an object.</p> <p>SC.5.P.10.Pa.c Demonstrate pushing away (repulsion) and pulling (attraction).</p> <p>SC.5.P.10.Pa.d Identify one source of sound, heat, or light that uses electricity.</p>

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

BENCHMARK CODE	BENCHMARK
SC.5.P.11.1	Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.5.P.11.In.a Identify the power source and wires (conductors) in an electrical circuit.</p> <p>SC.5.P.11.In.b Identify materials that conduct electricity.</p>	<p>SC.5.P.11.Su.a Recognize the power source in an electrical circuit.</p> <p>SC.5.P.11.Su.b Recognize a material that conducts electricity.</p>	<p>SC.5.P.11.Pa.a Recognize that electrical systems must be turned on (closed) in order to work.</p>

GRADE 5

BIG IDEA 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.P.13.In.a Distinguish between movement of an object caused by gravity and movement caused by pushes and pulls. SC.5.P.13.In.b Identify that heavier objects take more force to move than lighter ones. SC.5.P.13.In.c Identify that an opposing force (push or pull) is needed to prevent an object from moving.	SC.5.P.13.Su.a Recognize that gravity causes an object to move. SC.5.P.13.Su.b Recognize that a heavier object is harder to move than a light one. SC.5.P.13.Su.c Recognize the source of a force (push or pull) used to stop an object from moving.	SC.5.P.13.Pa.a Recognize that pushing or pulling makes an object move. SC.5.P.13.Pa.b Recognize a way to stop an object from moving.

BIG IDEA 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.L.14.In.a Distinguish major external and internal body parts, including skin, brain, heart, lungs, stomach, muscles and skeleton, reproductive organs, and sensory organs. SC.5.L.14.In.b Identify functions of plant and animal structures; for example, plant stem transports food to leaves, and heart pumps blood to parts of the body.	SC.5.L.14.Su.a Identify major external and internal body parts, including skin, brain, heart, lungs, stomach, and sensory organs. SC.5.L.14.Su.b Recognize the functions of the major parts of plants and animals.	SC.5.L.14.Pa.a Recognize body parts related to movement and the five senses. SC.5.L.14.Pa.b Observe plants and animals and recognize how they are alike in the way they look.

GRADE 5

BIG IDEA 15: Diversity and Evolution of Living Organisms

A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.

B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.

BENCHMARK CODE	BENCHMARK
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.L.15.In.a Identify ways that plants and animals can be affected by changes in their habitats, such as lack of food or water, disease, or reduced space.	SC.5.L.15.Su.a Recognize ways that plants and animals can be affected by changes in their habitats, such as lack of food or water.	SC.5.L.15.Pa.a Recognize what happens when plants don't get water.

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.5.L.17.In.a Identify features of common plants and animals that enable them to survive in different habitats (environments).	SC.5.L.17.Su.a Recognize that many different kinds of living things are found in different habitats.	SC.5.L.17.Pa.a Match common living things with their habitats.

GRADE 6

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.6.N.1.2	Explain why scientific investigations should be replicable.
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.N.1.In.a Identify a problem from the sixth grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results.</p> <p>SC.6.N.1.In.b Identify that scientific investigations can be repeated the same way by others.</p> <p>SC.6.N.1.In.c Identify that scientists can use different kinds of experiments, methods, and explanations to find answers to scientific questions.</p> <p>SC.6.N.1.In.d Compare results of observations and experiments of self and others.</p>	<p>SC.6.N.1.Su.a Recognize a problem from the sixth grade curriculum, use materials to gather information, carry out a simple experiment, and record and share results.</p> <p>SC.6.N.1.Su.b Recognize that experiments involve procedures that can be repeated the same way by others.</p> <p>SC.6.N.1.Su.c Recognize that scientists perform experiments, make observations, and gather evidence to answer scientific questions.</p> <p>SC.6.N.1.Su.d Identify information based on observations and experiments of self and others.</p>	<p>SC.6.N.1.Pa.a Recognize a problem related to the sixth grade curriculum, observe and explore objects or activities, and recognize a solution.</p> <p>SC.6.N.1.Pa.b Recognize that when a common activity is repeated, it has the same result.</p> <p>SC.6.N.1.Pa.c Recognize that people conduct activities and share information about science.</p>

GRADE 6

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.6.N.2.1	Distinguish science from other activities involving thought.
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.N.2.In.a Identify familiar topics included in the study of science.</p> <p>SC.6.N.2.In.b Identify that scientific knowledge changes with new evidence or new interpretations.</p> <p>SC.6.N.1.In.c Identify that scientists come from different backgrounds and have varied interests.</p>	<p>SC.6.N.2.Su.a Recognize familiar topics in the study of science.</p> <p>SC.6.N.2.Su.b Recognize that scientific knowledge changes when new things are discovered.</p> <p>SC.6.N.2.Su.c Recognize contributions of well-known scientists.</p>	<p>SC.6.N.2.Pa.a Recognize objects and pictures related to science.</p> <p>SC.6.N.2.Pa.b Recognize a scientist as a person who works with science.</p>

BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.
SC.6.N.3.3	Give several examples of scientific laws.
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.N.3.In.a Identify that a scientific theory is an explanation of nature supported by evidence.</p> <p>SC.6.N.3.In.b Identify examples of scientific laws (proven descriptions of nature), such as the law of gravity.</p> <p>SC.6.N.3.In.c Identify models used in the context of sixth grade science access points.</p>	<p>SC.6.N.3.Su.a Recognize that a scientific theory is an explanation of nature.</p> <p>SC.6.N.3.Su.b Recognize events that are based on scientific laws, such as the law of gravity.</p> <p>SC.6.N.3.Su.c Recognize models used in the context of sixth grade science access points.</p>	<p>SC.6.N.3.Pa.a Observe and recognize a predictable cause-effect relationship related to a science topic.</p> <p>SC.6.N.3.Pa.b Associate a model with an activity used in the context of sixth grade science access points.</p>

GRADE 6

BIG IDEA 6: Earth Structures

Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

BENCHMARK CODE	BENCHMARK
SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.6.E.6.In.a Describe how weathering and erosion reshape the Earth's surface. SC.6.E.6.In.b Identify various landforms in Florida, including coastlines, rivers, lakes, and dunes.	SC.6.E.6.Su.a Recognize that wind and water cause physical weathering and erosion. SC.6.E.6.Su.b Recognize different landforms in Florida, including beaches (coastlines), rivers, and lakes.	SC.6.E.6.Pa.a Recognize that water can move soil. SC.6.E.6.Pa.b Recognize a landform in Florida, such as a beach (coastline), river, or lake.

BIG IDEA 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

BENCHMARK CODE	BENCHMARK
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.
SC.6.E.7.6	Differentiate between weather and climate.
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.
SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet.

GRADE 6

BIG IDEA 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.E.7.In.a Recognize that heat is a flow of energy that moves through Earth's land, air, and water in different ways, including conduction, convection, and radiation.</p> <p>SC.6.E.7.In.b Identify components in the water cycle, including evaporation, condensation, precipitation, ground water, and runoff.</p> <p>SC.6.E.7.In.c Identify the way elements of weather are measured, including temperature, humidity, wind speed and direction, and precipitation.</p> <p>SC.6.E.7.In.d Recognize that Earth consists of different parts, including air that is over the Earth (atmosphere), water that covers much of the Earth (hydrosphere), and the parts that support all living things on Earth (biosphere).</p> <p>SC.6.E.7.In.e Recognize that there are general patterns of weather that move around Earth, and in North America the patterns typically move from west to east.</p> <p>SC.6.E.7.In.f Identify climate as the expected weather patterns in a region. SC.6.E.7.In.g Identify possible effects of</p> <p>hurricanes and other natural disasters on humans in Florida.</p> <p>SC.6.E.7.In.h Identify ways humans get ready for severe storms and protect themselves from sun exposure.</p> <p>SC.6.E.3.In.i Identify that the atmosphere protects Earth from radiation from the Sun and regulates the temperature.</p>	<p>SC.6.E.7.Su.a Recognize that heat can transfer from the Sun to the water, land, and air.</p> <p>SC.6.E.7.Su.b Recognize parts of the water cycle such as clouds (condensation), rain (precipitation), and evaporation.</p> <p>SC.6.E.7.Su.c Recognize the way temperature and wind speed are measured.</p> <p>SC.6.E.7.Su.d Recognize where living things are found (biosphere) and where the air is found (atmosphere) on Earth.</p> <p>SC.6.E.7.Su.e Recognize that there are patterns of weather that move.</p> <p>SC.6.E.7.Su.f Identify the major characteristics of climate in Florida, including temperature and precipitation.</p> <p>SC.6.E.7.Su.g Recognize possible effects of severe storms, hurricanes, or other natural disasters in Florida.</p> <p>SC.6.E.7.Su.h Recognize ways people prepare for severe storms and protect themselves from sun exposure.</p> <p>SC.6.E.7.Su.i Recognize that the air that surrounds Earth (atmosphere) protects living things from the intense heat of the Sun.</p>	<p>SC.6.E.7.Pa.a Recognize that the Sun is a source of heat.</p> <p>SC.6.E.7.Pa.b Recognize that rain comes from clouds.</p> <p>SC.6.E.7.Pa.c Recognize different types of weather conditions, including hot/cold, raining/not raining, and windy/calm.</p> <p>SC.6.E.7.Pa.d Recognize that air covers Earth (atmosphere).</p> <p>SC.6.E.7.Pa.e Recognize where to go in severe weather situations or drills at school and at home.</p>

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one fo

BENCHMARK CODE	BENCHMARK
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.P.11.In.a Identify energy as stored (potential) or expressed in motion (kinetic).</p>	<p>SC.6.P.11.Su.a Recognize examples of stored energy, such as in a roller coaster.</p>	<p>SC.6.P.11.Pa.a Distinguish between objects in motion (kinetic energy) and at rest.</p>

GRADE 6

BIG IDEA 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.6.P.12.In.a Identify that speed describes the distance and time in which an object is moving, such as miles per hour.	SC.6.P.12.Su.a Recognize that speed describes how far an object travels in a given amount of time.	SC.6.P.12.Pa.a Recognize that traveling longer distances takes more time, such as going to the cafeteria takes longer than going across the classroom.

