

Wakulla County Schools
MIDDLE SCHOOL COMPREHENSIVE SCIENCE CURRICULUM
Sixth Grade - Course #2002040

Revised June, 2011

Science Committee

Riversprings Middle School

Susan Lassiter
John Madden
Jeff Dutrow

Wakulla Middle School

Logan Crouch
Susan Hutchins
Rick Myhre

Superintendent

David Miller

Wakulla County School Board

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Mike Scott

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District Staff

Beth O'Donnell – Assistant Superintendent for Instruction

Beth Mims – Executive Director of Curriculum

M/J Comprehensive Science 1

Course #2002040

This curriculum is based upon the Next Generation Sunshine State Standards for Science and the Course Description for M/J Comprehensive Science 1. Sixth grade science instruction should fully instruct students on the benchmarks contained in this document.

Documentation:

Teachers should document when instruction is provided on the benchmarks. The date noted should correspond to a specific lesson or unit of instruction as noted in the teacher's lesson plans or to when an assessment was given to determine student mastery of the benchmark.

Major Tool of Instruction:

The major tool of instruction provided to all teachers is the Glencoe *iScience* – Course 1, 2010 text. It is critical that teachers require that students access the text in order to build content-area reading skills. Time spent reading the more complex science text will help students build cognitive endurance for other reading tasks. This will also be a requirement as we move to incorporate the Common Core Literacy Standards over the next three years. Other resources may be incorporated to insure that all students achieve mastery of the required benchmarks. *Correlation page numbers that refer to the Teacher's Edition (TE) correspond to the wrap-around version of the teacher's edition.*

NOTE: Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course.

Assessment Information:

The information under 'Assessment' for each benchmark is taken directly from the FCAT 2.0 Test Specification document. This information must be used to help 'unpack' the benchmarks and set content limits for instruction.

Key to Acronyms and Markings:

Bold Print – FCAT Vocabulary – Middle School

Marked with * - FCAT Vocabulary that was tested at 5th grade

CPALMS – www.floridastandards.org

Appendices:

Appendix A: A list of vocabulary from all benchmarks in this course

Appendix B: A scope and sequence of vocabulary for grades 6-8; a K-5 scope and sequence is available on the district website

Required Professional Norms

As teachers encourage and support the critical thinking of students in classrooms, ongoing debate and discussion is inevitable. Therefore, it is important to establish professional standards that set the stage for norm setting in the classroom.

All Wakulla educators are expected to adhere to the following professional norms when addressing controversial issues and to use these norms as a baseline for helping students agree upon guidelines to govern classroom interaction.

- 1. Critical analysis of a topic or subject is welcome.**
- 2. Differing belief systems are treated with respect.**
- 3. There is no place for ridicule in the classroom.**
- 4. While students are required to learn and are tested on content as required by state standards, there is no requirement to agree with a stated position.**

Please note that a parent may request a related alternative assignment when there is strong objection to content.

- 5. Students are not penalized for proffering an alternative position on a controversial issue.**

Common Core Standards:

The following two pages provide the Literacy Standards from the Common Core State Standards (CCSS), which are to be incorporated with all science instruction.

Reading Standards for Literacy in Science and Technical Subjects 6-8

Key Details

1. Cite specific textual evidence to support analysis of science and technical texts.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Craft and Structure

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

Integration of Knowledge and Ideas

7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Range of Reading and Level of Text Complexity

10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

Writing Standards for Literacy in History/Social Studies, Science and Technical Subjects 6-8

Text Types and Purposes

1. Write arguments focused on *discipline-specific content*.
 - a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
 - b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
 - c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
 - d. Establish and maintain a formal style.
 - e. Provide a concluding statement or section that follows from and supports the argument presented.