BIG IDEA 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

BENCHMARK CODE	BENCHMARK
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.6.P.13.In.a Identify examples of gravitational and contact forces, such as falling objects or push and pull. SC.6.P.13.In.b Demonstrate and describe how forces can change the speed and direction of objects in motion.	SC.6.P.13.Su.a Distinguish between pushing and pulling forces (contact) and falling (gravitational force) of an object. SC.6.P.13.Su.b Recognize that force can change the speed and direction of an object in motion.	SC.6.P.13.Pa.a Recognize that pushing or pulling makes an object move (contact force). SC.6.P.13.Pa.b Recognize that objects fall unless supported by something. SC.6.P.13.Pa.c Recognize the speed (fast or slow) of a moving object.

GRADE 6

BIG IDEA 14: Organization and Development of Living Organisms

A. All living things share certain characteristics.

B. The scientific theory of cells, also called cell theory, is a fundamental organizing principle of life on Earth.

C. Life can be organized in a functional and structural hierarchy.

D. Life is maintained by various physiological functions essential for growth, reproduction, and homeostasis.

BENCHMARK CODE	BENCHMARK
SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.6.L.14.In.a Identify how the major structures of plants and organs of animals work as parts of larger systems, such as the heart is part of the circulatory system that pumps blood.</p> <p>SC.6.L.14.In.b Identify that the cell is the smallest basic unit of life and most living things are composed of many cells.</p> <p>SC.6.L.14.In.c Identify that cells carry out important functions within an organism, such as using energy from food.</p> <p>SC.6.L.14.In.d Recognize that plant and animal cells have different parts and each part has a function.</p> <p>SC.6.L.14.In.e Recognize that bacteria and viruses can infect the human body.</p>	<p>SC.6.L.14.Su.a Identify the major internal organs of animals and external structures of plants and their functions.</p> <p>SC.6.L.14.Su.b Recognize that there are smaller parts in all living things, too small to be seen without magnification, called cells.</p> <p>SC.6.L.14.Su.c Recognize that animals, including humans, use energy from food.</p> <p>SC.6.L.14.Su.d Identify ways to prevent infection from bacteria and viruses, such as hand washing.</p>	<p>SC.6.L.14.Pa.a Recognize that the human body is made up of various parts.</p> <p>SC.6.L.14.Pa.b Identify basic needs of plants and animals.</p> <p>SC.6.L.14.Pa.c Recognize body parts related to basic needs, such as mouth for eating.</p> <p>SC.6.L.14.Pa.d Recognize practices that keep the body free from infection, such as hand washing.</p>

GRADE 6

BIG IDEA 15: Diversity and Evolution of Living Organisms

A. The scientific theory of evolution is the organizing principle of life science.

B. The scientific theory of evolution is supported by multiple forms of evidence.

C. Natural Selection is a primary mechanism leading to change over time in organisms.

BENCHMARK CODE	BENCHMARK
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.6.L.15.In.a Classify animals into major groups, such as insects, fish, reptiles, mammals, and birds.	SC.6.L.15.Su.a Sort common animals by their physical characteristics.	SC.6.L.15.Pa.a Match animals based on a given shared characteristic.

GRADE 7

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.7.N.1.In.a Identify a problem from the seventh grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results.</p> <p>SC.7.N.1.In.b Recognize the relationship between the end product (dependent variable) and in the input (independent variable) in an experiment.</p> <p>SC.7.N.1.In.c Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight?</p> <p>SC.7.N.1.In.d Identify ways that science can be used to study different areas, such as life science, earth and space science, and physical science.</p> <p>SC.7.N.1.In.e Identify that scientific knowledge is based on a large body of evidence and observations.</p>	<p>SC.7.N.1.Su.a Recognize a problem from the seventh grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results.</p> <p>SC.7.N.1.Su.b Recognize what is tested in a simple experiment (dependent variable).</p> <p>SC.7.N.1.Su.c Recognize a question that can be answered by scientific investigation, such as can a plant grow without sunlight?</p> <p>SC.7.N.1.Su.d Recognize that science includes different areas, such as life science, earth and space science, and physical science.</p> <p>SC.7.N.1.Su.e Recognize that scientific knowledge is based on evidence and observations.</p>	<p>SC.7.N.1.Pa.a Recognize a problem related to the seventh grade curriculum, observe and explore objects and activities, and recognize a solution.</p> <p>SC.7.N.1.Pa.b Recognize observable changes in a simple experiment, such as plant growth.</p> <p>SC.7.N.1.Pa.c Associate objects and activities with science.</p>

GRADE 7

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.7.N.2.In.a Identify an example of a change in scientific knowledge based on new evidence or new interpretations.	SC.7.N.2.Su.a Recognize an example of a change in scientific knowledge based on new evidence.	SC.7.N.2.Pa.a Recognize information related to science.

BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.7.N.3.In.a Identify that scientific theories are explanations and laws describe relationships, and both are supported by evidence. SC.7.N.3.In.b Identify a benefit of using a model to explain how things work.	SC.7.N.3.Su.a Recognize that scientific theories and laws are supported by evidence. SC.7.N.3.Su.b Recognize a benefit of using a model to explain how things work.	SC.7.N.3.Pa.a Recognize that people use science to solve problems. SC.7.N.3.Pa.b Recognize a model of a common activity.

GRADE 7

BIG IDEA 6: Earth Structures

Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

BENCHMARK CODE	BENCHMARK
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.7.E.6.In.a Identify that Earth has three layers (crust, mantle, and core) and describe the inside (core) as the hottest layer.</p> <p>SC.7.E.6.In.b Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface.</p> <p>SC.7.E.6.In.c Demonstrate how older rock layers are deposited at the bottom before younger layers (Law of Superposition).</p> <p>SC.7.E.6.In.d Identify physical evidence, such as fossils and sedimentary rock, which show how Earth has changed over a very long period of time.</p> <p>SC.7.E.6.In.e Recognize that humans have had an impact on Earth, such as polluting the air and water and expanding urban areas and road systems.</p>	<p>SC.7.E.6.Su.a Recognize that the surface of Earth is called the crust.</p> <p>SC.7.E.6.Su.b Recognize that mountains change size and shape over a long period of time.</p> <p>SC.7.E.6.Su.c Recognize that fossils are remains or imprints of living things from long ago.</p> <p>SC.7.E.6.Su.d Recognize the effects of earthquakes and volcanoes.</p> <p>SC.7.E.6.Su.e Recognize that polluting the air and water can harm Earth.</p>	<p>SC.7.E.6.Pa.a Recognize the ground as the outer surface (crust) of Earth.</p> <p>SC.7.E.6.Pa.b Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid.</p> <p>SC.7.E.6.Pa.c Recognize that ground on the Earth's surface changes over time.</p> <p>SC.7.E.6.Pa.d Distinguish between clean and dirty water.</p>

GRADE 7

BIG IDEA 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.

B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.7.P.10.In.a Identify that white (visible) light has many colors, such as when viewed with a prism. SC.7.P.10.In.b Recognize that light can be reflected or absorbed. SC.7.P.10.In.c Identify that light and sound travel in wave patterns.	SC.7.P.10.Su.a Recognize that white (visible) light contains many colors, such as viewed with a prism or rainbow. SC.7.P.10.Su.b Recognize that light can be reflected. SC.7.P.10.Su.c Recognize that sound and light travel.	SC.7.P.10.Pa.a Recognize primary colors of a rainbow. SC.7.P.10.Pa.b Recognize reflections of objects. SC.7.P.10.Pa.c Match light and sound to their sources.

BIG IDEA 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.7.P.11.In.a Identify that when heat is added or taken away, a temperature change occurs. SC.7.P.11.In.b Recognize that one form of energy can change to other forms of energy, such as solar panels change light into electricity. SC.7.P.11.In.c Identify examples of the predictable movement of heat, such as hot air rises and heat transfers from hot to cold objects.	SC.7.P.11.Su.a Recognize what happens to the temperature when heat is added. SC.7.P.11.Su.b Recognize that energy can change forms, such as electricity produces light and heat in a lamp. SC.7.P.11.Su.c Identify that heat rises.	SC.7.P.11.Pa.a Recognize that a hot object can make a cold object warm when they touch. SC.7.P.11.Pa.b Recognize that electrical devices need energy to work.

GRADE 7

BIG IDEA 15: Diversity and Evolution of Living Organisms

A. The scientific theory of evolution is the organizing principle of life science.

B. The scientific theory of evolution is supported by multiple forms of evidence.

C. Natural Selection is a primary mechanism leading to change over time in organisms.

BENCHMARK CODE	BENCHMARK
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.7.L.15.In.a Recognize that fossils help people learn about living things that lived a very long time ago.</p> <p>SC.7.L.15.In.b Recognize that physical characteristics of living things are adapted to deal with the conditions of the environment, such as skin color or gills on a fish.</p> <p>SC.7.L.15.In.c Explain extinction and give examples.</p>	<p>SC.7.L.15.Su.a Identify fossils as parts of animals and plants that are no longer alive.</p> <p>SC.7.L.15.Su.b Recognize that common plants or animals have special features that enable them to live in their environment, such as a fish has gills so it can live underwater.</p> <p>SC.7.L.15.Su.c Recognize that some plants and animals no longer exist (are extinct).</p>	<p>SC.7.L.15.Pa.a Recognize that living things can die.</p> <p>SC.7.L.15.Pa.b Recognize a personal characteristic, such as hair color, that is different from the parents.</p>

GRADE 7

BIG IDEA 16: Heredity and Reproduction

A. Reproduction is characteristic of living things and is essential for the survival of species.

B. Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.

C. Changes in the DNA of an organism can cause changes in traits, and manipulation of DNA in organisms has led to genetically modified organisms.