SCIENCE CURRICULUM – Sixth Grade

Body of Knowledge: Nature of Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: High	The Nature of Science benchmarks are foundational to all science inquiry. They must be reinforced with every investigation. Ongoing investigations are critical to the mastery of the concepts in the NGSSS for science.						
SC.6.N.1.2	Explain why scientific investigations should be replicable. Complexity: High							
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. Complexity: High							
SC.6.N.1.4	Discuss, compare and negotiate methods used, results obtained and explanations among groups of students conducting the same investigation. Complexity: High							
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence. Complexity: Moderate							

Associated Vocabulary	Replication, prediction*, observation*, inference*, theory*, scientific law ,test variable (independent), controlled variable, empirical evidence, hypothesis, scientific model, outcome variable (dependent), repetition, variable*
Assessment Information	<p>SC.6.N.1.1 and SC.6.N.1.3 are assessed as SC.8.N.1.1 in 8th grade. Task will require students to evaluate a scientific investigation using evidence of scientific thinking and/or problem solving; identify test variables (independent variables) and/or outcome variables (dependent variables) in a given scientific investigation; interpret and/or analyze data to make predictions and/or defend conclusions; distinguish between an experiment and other types of scientific investigations where variables cannot be controlled; explain how hypotheses are valuable.</p> <p>SC.6.N.1.2 and SC.6.N.1.4 are assessed as SC.7.N.1.2 in 8th grade. Task will require students to differentiate between replication and repetition; explain why scientific investigations should be replicable; compare methods and/or results obtained in a scientific investigation; evaluate the use of repeated trials or replication in a scientific investigation.</p>

Access Points for Students with Significant Cognitive Disability

Independent:	Supported:	Participatory:
<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>

Body of Knowledge: Nature of Science

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.

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.6.N.2.1	Distinguish science from other activities involving thought. <p style="text-align: right;">Complexity: Moderate</p>	The Nature of Science benchmarks are foundational to all science inquiry. They must be reinforced with every investigation. Ongoing investigations are critical to the mastery of the concepts in the NGSSS for science. Please review the Professional Norms found on page 3 of this document.						
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered. <p style="text-align: right;">Complexity: Moderate</p>							
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. <p style="text-align: right;">Complexity: Low</p>							
Associated Vocabulary	Evidence, interpretation							
Assessment Information	<p>SC.6.N.2.2 Reporting Category: Nature of Science Benchmark Clarifications: Task will require students to explain that scientific knowledge may change as new evidence is discovered or new scientific interpretations are formed; explain that scientific explanations are based on empirical evidence, logical reasoning, predictions and modeling; identify instances in the history of science in which science knowledge has changed as a result of new evidence. Content Limits: Items will not require identification of the scientist(s) and/or details associated with a particular event/discovery and they will not use the term <i>durable</i>. Stimulus Attributes: Scenarios referring to empirical evidence will use the term <i>evidence</i>. The phrases <i>natural event</i> should be used rather than <i>natural phenomenon</i>. Prior Knowledge: SC.3.N.1.7, SC.4.N.1.3, SC.4.N.1.7, SC.5.N.1.5, SC.5.N.1.6, SC.5.N.2.1</p> <p>Sample Item Scientific knowledge may change as new evidence or information is discovered. Which of the following would NOT be a result of new scientific</p>							

	<p>research and information?</p> <p>A. Binomial nomenclature is assigned to a recently identified plant species.</p> <p>B. An endangered monkey species is put in a reserve for protection from extinction.</p> <p>C. A newly discovered chemical element will be added to the periodic table of the elements.</p> <p>D. A nonnative plant species will begin to reproduce rapidly after being introduced into a swamp ecosystem. ♦</p> <p>Also Assesses: SC.7.N.1.6, SC.7.N.1.7, SC.7.N.2.1, SC.8.N.1.6</p>
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Access Points for Students with Significant Cognitive Disability

Independent:	Supported:	Participatory:
<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.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>