BENCHMARK CODE	BENCHMARK
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.7.L.16.In.a Explain that some characteristics are passed from parent to child (inherited).</p> <p>SC.7.L.16.In.b Recognize that it is possible to predict whether a person is likely to inherit a particular trait from parents.</p> <p>SC.7.L.16.In.c Explain that offspring receive half their genes from each parent in sexual reproduction.</p> <p>SC.7.L.16.In.d Recognize that science processes (biotechnology) have been used to develop new foods and medicines.</p>	<p>SC.7.L.16.Su.a Recognize that offspring have similar characteristics to parents.</p> <p>SC.7.L.16.Su.b Recognize that animals, including humans, inherit some characteristics from one parent and some from the other.</p> <p>SC.7.L.16.Su.c Recognize that science (biotechnology) has been used to develop new products for use in daily life.</p>	<p>SC.7.L.16.Pa.a Recognize a characteristic passed from parents to self, such as eye color.</p> <p>SC.7.L.16.Pa.b Recognize that children are born from two parents.</p> <p>SC.7.L.16.Pa.c Recognize common products, such as medicine, developed through science.</p>

GRADE 7

BIG IDEA 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

B. Both human activities and natural events can have major impacts on the environment.

C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.7.L.17.In.a Identify that in a simple food chain, energy transfers from the Sun to plants (producers), to animals (consumers), and to organisms that cause decay (decomposers).</p> <p>SC.7.L.17.In.b Describe how organisms interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at the expense of the other (parasitism).</p> <p>SC.7.L.17.In.c Recognize that living things compete with each other to get the things they need to live in their local environment.</p>	<p>SC.7.L.17.Su.a Identify different types of consumers in a food chain, including animals that eat plants, animals that eat other animals, and animals that eat plants and animals.</p> <p>SC.7.L.17.Su.b Recognize how living things affect each other in their habitat (ecosystem).</p> <p>SC.7.L.17.Su.c Identify how a lack of food, water, or shelter affects plants and animals in their habitats.</p>	<p>SC.7.L.17.Pa.a Recognize that humans eat vegetables and fruits (plants) and meat (animals).</p> <p>SC.7.L.17.Pa.b Recognize a mutual relationship between people and other living things.</p> <p>SC.7.L.17.Pa.c Recognize what happens when animals don't get food and water.</p>

GRADE 8

BIG IDEA 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.8.N.1.In.a Identify a problem from the eighth grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results.</p> <p>SC.8.N.1.In.b Identify a possible explanation (hypothesis) for a science problem.</p> <p>SC.8.N.1.In.c Identify methods used in different areas of science, such as life science, earth and space science, and physical science.</p> <p>SC.8.N.1.In.d Identify that the process used in scientific investigations involves asking a research question, forming a hypothesis, reviewing what is already known, collecting evidence through observations or experiments, determining results, and reaching conclusions.</p>	<p>SC.8.N.1.Su.a Recognize a problem from the eighth grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results.</p> <p>SC.8.N.1.Su.b Recognize a possible explanation (hypothesis) for a science problem.</p> <p>SC.8.N.1.Su.c Recognize methods used in different areas of science, such as life science, earth and space science, and physical science.</p> <p>SC.8.N.1.Su.d Recognize that the basic process used in scientific investigations involves questioning, observing, and recording and sharing results.</p>	<p>SC.8.N.1.Pa.a Recognize a problem related to the eighth grade curriculum, observe and explore objects and activities, and recognize a solution.</p> <p>SC.8.N.1.Pa.b Recognize science as a way to solve problems about the natural world.</p>

GRADE 8

BIG IDEA 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.
SC.8.N.2.2	Discuss what characterizes science and its methods.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.8.N.2.In.a Identify that scientific knowledge must be supported by evidence.	SC.8.N.2.Su.a Recognize examples of evidence that supports scientific knowledge.	SC.8.N.2.Pa.a Recognize an example of observable evidence related to science.

BIG IDEA 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.8.N.3.1	Select models useful in relating the results of their own investigations.
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.8.N.3.In.a Identify models used in the context of one's own study of science. SC.8.N.3.In.b Identify that scientific theories can change.	SC.8.N.3.Su.a Recognize models used in the context of one's own study of science. SC.8.N.3.Su.b Recognize that scientific theories can change.	SC.8.N.3.Pa.a Associate a model with an activity used in the context of one's own study of science. SC.8.N.3.Pa.b Observe and recognize a cause-effect relationship related to a science topic.

BIG IDEA 4: Science and Society

As tomorrow's citizens, students should be able to identify issues about which society could provide input, formulate scientifically investigable questions about those issues, construct investigations of their questions, collect and evaluate data from their investigations, and develop scientific recommendations based upon their findings.

BENCHMARK CODE	BENCHMARK
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.8.N.4.In.a Identify ways that science processes can be used to make informed decisions in the community, state, and nation.	SC.8.N.4.Su.a Recognize that science processes can be used to help people in the community and state make wise choices.	SC.8.N.4.Pa.a Recognize a way science is used in the community.

GRADE 8

BIG IDEA 5: Earth in Space and Time

The origin and eventual fate of the Universe still remains one of the greatest questions in science. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the planetary systems, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of the nature of the Universe.

BENCHMARK CODE	BENCHMARK
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric.
SC.8.E.5.9	Explain the impact of objects in space on each other including: 1. the Sun on the Earth including seasons and gravitational attraction 2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida.

GRADE 8

BIG IDEA 5: Earth in Space and Time

The origin and eventual fate of the Universe still remains one of the greatest questions in science. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the planetary systems, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of the nature of the Universe.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.8.E.5.In.a Compare the distances of the Moon, the Sun, and other stars from the Earth.</p> <p>SC.8.E.5.In.b Identify that the Earth and Sun are a part of the Milky Way galaxy.</p> <p>SC.8.E.5.In.c Identify Earth's position in the Solar System, and its size relative to the Moon and Sun.</p> <p>SC.8.E.5.In.d Identify gravity as the force that holds orbiting planets in place in the Solar System.</p> <p>SC.8.E.5.In.e Identify differences in physical properties of stars, such as brightness, color, and size.</p> <p>SC.8.E.5.In.f Describe the Sun as a mass of hot, burning gases that produces very high temperatures.</p> <p>SC.8.E.5.In.g Compare conditions on other planets in the Solar System to those on Earth, such as gravity, temperature, and atmosphere.</p> <p>SC.8.E.5.In.h Identify that long ago people thought the Sun traveled around Earth (geocentric model) until scientists proved otherwise.</p> <p>SC.8.E.5.In.i Recognize that the four seasons are related to Earth's position as it travels (revolves) around the Sun.</p> <p>SC.8.E.5.In.j Recognize that the Moon's revolution around Earth takes about thirty days.</p> <p>SC.8.E.5.In.k Identify technology used by scientists to locate, view, and study objects in space.</p> <p>SC.8.E.5.In.l Recognize that technology allows special cameras and satellites to take pictures of objects in space.</p> <p>SC.8.E.5.In.m Identify effects of space research and exploration on Florida's economy.</p>	<p>SC.8.E.5.Su.a Identify the relative positions of the Sun and the Moon from Earth.</p> <p>SC.8.E.5.Su.b Recognize that the Solar System is part of a galaxy.</p> <p>SC.8.E.5.Su.c Identify that there are planets and moons in the Solar System.</p> <p>SC.8.E.5.Su.d Recognize that the Sun is the closest star to Earth and appears large and bright.</p> <p>SC.8.E.5.Su.e Recognize that the Sun is made of gases that are on fire.</p> <p>SC.8.E.5.Su.f Recognize that conditions on other planets in the Solar System are different than those on Earth.</p> <p>SC.8.E.5.Su.g Recognize that Earth revolves around the Sun creating the four seasons.</p> <p>SC.8.E.5.Su.h Recognize that scientists use special tools to examine objects in space.</p> <p>SC.8.E.5.Su.i Identify an effect space exploration has had on Florida's economy.</p>	<p>SC.8.E.1.Pa.a Recognize that the Moon is closer to Earth than the Sun.</p> <p>SC.8.E.1.Pa.b Recognize the Sun and stars as objects in space.</p> <p>SC.8.E.1.Pa.c Recognize the four seasons.</p> <p>SC.8.E.1.Pa.d Recognize a technology tool created for space exploration and adapted for personal use, such as computers, telescopes, or satellites.</p>

GRADE 8

BIG IDEA 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass which gives it inertia.

B. Objects and substances can be classified by their physical and chemical properties.

Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

BENCHMARK CODE	BENCHMARK
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.8.P.8.In.a Compare properties of solids, liquids, and gases.</p> <p>SC.8.P.8.In.b Recognize that the weight of an object is related to the pull of gravity.</p> <p>SC.8.P.8.In.c Observe and compare the density of various materials.</p> <p>SC.8.P.8.In.d Observe and compare substances based on their physical properties, such as thermal and electrical conductivity, solubility, or magnetic properties.</p> <p>SC.8.P.8.In.e Recognize that common elements combine in different ways to make up all living and nonliving things.</p> <p>SC.8.P.8.In.f Identify common elements, such as oxygen, iron, and carbon.</p> <p>SC.8.P.8.In.g Identify that matter is made of small particles called atoms.</p> <p>SC.8.P.8.In.h Identify common acids, such as lemon juice and vinegar, and bases, such as baking soda and ammonia, and their hazardous properties.</p> <p>SC.8.P.8.In.i Identify common materials as pure substances or mixtures.</p>	<p>SC.8.P.8.Su.a Recognize three states of matter, including solids, liquids, and gases.</p> <p>SC.8.P.8.Su.b Compare the weight of different sized objects.</p> <p>SC.8.P.8.Su.c Recognize that smaller objects can weigh more than bigger objects because of density.</p> <p>SC.8.P.8.Su.d Observe and compare substances by physical properties, such as weight, size, boiling and melting points, and magnetic properties.</p> <p>SC.8.P.8.Su.e Recognize that parts of matter can be separated in tiny particles.</p> <p>SC.8.P.8.Su.f Recognize examples of common elements, such as carbon or iron.</p> <p>SC.8.P.8.Su.g Recognize common acids, such as vinegar, and bases, such as ammonia, and their hazardous properties.</p> <p>SC.8.P.8.Su.h Recognize examples of pure substances and mixtures.</p>	<p>SC.8.P.8.Pa.a Recognize examples of the gaseous state of matter, such as steam or smoke.</p> <p>SC.8.P.8.Pa.b Recognize the heavier of two objects.</p> <p>SC.8.P.8.Pa.c Recognize substances by physical properties, such as weight (heavy and light), size (big and small), and temperature (hot and cold).</p> <p>SC.8.P.8.Pa.d Recognize common acids as safe or harmful.</p> <p>SC.8.P.8.Pa.e Separate a mixture into its parts.</p>

GRADE 8

BIG IDEA 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. When matter is changed physically, generally no changes occur in the structure of the atoms or molecules composing the matter.

C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.
SC.8.P.9.2	Differentiate between physical changes and chemical changes.
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.8.P.9.In.a Observe and classify changes in matter as physical (reversible) or chemical (irreversible). SC.8.P.9.In.b Observe and identify how temperature influences chemical changes.	SC.8.P.9.Su.a Observe and recognize physical changes in matter as able to change back (reversible), such as water to ice, and chemical changes of matter as unable to change back (irreversible), such as cake to cake batter. SC.8.P.9.Su.b Observe and recognize changes caused by heat on substances.	SC.8.P.9.Pa.a Recognize an example of a physical change, such as ice changing to water. SC.8.P.9.Pa.b Recognize that heat influences changes (chemical) in matter, such as cooking.

BIG IDEA 18: Matter and Energy Transformations

A. Living things all share basic needs for life.

B. Living organisms acquire the energy they need for life processes through various metabolic pathways (photosynthesis and cellular respiration).

C. Matter and energy are recycled through cycles such as the carbon cycle.

BENCHMARK CODE	BENCHMARK
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.8.L.18.In.a Identify structures in plants that enable them to use the energy from the Sun to make their own food through a process called photosynthesis. SC.8.L.18.In.b Recognize that cells break down food to release energy. SC.8.L.18.In.c Illustrate a model that shows how carbon is cycled between plants and animals. SC.8.L.18.In.d Identify the flow of energy from the Sun as it is transferred along a food chain.	SC.8.L.18.Su.a Recognize that plants make their own food through a process called photosynthesis. SC.8.L.18.Su.b Recognize that plants and animals get energy from food. SC.8.L.18.Su.c Recognize that plants use the carbon dioxide that animals breathe out. SC.8.L.18.Su.d Recognize that plants get energy from the Sun and that energy is transferred to the animals that eat the plants.	SC.8.L.18.Pa.a Recognize that plants need water and light to grow. SC.8.L.18.Pa.b Recognize that food provides energy.

**FLORIDA SCIENCE STANDARDS
SECONDARY BODIES OF KNOWLEDGE**

These Bodies of Knowledge (BOK) do not represent courses. Courses such as Physics, Chemistry, or Biology will be developed from these standards, and individual courses may have standards from more than one BOK. The * (sunbursts) denote benchmarks that include content that all students should know and be able to do. These benchmarks are considered to be appropriate for statewide assessment or end of course exams. There are some Florida science courses with curriculum defined by other organizations (such as College Board for Advanced Placement Physics or International Baccalaureate science courses). Access points have been developed for the sunburst benchmarks in the BOK's of Nature of Science, Earth and Space Science, Physical Science, and Life Science.

Benchmark Coding Scheme

SC. 912. N. 1. 1

Subject, Grade Level, Body of Knowledge, Standard, Benchmark

Body of Knowledge Key:

N ~ Nature of Science

E ~ Earth and Space Science

P ~ Physical Science

L ~ Life Science

Access Points Coding Scheme

SC. 5. P. 1. In.a

Subject, Grade Level, Body of Knowledge, Standard, Access Point

Access Points Key:

In ~ Independent

Su ~ Supported

Pa ~ Participatory

GRADE 9 - 12

NATURE OF SCIENCE BODY OF KNOWLEDGE

Standard 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

	BENCHMARK CODE	BENCHMARK
*	SC.912.N.1.1	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: <ol style="list-style-type: none"> 1. pose questions about the natural world, 2. conduct systematic observations, 3. examine books and other sources of information to see what is already known, 4. review what is known in light of empirical evidence, 5. plan investigations, 6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs), 7. pose answers, explanations, or descriptions of events, 8. generate explanations that explicate or describe natural phenomena (inferences), 9. use appropriate evidence and reasoning to justify these explanations to others, 10. communicate results of scientific investigations, and 11. evaluate the merits of the explanations produced by others.
*	SC.912.N.1.2	Describe and explain what characterizes science and its methods.
*	SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.
*	SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.
*	SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.
*	SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.
*	SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations.

GRADE 9 - 12

NATURE OF SCIENCE BODY OF KNOWLEDGE

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A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.N.1.In.a Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following:</p> <ol style="list-style-type: none"> 1. Identify a scientific question 2. Examine reliable sources of information to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions. <p>SC.912.N.1.In.b Describe the processes used in scientific investigations, including posing a research question, forming a hypothesis, reviewing what is known, collecting evidence, evaluating results, and reaching conclusions.</p> <p>SC.912.N.1.In.c Identify that scientific investigations are sometimes repeated in different locations.</p> <p>SC.912.N.1.In.d Identify that scientists use many different methods in conducting their research.</p>	<p>SC.912.N.1.Su.a Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following:</p> <ol style="list-style-type: none"> 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion. <p>SC.912.N.1.Su.b Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results.</p> <p>SC.912.N.1.Su.c Recognize that scientific investigations can be repeated in different locations.</p> <p>SC.912.N.1.Su.d Recognize that scientists use a variety of methods to get answers to their research questions.</p>	<p>SC.912.N.1.Pa.a Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following:</p> <ol style="list-style-type: none"> 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution. <p>SC.912.N.1.Pa.b Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results.</p> <p>SC.912.N.1.Pa.c Recognize that when a variety of common activities are repeated the same way, the outcomes are the same.</p> <p>SC.912.N.1.Pa.d Recognize that people try different ways to complete a task when the first one does not work.</p>

GRADE 9 - 12

NATURE OF SCIENCE BODY OF KNOWLEDGE

Standard 2: The Characteristics of Scientific Knowledge

A:

Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

*	SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).
*	SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.
*	SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society.
*	SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.
*	SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.912.N.2.In.a Identify examples of investigations that involve science. SC.912.N.2.In.b Distinguish between questions that can be answered by science and observable information and questions that can't be answered by science and observable information. SC.912.N.2.In.c Recognize that scientific knowledge can be challenged or confirmed by new investigations and reexamination. SC.912.N.2.In.d Identify major contributions of scientists.	SC.912.N.2.Su.a Identify questions that can be answered by science. SC.912.N.2.Su.b Recognize that what is known about science can change based on new information. SC.912.N.2.Su.c Recognize major contributions of scientists.	SC.912.N.2.Pa.a Recognize an example of work by scientists. SC.912.N.2.Pa.b Recognize a variety of cause-effect relationships related to science.

GRADE 9 - 12

NATURE OF SCIENCE BODY OF KNOWLEDGE

Standard 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example: "theory," "law," "hypothesis" and "model" have very specific meanings and functions within science.

*	SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.
*	SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.
*	SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.
*	SC.912.N.3.4	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.
*	SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.912.N.3.In.a Recognize that a scientific theory is developed by repeated investigations of many scientists and agreement on the likely explanation. SC.912.N.3.In.b Identify examples of scientific laws that describe relationships in the natural world, such as Newton's laws. SC.912.N.3.In.c Identify ways models are used in the study of science.	SC.912.N.3.Su.a Recognize that scientific theories are supported by evidence and agreement of many scientists. SC.912.N.3.Su.b Recognize examples of scientific laws that describe relationships in nature, such as Newton's laws. SC.912.N.3.Su.c Recognize ways models are used in the study of science.	SC.912.N.3.Pa.a Recognize examples of cause-effect descriptions or explanations related to science. SC.912.N.3.Pa.b Recognize a model used in the context of one's own study of science.

Standard 4: Science and Society

As tomorrow's citizens, students should be able to identify issues about which society could provide input, formulate scientifically investigable questions about those issues, construct investigations of their questions, collect and evaluate data from their investigations, and develop scientific recommendations based upon their findings.

*	SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.
*	SC.912.N.4.2	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.912.N.4.In.a Identify ways scientific knowledge and problem solving benefit people. SC.912.N.4.In.b Identify that costs and benefits must be considered when choosing a strategy for solving a problem.	SC.912.N.4.Su.a Recognize ways scientific knowledge and problem solving benefit people. SC.912.N.4.Su.b Recognize that some strategies may cost more to solve a problem.	SC.912.N.4.Pa.a Recognize science information that helps people. SC.912.N.4.Pa.b Recognize a local problem that can be solved by science.

GRADE 9 - 12

EARTH AND SPACE SCIENCE BODY OF KNOWLEDGE

Standard 5: Earth in Space and Time

The origin and eventual fate of the Universe still remains one of the greatest questions in science. Gravity and energy influence the development and life cycles of galaxies, including our own Milky Way Galaxy, stars, the planetary systems, Earth, and residual material left from the formation of the Solar System. Humankind's need to explore continues to lead to the development of knowledge and understanding of the nature of the Universe.

	BENCHMARK CODE	BENCHMARK
*	SC.912.E.5.1	Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe.
*	SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them.
*	SC.912.E.5.3	Describe and predict how the initial mass of a star determines its evolution.
*	SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.
*	SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems.
*	SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other.
*	SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development.
*	SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.
*	SC.912.E.5.9	Analyze the broad effects of space exploration on the economy and culture of Florida.
	SC.912.E.5.10	Describe and apply the coordinate system used to locate objects in the sky.
	SC.912.E.5.11	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations.