Body of Knowledge: Nature of 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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. <p style="text-align: right;">Complexity: Moderate</p>	The Nature of Science benchmarks are foundational to all science inquiry. They must be reinforced with every investigation. Ongoing investigations are critical to the mastery of the concepts in the NGSSS for science. Please refer to the Professional Norms on page 3 of this document.						
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. <p style="text-align: right;">Complexity: Moderate</p>							
SC.6.N.3.3	Give several examples of scientific laws. <p style="text-align: right;">Complexity: Low</p>							
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks. <p style="text-align: right;">Complexity: Moderate</p>							
Associated Vocabulary	See Big Ideas 1 and 2.							
Assessment Information	SC.6.N.3.1 is assessed as SC.7.N.3.1 in 8 th grade. Task will require students to explain the difference between theories and laws; identify examples of theories and/or laws; explain why theories may be modified but are rarely discarded.							
Access Points for Students with Significant Cognitive Disability								
Independent:			Supported:			Participatory:		
SC.6.N.3.In.a Identify that a scientific theory is an explanation of nature supported by evidence.			SC.6.N.3.Su.a Recognize that a scientific theory is an explanation of nature.			SC.6.N.3.Pa.a Observe and recognize a predictable cause-effect relationship related to a science topic.		
SC.6.N.3.In.b Identify examples of scientific laws (proven descriptions of nature), such as the law of gravity.			SC.6.N.3.Su.b Recognize events that are based on scientific laws, such as the law of gravity.			SC.6.N.3.Pa.b Associate a model with an activity used in the context of sixth grade science access points.		
SC.6.N.3.In.c Identify models used in the context of sixth grade science access points.			SC.6.N.3.Su.c Recognize models used in the context of sixth grade science access points.					

Body of Knowledge: Earth/Space Science

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 water and natural resources.

BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: Moderate	Text: Lesson 1.2 – pages 40-46, pages 26-27						
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 Complexity: Moderate	Text: Lesson 3.1 – pages 74-75; Lesson 3.2 – pages 79-84						
Associated Vocabulary	Rock, mineral, water cycle*, evaporation*, condensation*, precipitation*, transpiration*, weather, climate*, rock cycle, weathering*, oxidation, decomposition, organic matter, pH , topography, erosion, deposition, delta, abrasion*							
Assessment Information	SC.6.E.6.1 & SC.6.E.6.2 are assessed as SC.7.E.6.2 in 8 th Grade. Task will require students to identify and/or describe steps of the rock cycle and relate them to surface and sub-surface events; describe and/or explain how Earth's surface is built up and torn down through the processes of physical and chemical weathering, erosion and deposition; identify different types of landforms commonly found on Earth; describe similarities and/or differences among landforms found in Florida and those found outside of Florida; identify and/or describe the impact that humans have had on Earth.							
Access Points for Students with Significant Cognitive Disability								
Independent:			Supported:			Participatory:		
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.		

Body of Knowledge: Earth/Space Science

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.

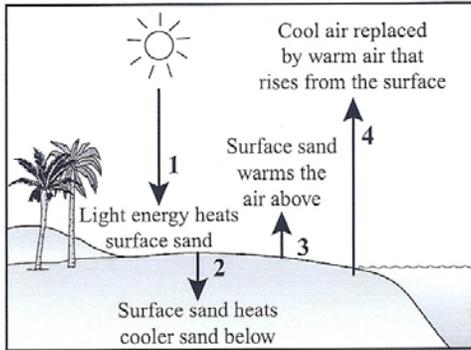
BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE						
			11/12	12/13	13/14	14/15	15/16	16/17	
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system. Complexity: Moderate								
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate. Complexity: High	Text: Lesson 1.2 – pages 21-28							
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. Complexity: High								
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere and biosphere. Complexity: High	Text: Lesson 1.1 – pages 11-15							
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. Complexity: High								
SC.6.E.7.6	Differentiate between weather and climate. Complexity: Moderate	Text: Lesson 1.2 – pages 24-25							
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida. Complexity: High								
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure. Complexity: Moderate								

SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet. Complexity: Moderate				
Associated Vocabulary	Hydrosphere, cryosphere, biosphere, atmosphere, troposphere, stratosphere, ionosphere, ozone layer, radiation, conduction, convection, precipitation*, water cycle*, jet stream, air pressure, humidity*, greenhouse gas, global warming				
Assessment Information	<p>SC.6.E.7.4 Reporting Category: Earth & Space Science Benchmark Clarifications: Task will require students to differentiate and/or explain interactions among the geosphere, hydrosphere, cryosphere, atmosphere and biosphere; describe and/or explain how the cycling of water and global patterns influence local weather and climate; differentiate between weather and climate; describe the composition and structure of the atmosphere and/or how the atmosphere protects life and insulates the planet. Content Limits: Items will not assess atmospheres of planets other than Earth; Items may assess atmospheric conditions and their resulting weather phenomena, such as hurricanes, tornadoes, lightning, fronts and precipitation; Items will not address auroras; Items will not assess the cause of global warming or the ozone hole but may assess their effects; Items may assess the layers of the atmosphere and/or the function of each; Items should not assess the water cycle in isolation. Stimulus Attributes: Items assessing the jet stream, the Gulf Stream or other winds and/or currents must include a map showing these patterns; Temperature should be shown in degrees Celsius followed by the equivalent degrees Fahrenheit temperature in parentheses. Response Attributes: Temperature should be shown in degrees Celsius followed by the equivalent degrees Fahrenheit temperature in parentheses. Prior Knowledge: SC.5.E.7.1, SC.5.E.7.2, SC.5.E.7.3, SC.5.E.7.4, SC.5.E.7.5, SC.5.E.7.6 Sample Items: The climate of an area can be different from its weather. Which of the following statements describes the climate of an area? A. There should be heavy rains tomorrow morning. B. The rains next week are expected to cause some flooding. C. The average temperature from 1930-1996 was 23 C (74 F). ♦ D. F). Also Assesses: SC.6.E.7.2, SC.6.E.7.3, SC.6.E.7.6, SC.6.E.7.9</p> <p>SC.6.E.7.5 Reporting Category: Earth & Space Science Benchmark Clarification: Task will require students to explain how energy provided by the Sun influences global patterns of atmospheric movement and/or the temperature differences among air, water and land; differentiate among radiation, conduction and convection in Earth’s systems. Content Limits: Items may assess cause of wind and wind patterns but will not assess knowledge of the Coriolis effect; Items assessing radiation, conduction and /or convection should be in the context of the atmosphere, geosphere and hydrosphere on Earth. Stimulus Attribute: Temperature should be shown in degrees Celsius, followed by the equivalent degrees Fahrenheit temperature in parentheses.</p>				

Prior Knowledge: SC.3.E.6.1

Sample Item:

The arrows in the picture below show several ways heat is transferred from the Sun as it strikes sand and the surface of the beach.



- A. 1 B. 2 C. 3 D. 4 ♦

Also Assesses: SC.6.E.7.1

Access Points for Students with Significant Cognitive Disability

Independent:	Supported:	Participatory:
<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</p>	<p>SC.6.E.7.Su.a Recognize that heat can transfer from the Sun to the water, land, and air. 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,</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>

<p>east.</p> <p>SC.6.E.7.In.f Identify climate as the expected weather patterns in a region.</p> <p>SC.6.E.7.In.g Identify possible effects of 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.7.In.i Identify that the atmosphere protects Earth from radiation from the Sun and regulates the temperature.</p>	<p>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>	
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Body of Knowledge: Physical Science

Big Idea 11: Energy Transfer and Transformations								
<p>A. Waves involve a transfer of energy without a transfer of matter.</p> <p>B. Water and sound waves transfer energy through a material.</p> <p>C. Light waves can travel through a vacuum and through matter.</p> <p>D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.</p>								
BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: Moderate							
Associated Vocabulary	Energy* (Kinetic, potential), work, law of conservation of energy, friction*, heat, conduction*, convection, radiation							
Assessment Information	SC.6.P.11.1 is assessed as SC.7.P.11.2 at 8 th Grade. Task will require students to identify and/or describe the transformation of energy from one form to another; differentiate between potential and kinetic energy; identify and/or explain situations where energy is transformed between kinetic energy and potential energy; identify and/or describe examples of the Law of Conservation of Energy.							
Access Points for Students with Significant Cognitive Disability								
Independent:			Supported:			Participatory:		
SC.6.P.11.In.a Identify energy as stored (potential) or expressed in motion (kinetic).			SC.6.P.11.Su.a Recognize examples of stored energy, such as in a roller coaster.			SC.6.P.11.Pa.a Distinguish between objects in motion (kinetic energy) and at rest.		