GRADE 9 - 12

EARTH AND SPACE SCIENCE BODY OF KNOWLEDGE

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Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.E.5.In.a Recognize that the Milky Way is part of the expanding universe.</p> <p>SC.912.E.5.In.b Identify stars as giant masses of burning gases that are changing.</p> <p>SC.912.E.5.In.c Describe the Sun as a medium-sized star with sunspots and storms that can affect weather and radio transmissions on Earth.</p> <p>SC.912.E.5.In.d Recognize that there are other planetary systems in the universe besides the Solar System.</p> <p>SC.912.E.5.In.e Recognize a lunar eclipse, a solar eclipse, and the effect of the Moon on tides on Earth.</p> <p>SC.912.E.5.In.f Identify major contributions and research from space exploration that affected Florida's economy and culture.</p> <p>SC.912.E.5.In.g Identify tools that use different types of radiation, such as radio waves, ultraviolet radiation, and infrared waves.</p>	<p>SC.912.E.5.Su.a Recognize that the universe consists of many galaxies, including the Milky Way.</p> <p>SC.912.E.5.Su.b Recognize that stars are made of burning gases.</p> <p>SC.912.E.5.Su.c Describe observable effects of the Sun on Earth, such as changes in light and temperature.</p> <p>SC.912.E.5.Su.d Recognize that there are planetary systems in the Universe.</p> <p>SC.912.E.5.Su.e Recognize an eclipse.</p> <p>SC.912.E.5.Su.f Identify major contributions related to space exploration that affected Florida.</p> <p>SC.912.E.5.Su.g Recognize examples of tools that use radiation for observation purposes, such as x-rays and infrared night goggles.</p>	<p>SC.912.E.5.Pa.a Recognize that when objects move away from each other, the distance between them expands.</p> <p>SC.912.E.5.Pa.b Recognize that stars are bright.</p> <p>SC.912.E.5.Pa.c Observe and recognize effects of the Sun on Earth, such as temperature changes.</p> <p>SC.912.E.5.Pa.d Recognize that Earth is a planet.</p> <p>SC.912.E.5.Pa.e Recognize items, such as freeze-dried food and space blankets, developed because of space exploration.</p> <p>SC.912.E.5.Pa.f Recognize a tool that uses radiation for personal reasons, such as x-rays.</p>

GRADE 9 - 12

EARTH AND SPACE SCIENCE BODY OF KNOWLEDGE

Standard 6: Earth Structures

The scientific theory of plate tectonics provides the framework for much of modern geology. Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

	BENCHMARK CODE	BENCHMARK
*	SC.912.E.6.1	Describe and differentiate the layers of Earth and the interactions among them.
*	SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation.
*	SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.
*	SC.912.E.6.4	Analyze how specific geologic processes and features are expressed in Florida and elsewhere.
	SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features.
	SC.912.E.6.6	Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
SC.912.E.6.In.a Describe the three layers of Earth (core, mantle, and crust). SC.912.E.6.In.b Describe examples of surface features, such as glaciers, valleys, canyons, and dried riverbeds, which are caused by wind and erosion (surface processes). SC.912.E.6.In.c Relate a cause and effect of movements in Earth's crust (plate tectonics), such as fault lines in the plates causing earthquakes. SC.912.E.6.In.d Identify natural geological processes that change the land and water in Florida, including beach erosion and sinkholes.	SC.912.E.6.Su.a Recognize the three layers of Earth (core, mantle, and crust). SC.912.E.6.Su.b Identify types of surface features, such as hills and valleys. SC.912.E.6.Su.c Recognize that Earth's crust is broken into parts (plates) that move and cause mountains and volcanoes. SC.912.E.6.Su.d Recognize examples of natural changes to Florida's land and water, such as beach erosion.	SC.912.E.6.Pa.a Identify a surface feature of Earth, such as a hill. SC.912.E.6.Pa.b Recognize that the surface of Earth can change.

GRADE 9 - 12

EARTH AND SPACE SCIENCE BODY OF KNOWLEDGE

STANDARD 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

	BENCHMARK CODE	BENCHMARK
*	SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.
*	SC.912.E.7.2	Analyze the causes of the various kinds of surface and deep water motion within the oceans and their impacts on the transfer of energy between the poles and the equator.
*	SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.
*	SC.912.E.7.4	Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans.
*	SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.
*	SC.912.E.7.6	Relate the formation of severe weather to the various physical factors.
*	SC.912.E.7.7	Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change.
*	SC.912.E.7.8	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.
*	SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.

GRADE 9 - 12

EARTH AND SPACE SCIENCE BODY OF KNOWLEDGE

STANDARD 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.E.7.In.a Identify cycles that occur on Earth, such as the water and carbon cycles, and the role energy plays in them.</p> <p>SC.912.E.7.In.b Recognize that there are circular movements of ocean water (surface and deep-water currents) which move cold water from the poles toward the tropics and vice versa.</p> <p>SC.912.E.7.In.c Describe the interactions among the atmosphere, hydrosphere, and biosphere, including how air, water, and land support living things and how air temperature affects water and land temperatures.</p> <p>SC.912.E.7.In.d Describe variations in climate due to geological locations, such as on mountains and the nearness to large bodies of water.</p> <p>SC.912.E.7.In.e Identify weather conditions using weather data and weather maps.</p> <p>SC.912.E.7.In.f Compare weather conditions in different types of severe storms, including hurricanes, tornadoes, and thunderstorms.</p> <p>SC.912.E.7.In.g Recognize that global climate change is related to conditions in the atmosphere and oceans.</p> <p>SC.912.E.7.In.g Recognize that global climate change is related to conditions in the atmosphere and oceans.</p> <p>SC.912.E.7.In.h Describe how atmospheric and hydrologic conditions, such as hurricanes, drought, wildfires, and sinkholes, affect human behavior.</p> <p>SC.912.E.7.In.i Recognize that the ocean absorbs most of the solar energy reaching Earth and loses heat primarily by evaporation.</p>	<p>SC.912.E.7.Su.a Recognize the phases of the water cycle that occur on Earth and the role energy plays in the water cycle.</p> <p>SC.912.E.7.Su.b Recognize that currents move the ocean water around Earth.</p> <p>SC.912.E.7.Su.c Recognize components of the atmosphere, the hydrosphere, and the biosphere.</p> <p>SC.912.E.7.Su.d Identify the climate conditions in different parts of the world.</p> <p>SC.912.E.7.Su.e Identify weather conditions, including temperature, wind speed, and humidity.</p> <p>SC.912.E.7.Su.f Recognize conditions in severe storms, such as hurricanes, tornadoes, and thunderstorms.</p> <p>SC.912.E.7.Su.g Recognize that global climate change occurs over a long period of time.</p> <p>SC.912.E.7.Su.h Identify how weather and water conditions affect humans in Florida.</p> <p>SC.912.E.7.Su.i Recognize that the ocean absorbs heat from the Sun and then warms the air.</p>	<p>SC.912.E.7.Pa.a Recognize that clouds release rain (part of the water cycle).</p> <p>SC.912.E.7.Pa.b Recognize waves in the ocean.</p> <p>SC.912.E.7.Pa.c Recognize that humans, plants, and animals live on the Earth (biosphere).</p> <p>SC.912.E.7.Pa.d Recognize that weather (climate) is different in different locations.</p> <p>SC.912.E.7.Pa.e Recognize the weather conditions, including severe weather, in Florida.</p> <p>SC.912.E.7.Pa.f Recognize that the Sun heats the water in the ocean.</p>

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 8: Matter

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.

B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures.

Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.

C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.

D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

	BENCHMARK CODE	BENCHMARK
*	SC.912.P.8.1	Differentiate among the four states of matter.
*	SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter.
*	SC.912.P.8.3	Explore the scientific theory of atoms (also known as atomic theory) by describing changes in the atomic model over time and why those changes were necessitated by experimental evidence.
*	SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.
*	SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.
*	SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.
*	SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.
*	SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.
*	SC.912.P.8.9	Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.
*	SC.912.P.8.10	Describe oxidation-reduction reactions in living and non-living systems.
*	SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.
*	SC.912.P.8.12	Describe the properties of the carbon atom that make the diversity of carbon compounds possible.
*	SC.912.P.8.13	Identify selected functional groups and relate how they contribute to properties of carbon compounds.

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 8: Matter

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.

B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures. Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.

C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.

D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.P.8.In.a Classify states of matter as solid, liquid, and gaseous.</p> <p>SC.912.P.8.In.b Compare characteristics of physical and chemical changes of matter.</p> <p>SC.912.P.8.In.c Identify the nucleus as the center of an atom.</p> <p>SC.912.P.8.In.d Recognize that the periodic table includes all known elements.</p> <p>SC.912.P.8.In.e Identify that compounds are made of two or more elements.</p> <p>SC.912.P.8.In.f Identify formulas for common compounds, such as H₂O and CO₂.</p> <p>SC.912.P.8.In.g Identify properties of common acids and bases.</p> <p>SC.912.P.8.In.h Identify that carbon is found in all living things.</p>	<p>SC.912.P.8.Su.a Identify examples of states of matter as solid, liquid, and gaseous.</p> <p>SC.912.P.8.Su.b Identify examples of physical and chemical changes.</p> <p>SC.912.P.8.Su.c Recognize that atoms are tiny particles in materials, too small to see.</p> <p>SC.912.P.8.Su.d Recognize examples of common elements, such as oxygen and hydrogen.</p> <p>SC.912.P.8.Su.e Recognize examples of common compounds, such as water and salt.</p> <p>SC.912.P.8.Su.f Match common chemical formulas to their common name, such as H₂O to water.</p> <p>SC.912.P.8.Su.g Categorize common materials or foods as acids or bases.</p> <p>SC.912.P.8.Su.h Recognize that carbon is found in all living things.</p>	<p>SC.912.P.8.Pa.a Select an example of a common solid, liquid, and gas.</p> <p>SC.912.P.8.Pa.b Recognize a common chemical change, such as cooking, burning, rusting, or decaying.</p> <p>SC.912.P.8.Pa.c Recognize that the parts of an object can be put together to make a whole.</p> <p>SC.912.P.8.Pa.d Match common compounds to their names or communication symbols.</p> <p>SC.912.P.8.Pa.e Recognize that some acids and bases can be dangerous and identify related hazard symbols.</p>

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 10: Energy

A. Energy is involved in all physical and chemical processes. It is conserved, and can be transformed from one form to another and into work. At the atomic and nuclear levels energy is not continuous but exists in discrete amounts.