Body of Knowledge: Physical Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
SC.6.P.12.1	Measure and graph distance versus time for an object moving at constant speed. Interpret this relationship. Complexity: High							
Associated Vocabulary	Displacement, motion*, speed*, velocity, acceleration , force*, gravity*, friction*, resistance (air), Newton's 1 st , 2 nd , and 3 rd laws, Net Force , pressure							
Connection/Assessment Information	Math: Graphing Social Studies: Maps							
Access Points for Students with Significant Cognitive Disability								
Independent:			Supported:			Participatory:		
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.		

Body of Knowledge: Physical Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: Moderate							
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. Complexity: Low							
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. Complexity: Moderate							
Associated Vocabulary	See Big Idea 12.							
Assessment Information	<p>SC.6.P.13.1 Reporting Category: Physical Science Benchmark Clarifications: Task will require students to identify and/or describe types of forces; describe the relationship among distance, mass and gravitational force between any two objects; differentiate between mass and weight. Content Limits: Items assessing gravity will use a conceptual understanding of the Law of Universal Gravitation by keeping either the mass or distance constant; Items will not assess nuclear forces; Items will not require the use of formulas or calculations; Items addressing mass and/or weight will not assess the units of measure for mass and weight. Prior Knowledge: SC.5.P.13.1 Sample Item: Luis rubbed a balloon on his hair and held the balloon next to the wall. He observed the balloon stick to the wall. Which of the following is responsible for the balloon sticking to the wall? A. Friction B. Gravity C. Electric Force ♦ D. Magnetic Force</p> <p>Also Assesses: SC.6.P.13.2, SC.8.P.8.2</p>							

SC.6.P.13.3

Reporting Category: Physical Science

Benchmark Clarifications: Task will require students to describe and/or explain that an unbalanced force acting on an object changes its speed and/or direction; interpret and/or analyze graphs of distance and time for an object moving at a constant speed.

Content Limits: Items requiring the interpretation and/or analysis of a graph may assess the relative speed of an object at various points or sections of the graph and the direction of motion; Items will not require a comparison of the speeds of more than five different objects; Items will not assess the addition of nonparallel vectors; Items will not require the calculation of acceleration; Items may require the calculation of net force; Items may assess the direction of net force; Items addressing force and motion are limited to conceptual understanding. Items will not require the use of the formula $F=ma$; Items addressing changes in speed should use the terms *positive acceleration* and *negative acceleration*; Items may assess understanding of friction as a force in both sliding and stationary situations. Items will not require knowledge of coefficient of friction; Items will not imply that a calculation is required in scenarios assessing understanding of no acceleration or no net force.

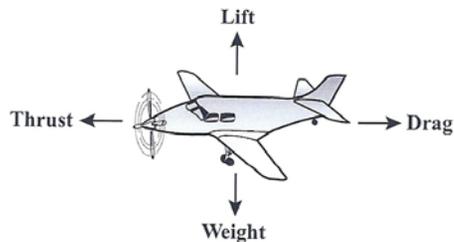
Stimulus Attributes: Force diagrams may have a maximum of two sets of parallel forces acting on an object; Scenarios addressing the calculation of average speed will not require the calculation of speed using data from a graph; Graphs of distance and time may include no more than five constant speeds.

Response Attribute: Responses will not require the creation of graphs.

Prior Knowledge: SC.3.P.10.2, SC.4.P.10.2, SC.4.P.10.4, SC.4.P.12.1, SC.4.P.12.2, SC.5.P.10.2, SC.5.P.13.2, SC.5.P.13.3, SC.5.P.13.4

Sample Item:

The diagram below shows forces acting on a model airplane. Both its speed and height above the ground are constant.



Which of the following conditions would cause the model airplane to descend toward the ground?

- A. The lift is equal to the drag.
- B. The lift is less than the weight. ♦**
- C. The thrust is equal to the weight.
- D. The thrust is greater than the drag.

Also Assesses: SC.6.P.12.1

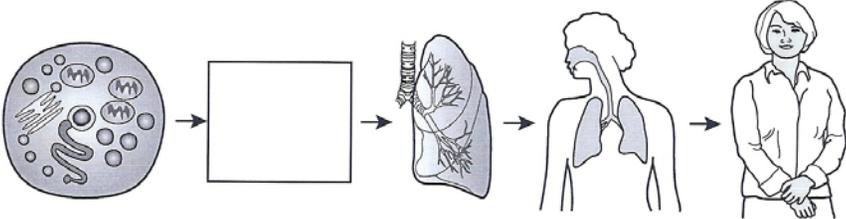
Access Points for Students with Significant Cognitive Disability

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

Body of Knowledge: Life Science

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	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: Low							
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. Complexity: Moderate							
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. Complexity: Moderate							
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. Complexity: Moderate							
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. Complexity: High							

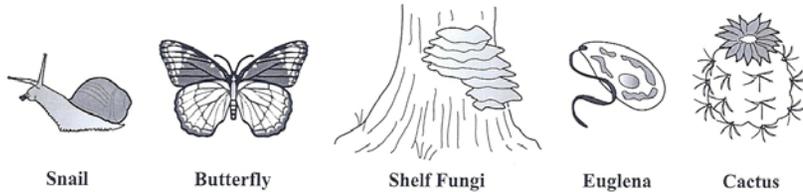
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi and parasites. Complexity: Moderate				
Associated Vocabulary	Organism, cell, unicellular, multicellular, homeostasis , binomial nomenclature , species, genus, dichotomous key (light, compound and electron microscopes), cell theory, macromolecule, nuclei acid, protein, lipid, carbohydrate, cell membrane, cell wall, cytoplasm, organelle, nucleus, chloroplast, passive transport, diffusion, osmosis, active transport, endocytosis, exocytosis, cellular respiration, fermentation, photosynthesis, cell cycle, interphase, centromere, mitosis, cytokinesis, tissue, organ*, organ system, immunity, compact bone, spongy bone, neuron, reflex, hormone reproduction*, gamete, sperm ovum, fertilization, zygote, virus, bacteria, vaccine				
Connection	Health:				
Assessment Information	<p>SC.6.L.14.1 Reporting Category: Life Science Benchmark Clarifications: Task will require students to identify and/or describe patterns in the hierarchical organization of organisms, from atoms to molecules, to cells, to tissues, to organs, to organ systems, to organisms. Content Limits: Items will not assess cell specialization; Items may use the terms for the types of tissues in animals (epithelial, muscle, nervous, connective) but will not assess knowledge of the structure or function of these types of tissues. Stimulus Attribute: Scenarios referring to atoms and molecules are limited to biotic contexts. Sample Item: Structures in the human body work together to perform specific functions. The diagram below shows the organization of structures found in the human body.</p>  <p>A picture of which of the following structures belongs in the box above? A. Cell B. Organ C. Organelle D. Tissue ♦</p> <p>SC.6.L.14.2 Reporting Category: Life Science Benchmark Clarifications: Task will require students to identify, describe and/or explain the components of cell theory; describe how cells undergo similar processes to maintain homeostasis. Content Limits: Items will assess neither scientists who contributed to the cell theory nor the historical development of the cell theory; Items</p>				

addressing homeostasis should focus on cells maintaining homeostasis and are limited to the cellular level. Items will not address permeability, osmosis or diffusion; Items may use the terms cellular respiration and photosynthesis in the context of homeostasis and the functions of cell structures but will not assess knowledge of these processes; Items will not assess cellular reproduction.

Sample Item:

The cell theory applies to all organisms, including the five shown below.

Drawings of Five Organisms



Which of the following statements describes how these organisms are an example of the cell theory?

- A. The organisms have cells that lack a nucleus.
- B. The organisms are made of one or more cells. ♦**
- C. The cells of the organisms undergo photosynthesis.
- D. The cells of the organisms are identical to each other.