Energy and mass are related through Einstein's equation $E=mc^2$.

B. The properties of atomic nuclei are responsible for energy-related phenomena such as radioactivity, fission and fusion.

C. Changes in entropy and energy that accompany chemical reactions influence reaction paths. Chemical reactions result in the release or absorption of energy.

D. The theory of electromagnetism explains that electricity and magnetism are closely related. Electric charges are the source of electric fields. Moving charges generate magnetic fields.

E. Waves are the propagation of a disturbance. They transport energy and momentum but do not transport matter.

	BENCHMARK CODE	BENCHMARK
*	SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.
*	SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.
*	SC.912.P.10.3	Compare and contrast work and power qualitatively and quantitatively.
*	SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.
*	SC.912.P.10.5	Relate temperature to the average molecular kinetic energy.
*	SC.912.P.10.6	Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum.
*	SC.912.P.10.7	Distinguish between endothermic and exothermic chemical processes.
	SC.912.P.10.8	Explain entropy's role in determining the efficiency of processes that convert energy to work.
*	SC.912.P.10.9	Describe the quantization of energy at the atomic level.
*	SC.912.P.10.10	Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).
*	SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.
*	SC.912.P.10.12	Differentiate between chemical and nuclear reactions.
	SC.912.P.10.13	Relate the configuration of static charges to the electric field, electric force, electric potential, and electric potential energy.
*	SC.912.P.10.14	Differentiate among conductors, semiconductors, and insulators.
*	SC.912.P.10.15	Investigate and explain the relationships among current, voltage, resistance, and power.
*	SC.912.P.10.16	Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies.
	SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields.
*	SC.912.P.10.18	Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.
	SC.912.P.10.19	Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not.

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

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C. Changes in entropy and energy that accompany chemical reactions influence reaction paths. Chemical reactions result in the release or absorption of energy.

D. The theory of electromagnetism explains that electricity and magnetism are closely related. Electric charges are the source of electric fields. Moving charges generate magnetic fields.

E. Waves are the propagation of a disturbance. They transport energy and momentum but do not transport matter.

*	SC.912.P.10.20	Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another.
*	SC.912.P.10.21	Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver.
	SC.912.P.10.22	Construct ray diagrams and use thin lens and mirror equations to locate the images formed by lenses and mirrors.

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 10: Energy

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Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.P.10.In.a Identify examples of energy being transformed from one form to another (conserved quantity).</p> <p>SC.912.P.10.In.b Identify power as work done in a certain amount of time using measurable terms, such as watts or horsepower.</p> <p>SC.912.P.10.In.c Relate the transfer of heat to the states of matter, including gases result from heating, liquids result from cooling a gas, and solids result from further cooling a liquid.</p> <p>SC.912.P.10.In.d Describe a process that gives off heat (exothermic), such as burning, and a process that absorbs heat (endothermic), such as water coming to a boil.</p> <p>SC.912.P.10.In.e Identify fundamental forces, including gravitational and electromagnetic.</p> <p>SC.912.P.10.In.f Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue.</p> <p>SC.912.P.10.In.g Identify common conductors and insulators of electricity.</p> <p>SC.912.P.10.In.h Identify that some electrical devices use different types of power sources and explain what might happen if incorrect electrical components are used.</p> <p>SC.912.P.10.In.i Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared.</p>	<p>SC.912.P.10.Su.a Recognize energy transformations that occur in everyday life, such as solar energy to electricity.</p> <p>SC.912.P.10.Su.b Recognize the relationship between work and power, such as power is the amount of work a person or machine does.</p> <p>SC.912.P.10.Su.c Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection).</p> <p>SC.912.P.10.Su.d Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil.</p> <p>SC.912.P.10.Su.e Recognize that nuclear power plants generate electricity and can be dangerous.</p> <p>SC.912.P.10.Su.f Recognize fundamental forces, such as gravitational.</p> <p>SC.912.P.10.Su.g Recognize common objects that conduct electricity (conductors) and objects that do not conduct electricity (insulators).</p> <p>SC.912.P.10.Su.h Recognize that some electrical devices use different types of power sources.</p> <p>SC.912.P.10.Su.i Observe and identify the effects of magnetic attraction on iron.</p> <p>SC.912.P.10.Su.j Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays.</p>	<p>SC.912.P.10.Pa.a Observe and recognize examples of the transformation of electrical energy to light and heat.</p> <p>SC.912.P.10.Pa.b Recognize that work requires energy.</p> <p>SC.912.P.10.Pa.c Recognize the source and recipient of heat transfer.</p> <p>SC.912.P.10.Pa.d Identify materials that provide protection (insulation) from heat.</p> <p>SC.912.P.10.Pa.e Recognize the universal symbols for radioactive and other hazardous materials.</p> <p>SC.912.P.10.Pa.f Recognize that an object falls unless stopped (gravity).</p> <p>SC.912.P.10.Pa.g Recognize safe and unsafe practices related to the use of electricity, such as keeping foreign objects out of electrical sockets and not using electrical devices around water.</p> <p>SC.912.P.10.Pa.h Demonstrate opening and closing an electrical circuit to turn an electrical device on and off.</p> <p>SC.912.P.10.Pa.i Recognize how magnets are used in real-world situations.</p> <p>SC.912.P.10.Pa.j Recognize primary and secondary colors in visible light.</p>

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 12: Motion

A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion.

When objects travel at speeds comparable to the speed of light, Einstein's special theory of relativity applies.

B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

C. The Law of Universal Gravitation states that gravitational forces act on all objects irrespective of their size and position.

D. Gases consist of great numbers of molecules moving in all directions. The behavior of gases can be modeled by the kinetic molecular theory.

E. Chemical reaction rates change with conditions under which they occur. Chemical equilibrium is a dynamic state in which forward and reverse processes occur at the same rates.

	BENCHMARK CODE	BENCHMARK
*	SC.912.P.12.1	Distinguish between scalar and vector quantities and assess which should be used to describe an event.
*	SC.912.P.12.2	Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time.
*	SC.912.P.12.3	Interpret and apply Newton's three laws of motion.
*	SC.912.P.12.4	Describe how the gravitational force between two objects depends on their masses and the distance between them.
*	SC.912.P.12.5	Apply the law of conservation of linear momentum to interactions, such as collisions between objects.
*	SC.912.P.12.6	Qualitatively apply the concept of angular momentum.
*	SC.912.P.12.7	Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving.
	SC.912.P.12.8	Recognize that Newton's Laws are a limiting case of Einstein's Special Theory of Relativity at speeds that are much smaller than the speed of light.
	SC.912.P.12.9	Recognize that time, length, and energy depend on the frame of reference.
*	SC.912.P.12.10	Interpret the behavior of ideal gases in terms of kinetic molecular theory.
	SC.912.P.12.11	Describe phase transitions in terms of kinetic molecular theory.
	SC.912.P.12.12	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.
	SC.912.P.12.13	Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.

GRADE 9 - 12

PHYSICAL SCIENCE BODY OF KNOWLEDGE

Standard 12: Motion

A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. When objects travel at speeds comparable to the speed of light, Einstein's special theory of relativity applies.

B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

C. The Law of Universal Gravitation states that gravitational forces act on all objects irrespective of their size and position.

D. Gases consist of great numbers of molecules moving in all directions. The behavior of gases can be modeled by the kinetic molecular theory.

E. Chemical reaction rates change with conditions under which they occur. Chemical equilibrium is a dynamic state in which forward and reverse processes occur at the same rates.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.P.12.In.a Recognize that scalar quantities describe the magnitude of the measurement, such as size, weight, volume, area, temperature, or speed.</p> <p>SC.912.P.12.In.b Identify acceleration as a change in speed or direction.</p> <p>SC.912.P.12.In.c Recognize various situations that show Newton's third law of motion: for every action there is an equal and opposite reaction.</p> <p>SC.912.P.12.In.d Identify examples of how gravity attracts other objects, such as people to Earth or orbits of planets in the Solar System.</p> <p>SC.912.P.12.In.e Recognize that the speed of light is always the same.</p> <p>SC.912.P.12.In.f Identify that gases exert pressure in a closed surface, such as pressure inside a basketball or a hot air balloon.</p>	<p>SC.912.P.12.Su.a Recognize that speed is expressed as distance moved in a certain time, such as miles per hour or feet per second.</p> <p>SC.912.P.12.Su.b Recognize that acceleration generally involves a change in speed.</p> <p>SC.912.P.12.Su.c Recognize the action and reaction in a situation that show Newton's third law of motion: for every action there is an equal and opposite reaction.</p> <p>SC.912.P.12.Su.d Identify that gravity is a force that attracts objects.</p> <p>SC.912.P.12.Su.e Recognize that light travels very fast.</p> <p>SC.912.P.12.Su.f Recognize that a gas can exert pressure, such as in balloons, car tires, or pool floats.</p>	<p>SC.912.P.12.Pa.a Recognize that objects travel at different speeds.</p> <p>SC.912.P.12.Pa.b Identify the speed and direction of a moving object, including fast and slow, up and down, round and round, straight line.</p> <p>SC.912.P.12.Pa.c Identify the source of the force moving an object.</p> <p>SC.912.P.12.Pa.d Recognize that things fall down toward Earth unless stopped or held up (gravity).</p> <p>SC.912.P.12.Pa.e Recognize ways to stop light from traveling, such as closing a door.</p> <p>SC.912.P.12.Pa.f Recognize that some objects contain air, such as balloons, tires, and balls.</p>

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 14: Organization and Development of Living Organisms

A. Cells have characteristic structures and functions that make them distinctive.

B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.

C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.

D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.

	BENCHMARK CODE	BENCHMARK
*	SC.912.L.14.1	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science.
*	SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
*	SC.912.L.14.3	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.
	SC.912.L.14.4	Compare and contrast structure and function of various types of microscopes.
*	SC.912.L.14.5	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis).
*	SC.912.L.14.6	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.
*	SC.912.L.14.7	Relate the structure of each of the major plant organs and tissues to physiological processes.
	SC.912.L.14.8	Explain alternation of generations in plants.
	SC.912.L.14.9	Relate the major structure of fungi to their functions.
	SC.912.L.14.10	Discuss the relationship between the evolution of land plants and their anatomy.
	SC.912.L.14.11	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.
	SC.912.L.14.12	Describe the anatomy and histology of bone tissue.
	SC.912.L.14.13	Distinguish between bones of the axial skeleton and the appendicular skeleton.
	SC.912.L.14.14	Identify the major bones of the axial and appendicular skeleton.
	SC.912.L.14.15	Identify major markings (such as foramina, fossae, tubercles, etc.) on a skeleton. Explain why these markings are important.
	SC.912.L.14.16	Describe the anatomy and histology, including ultrastructure, of muscle tissue.
	SC.912.L.14.17	List the steps involved in the sliding filament of muscle contraction.
	SC.912.L.14.18	Describe signal transmission across a myoneural junction.
	SC.912.L.14.19	Explain the physiology of skeletal muscle.
	SC.912.L.14.20	Identify the major muscles of the human on a model or diagram.
	SC.912.L.14.21	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.
	SC.912.L.14.22	Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse.
	SC.912.L.14.23	Identify the parts of a reflex arc.
	SC.912.L.14.24	Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse.
	SC.912.L.14.25	Identify the major parts of a cross section through the spinal cord.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 14: Organization and Development of Living Organisms

A. Cells have characteristic structures and functions that make them distinctive.

B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.

C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.

D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.

	SC.912.L.14.26	Identify the major parts of the brain on diagrams or models.
	SC.912.L.14.27	Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum.
	SC.912.L.14.28	Identify the major functions of the spinal cord.
	SC.912.L.14.29	Define the terms endocrine and exocrine.
	SC.912.L.14.30	Compare endocrine and neural controls of physiology.
	SC.912.L.14.31	Describe the physiology of hormones including the different types and the mechanisms of their action.
	SC.912.L.14.32	Describe the anatomy and physiology of the endocrine system.
	SC.912.L.14.33	Describe the basic anatomy and physiology of the reproductive system.
	SC.912.L.14.34	Describe the composition and physiology of blood, including that of the plasma and the formed elements.
	SC.912.L.14.35	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.
	SC.912.L.14.36	Describe the factors affecting blood flow through the cardiovascular system.
	SC.912.L.14.37	Explain the components of an electrocardiogram.
	SC.912.L.14.38	Describe normal heart sounds and what they mean.
	SC.912.L.14.39	Describe hypertension and some of the factors that produce it.
	SC.912.L.14.40	Describe the histology of the major arteries and veins of systemic, pulmonary, hepatic portal, and coronary circulation.
	SC.912.L.14.41	Describe fetal circulation and changes that occur to the circulatory system at birth.
	SC.912.L.14.42	Describe the anatomy and the physiology of the lymph system.
	SC.912.L.14.43	Describe the histology of the respiratory system.
	SC.912.L.14.44	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation.
	SC.912.L.14.45	Describe the histology of the alimentary canal and its associated accessory organs.
	SC.912.L.14.46	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control.
	SC.912.L.14.47	Describe the physiology of urine formation by the kidney.
	SC.912.L.14.48	Describe the anatomy, histology, and physiology of the ureters, the urinary bladder and the urethra.
	SC.912.L.14.49	Identify the major functions associated with the sympathetic and parasympathetic nervous systems.
	SC.912.L.14.50	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.
	SC.912.L.14.51	Describe the function of the vertebrate integumentary system.
	SC.912.L.14.52	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics.
	SC.912.L.14.53	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 14: Organization and Development of Living Organisms

- A. Cells have characteristic structures and functions that make them distinctive.**
- B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.**
- C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.**
- D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.**

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.L.14.In.a Identify that all living things are made of cells and cells function in similar ways (cell theory).</p> <p>SC.912.L.14.In.b Identify the major parts of plant and animal cells, including the cell membrane, nucleus, and cytoplasm, and their basic functions.</p> <p>SC.912.L.14.In.c Identify that parts of cells (organelles) can combine to work together.</p> <p>SC.912.L.14.In.d Describe common human health issues.</p> <p>SC.912.L.14.In.e Describe the general processes of food production, support, water transport, and reproduction in the major parts of plants.</p>	<p>SC.912.L.14.Su.a Identify that the cell is the smallest basic unit of life and that all living things are made of cells.</p> <p>SC.912.L.14.Su.b Recognize that cells have different parts and each has a function.</p> <p>SC.912.L.14.Su.c. Recognize common human health issues.</p> <p>SC.912.L.14.Su.d Relate parts of plants, such as leaf, stem, root, seed, and flower, to the functions of food production, support, water transport, and reproduction.</p>	<p>SC.912.L.14.Pa.a Match parts of common living things to their functions.</p> <p>SC.912.L.14.Pa.b Recognize that small parts of a living thing can work together.</p> <p>SC.912.L.14.Pa.c Identify ways to prevent infection from bacteria and viruses, such as hand washing and first aid.</p> <p>SC.912.L.14.Pa.d Recognize major plant parts, such as root, stem, leaf, and flower.</p>

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 15: Diversity and Evolution of Living Organisms

- A. The scientific theory of evolution is the fundamental concept underlying all of biology.**
B. The scientific theory of evolution is supported by multiple forms of scientific evidence.
C. Organisms are classified based on their evolutionary history.
D. Natural selection is a primary mechanism leading to evolutionary change.

	BENCHMARK CODE	BENCHMARK
*	SC.912.L.15.1	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.
	SC.912.L.15.2	Discuss the use of molecular clocks to estimate how long ago various groups of organisms diverged evolutionarily from one another.
	SC.912.L.15.3	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction.
*	SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
	SC.912.L.15.5	Explain the reasons for changes in how organisms are classified.
*	SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.
	SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.
*	SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth.
	SC.912.L.15.9	Explain the role of reproductive isolation in the process of speciation.
*	SC.912.L.15.10	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.
	SC.912.L.15.11	Discuss specific fossil hominids and what they show about human evolution.
	SC.912.L.15.12	List the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature. Use the Hardy-Weinberg equation to predict genotypes in a population from observed phenotypes.
*	SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.
*	SC.912.L.15.14	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.
*	SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 15: Diversity and Evolution of Living Organisms

- A. The scientific theory of evolution is the fundamental concept underlying all of biology.**
- B. The scientific theory of evolution is supported by multiple forms of scientific evidence.**
- C. Organisms are classified based on their evolutionary history.**
- D. Natural selection is a primary mechanism leading to evolutionary change.**

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.L.15.In.a Identify that prehistoric plants and animals changed over time (evolved) or became extinct.</p> <p>SC.912.L.15.In.b Classify living organisms into their kingdoms.</p> <p>SC.912.L.15.In.c Identify that there are scientific explanations of the origin of life on Earth.</p> <p>SC.912.L.15.In.d Recognize ways that the appearance of humans, their language, and their tools have changed over time.</p> <p>SC.912.L.15.In.e Recognize that some living things produce very large numbers of offspring to ensure that enough survive to continue the species (a condition for natural selection).</p> <p>SC.912.L.15.In.f Recognize that changes in the genes of a species can affect the characteristics of their offspring.</p>	<p>SC.912.L.15.Su.a Match fossils to related species.</p> <p>SC.912.L.15.Su.b Match organisms to the animal, plant, and fungus kingdoms.</p> <p>SC.912.L.15.Su.c Recognize that there are scientific explanations of how life began.</p> <p>SC.912.L.15.Su.d Recognize that humans have changed in appearance over a very long period of time.</p> <p>SC.912.L.15.Su.e Recognize that some living things, such as fish and turtles, produce very large numbers of offspring because most will die as a result of dangers in the environment before they grow up.</p> <p>SC.912.L.15.Su.f Recognize that characteristics of the offspring of living things are sometimes different from their parents.</p>	<p>SC.912.L.15.Pa.a Recognize that plants and animals change as they age.</p> <p>SC.912.L.15.Pa.b Sort common living things into plant and animal kingdoms.</p> <p>SC.912.L.15.Pa.c Recognize that animals produce offspring.</p> <p>SC.912.L.15.Pa.d Recognize differences in physical characteristics within a species of animals, such as different types of dogs.</p>

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 16: Heredity and Reproduction

- A. DNA stores and transmits genetic information. Genes are sets of instructions encoded in the structure of DNA.**
- B. Genetic information is passed from generation to generation by DNA in all organisms and accounts for similarities in related individuals.**
- C. Manipulation of DNA in organisms has led to commercial production of biological molecules on a large scale and genetically modified organisms.**
- D. Reproduction is characteristic of living things and is essential for the survival of species.**

	BENCHMARK CODE	BENCHMARK
*	SC.912.L.16.1	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance.
*	SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.
*	SC.912.L.16.3	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information.
*	SC.912.L.16.4	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.
*	SC.912.L.16.5	Explain the basic processes of transcription and translation, and how they result in the expression of genes.
	SC.912.L.16.6	Discuss the mechanisms for regulation of gene expression in prokaryotes and eukaryotes at transcription and translation level.
	SC.912.L.16.7	Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology.
*	SC.912.L.16.8	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer.
*	SC.912.L.16.9	Explain how and why the genetic code is universal and is common to almost all organisms.
*	SC.912.L.16.10	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.
	SC.912.L.16.11	Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis.
	SC.912.L.16.12	Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant DNA molecules (DNA cloning).
*	SC.912.L.16.13	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy.
*	SC.912.L.16.14	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.
	SC.912.L.16.15	Compare and contrast binary fission and mitotic cell division.
*	SC.912.L.16.16	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.
*	SC.912.L.16.17	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 16: Heredity and Reproduction

- A. DNA stores and transmits genetic information. Genes are sets of instructions encoded in the structure of DNA.**
- B. Genetic information is passed from generation to generation by DNA in all organisms and accounts for similarities in related individuals.**
- C. Manipulation of DNA in organisms has led to commercial production of biological molecules on a large scale and genetically modified organisms.**
- D. Reproduction is characteristic of living things and is essential for the survival of species.**

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.L.16.In.a Identify that genes are sets of instructions that determine which characteristics are passed from parent to offspring.</p> <p>SC.912.L.16.In.b Identify traits that plants and animals, including humans, inherit.</p> <p>SC.912.L.16.In.c Recognize that a substance called DNA carries genetic information in all organisms, and changes (mutations) in DNA can be helpful or harmful to an organism.</p> <p>SC.912.L.16.In.d Identify that cancer can result when cells change or grow uncontrollably.</p> <p>SC.912.L.16.In.e Identify ways that biotechnology has impacted society and the environment, such as the development of new medicines and farming techniques.</p> <p>SC.912.L.16.In.f Describe the basic process of human development from fertilization to birth.</p> <p>SC.912.L.16.In.g Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis).</p>	<p>SC.912.L.16.Su.a Recognize characteristics (traits) that offspring inherit from parents.</p> <p>SC.912.L.16.Su.b Recognize that all organisms have a substance called DNA with unique information.</p> <p>SC.912.L.16.Su.c Recognize that cancer may result when cells change or grow too fast.</p> <p>SC.912.L.16.Su.d Recognize that new medicines and foods can be developed by science (biotechnology).</p> <p>SC.912.L.16.Su.e Recognize major phases in the process of human development from fertilization to birth.</p> <p>SC.912.L.16.Su.f Recognize that cells reproduce by dividing.</p>	<p>SC.912.L.16.Pa.a Recognize similar characteristics (traits) between a child and parents, such as hair, eye, and skin color, or height.</p> <p>SC.912.L.16.Pa.b Recognize similarities in characteristics of plants and animals of the same type (species).</p> <p>SC.912.L.16.Pa.c Recognize that illness can result when parts of our bodies are not working properly.</p> <p>SC.912.L.16.Pa.d Recognize a food.</p> <p>SC.912.L.16.Pa.e Recognize the sequence of human development from baby to child to adult.</p> <p>SC.912.L.16.Pa.f Recognize that living things produce offspring (reproduce).</p>

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 17: Interdependence

A. The distribution and abundance of organisms is determined by the interactions between organisms, and between organisms and the non-living environment.

B. Energy and nutrients move within and between biotic and abiotic components of ecosystems via physical, chemical and biological processes.

C. Human activities and natural events can have profound effects on populations, biodiversity and ecosystem processes.

	BENCHMARK CODE	BENCHMARK
	SC.912.L.17.1	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.
*	SC.912.L.17.2	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.
*	SC.912.L.17.3	Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.
*	SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
*	SC.912.L.17.5	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.
*	SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.
	SC.912.L.17.7	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.
*	SC.912.L.17.8	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
*	SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.
*	SC.912.L.17.10	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.
*	SC.912.L.17.11	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
	SC.912.L.17.12	Discuss the political, social, and environmental consequences of sustainable use of land.
	SC.912.L.17.13	Discuss the need for adequate monitoring of environmental parameters when making policy decisions.
	SC.912.L.17.14	Assess the need for adequate waste management strategies.
	SC.912.L.17.15	Discuss the effects of technology on environmental quality.
	SC.912.L.17.16	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.
	SC.912.L.17.17	Assess the effectiveness of innovative methods of protecting the environment.
	SC.912.L.17.18	Describe how human population size and resource use relate to environmental quality.
	SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability.
*	SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 17: Interdependence

A. The distribution and abundance of organisms is determined by the interactions between organisms, and between organisms and the non-living environment.

B. Energy and nutrients move within and between biotic and abiotic components of ecosystems via physical, chemical and biological processes.

C. Human activities and natural events can have profound effects on populations, biodiversity and ecosystem processes.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.L.17.In.a Recognize that living things in oceans and fresh water are affected by the location, availability of light, depth of the water, and temperature.</p> <p>SC.912.L.17.In.b Identify that living things in an ecosystem are affected by changes in the environment, such as changes to the food supply, climate change, or the introduction of predators.</p> <p>SC.912.L.17.In.c Identify relationships among organisms, including helping each other (mutualism); obtaining food (predation); benefiting at the expense of the other (parasitism); and competing with each other for food, space, or shelter (competition).</p> <p>SC.912.L.17.In.d Recognize possible changes in an ecosystem (biodiversity) that can result from natural catastrophic events, changes in climate, and human activity.</p> <p>SC.912.L.17.In.e Identify the components of a food web, including sunlight, producers, consumers, and decomposers, and trace the flow of energy from the Sun.</p> <p>SC.912.L.17.In.f Identify the contributions of non-living elements, such as carbon and oxygen, to maintaining life in an ecosystem.</p> <p>SC.912.L.17.In.g Identify types of renewable and nonrenewable natural resources and explain the need for conservation.</p> <p>SC.912.L.17.In.h Describe ways the lifestyles of individuals and groups can help or hurt the environment.</p>	<p>SC.912.L.17.Su.a Recognize that living things in bodies of water are affected by the location and depth of the water.</p> <p>SC.912.L.17.Su.b Recognize how animals and plants in an ecosystem may be affected by changes to the food supply or climate.</p> <p>SC.7.L.17.Su.c Recognize that organisms can interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at expense of the other (parasitism).</p> <p>SC.912.L.17.Su.d Recognize changes in living things (biodiversity) that can result from natural catastrophic events and human activity.</p> <p>SC.912.L.17.Su.e Identify producers, consumers, and decomposers in a simple food chain.</p> <p>SC.912.L.17.Su.f Identify that clean water and air are important for supporting life in an ecosystem.</p> <p>SC.912.L.17.Su.g Identify a way to conserve a familiar, nonrenewable, natural resource.</p> <p>SC.912.L.17.Su.h Identify ways individuals can help the environment.</p>	<p>SC.912.L.17.Pa.a Recognize common living things in bodies of water.</p> <p>SC.912.L.17.Pa.b Recognize what happens to plants and animals when they don't get enough food or water.</p> <p>SC.912.L.17.Pa.c Recognize examples of mutual relationships between people and other living things.</p> <p>SC.912.L.17.Pa.d Recognize actions that are harmful to living things.</p> <p>SC.912.L.17.Pa.e Recognize that animals (consumers) eat animals and plants for food.</p> <p>SC.912.L.17.Pa.f Recognize the importance of clean water for living things.</p> <p>SC.912.L.17.Pa.g Recognize a way to help the local environment.</p>

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

Standard 18: Matter and Energy Transformations

- A. All living things are composed of four basic categories of macromolecules and share the same basic needs for life.**
B. Living organisms acquire the energy they need for life processes through various metabolic pathways (primarily photosynthesis and cellular respiration).
C. Chemical reactions in living things follow basic rules of chemistry and are usually regulated by enzymes.
D. The unique chemical properties of carbon and water make life on Earth possible.

	BENCHMARK CODE	BENCHMARK
*	SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.
	SC.912.L.18.2	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things.
	SC.912.L.18.3	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes.
	SC.912.L.18.4	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes.
	SC.912.L.18.5	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria.
	SC.912.L.18.6	Discuss the role of anaerobic respiration in living things and in human society.
*	SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis.
*	SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
*	SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration.
*	SC.912.L.18.10	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
*	SC.912.L.18.11	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
*	SC.912.L.18.12	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

GRADE 9 - 12

LIFE SCIENCE BODY OF KNOWLEDGE

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B. Living organisms acquire the energy they need for life processes through various metabolic pathways (primarily photosynthesis and cellular respiration).
C. Chemical reactions in living things follow basic rules of chemistry and are usually regulated by enzymes.
D. The unique chemical properties of carbon and water make life on Earth possible.

Access Points for Students with Significant Cognitive Disabilities

<i>Independent:</i>	<i>Supported:</i>	<i>Participatory:</i>
<p>SC.912.L.18.In.a Identify that carbohydrates, fats, proteins, and nucleic acids (macromolecules) are important for human organisms.</p> <p>SC.912.L.18.In.b Identify the products and function of photosynthesis.</p> <p>SC.912.L.18.In.c Identify that cells release energy from food so the organism can use it (cellular respiration).</p> <p>SC.912.L.18.In.d Recognize that plants give off oxygen that is used by animals and animals give off carbon dioxide that is used by plants.</p> <p>SC.912.L.18.In.e Recognize that energy is stored in cells.</p> <p>SC.912.L.18.In.f Recognize that enzymes break down food molecules during the digestive process.</p> <p>SC.912.L.18.In.g Identify that special properties of water, such as the ability to moderate temperature and dissolve substances, help to sustain living things on Earth.</p>	<p>SC.912.L.18.Su.a Recognize that humans use proteins, carbohydrates, and fats.</p> <p>SC.912.L.18.Su.b Recognize that the function of photosynthesis is to produce food for plants.</p> <p>SC.912.L.18.Su.c Recognize that cells get energy from food.</p> <p>SC.912.L.18.Su.d Recognize that people and animals breathe in the oxygen that plants give off.</p> <p>SC.912.L.18.Su.e Recognize that food is broken down in digestion (use of enzymes).</p> <p>SC.912.L.18.Su.f Identify the important role of water in sustaining life of plants and animals.</p>	<p>SC.912.L.18.Pa.a Recognize that humans need different kinds of food.</p> <p>SC.912.L.18.Pa.b Recognize that plants need water, light, and air to grow.</p> <p>SC.912.L.18.Pa.c Identify that food is a source of energy.</p> <p>SC.912.L.18.Pa.d Recognize that saliva helps people eat when they chew.</p> <p>SC.912.L.18.Pa.e Recognize that plants and animals use water to live.</p>