Also Assesses: SC.6.L.14.3

SC.6.L.14.4

Reporting Category: Life Science

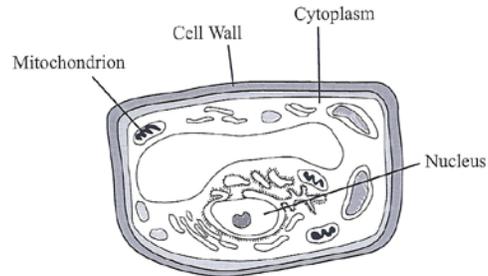
Benchmark Clarifications: Task will require students to compare and/or contrast the structure and/or function of major organelles of plant and animal cells.

Content Limits: Items assessing cellular structures are limited to the cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria and vacuoles.

Stimulus Attribute: Scenarios will require a comparison or contrast of organelles in plant and/or animal cells.

Sample Item:

Plant cells are different from animal cells. The diagram below identifies four different structures in a plant cell.



Compared to the structures in an animal cell, which of the following structures is found only in a plant cell?

- A. Mitochondrion
- B. Cell Wall ♦**
- C. Cytoplasm
- D. Nucleus

SC.6.L.14.5

Reporting Category: Life Science

Benchmark Clarifications: Task will require students to identify and/or describe the general functions of the major systems of the human body; identify and/or describe how the major system of the human body interact to maintain homeostasis; identify, compare and/or contrast the types of infectious agents that affect the human body.

Content Limits: Items are limited to the human digestive, respiratory, circulatory, reproductive, excretory, immune, nervous and musculoskeletal system; Items will not assess the structures or functions of individual organs in isolation; Items assessing the interactions of systems to maintain homeostasis should include a reference to homeostasis and are limited to the organismal level; Items will not require specific knowledge of diseases that affect the human body or their casual agents; Items may assess the interactions of no more than three systems.

Stimulus Attributes: Diagrams of the human reproductive systems will not be used.

Prior Knowledge: SC.5.L.14.1, SC.5.L.14.2

Sample Item:

In order to maintain homeostasis, the system of the human body work together to keep a constant internal temperature. Which of the following statements describes how the human body respond in a cold environment?

- A. The nervous system moves the jaw bones causing the chattering of teeth.
- B. The nervous system signals the muscles of the muscular system to contract and warm the body. ♦**
- C. The circulatory system delivers less carbon dioxide to the muscular system, resulting in stiffening of the muscles.
- D. The skeletal system produces more blood cells that circulate through the blood vessels, increasing the warmth of the body.

Also Assesses: SC.6.L.14.6

Access Points for Students with Significant Cognitive Disability

Independent:	Supported:	Participatory:
<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.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>

Body of Knowledge: Life Science

<p>Big Idea 15: Diversity and Evolution of Living Organisms</p> <p>A. The scientific theory of evolution is the organizing principle of life science.</p> <p>B. The scientific theory of evolution is supported by multiple forms of evidence.</p> <p>C. Natural Selection is a primary mechanism leading to change over time in organisms.</p>								
BENCHMARK CODE	BENCHMARK	RESOURCES/ACTIVITIES/TEXT CORRELATION	DATE					
			11/12	12/13	13/14	14/15	15/16	16/17
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. Complexity: High	Please refer to the Professional Norms on page 3 of this document.						
Associated Vocabulary	See Big Idea 14. Eukaryote, prokaryotes, heterotrophs, parasites unicellular, autotrophs, binomial nomenclature, protest, algae, kingdom, phylum, class, order, family, species							
Assessment Information	<p>SC.6.L.15.1 Reporting Category: Life Science Benchmark Clarifications: Task will require students to analyze and/or describe how and/or why organisms are classified. Content Limits: Items may assess how characteristics are used to classify organisms but will not assess specific characteristics of individual types of organisms; Items assessing the classification of organisms into domains are limited to Bacteria, Archaea and Eukarya. Items assessing the classification of organisms into kingdoms are limited to Eubacteria, Archaea, Protist, Fungus, Plant and Animal; Items may assess knowledge of the hierarchy of classification but will not assess the specific characteristics of organisms classified in a particular phylum, class, order, family, genus or species; Items may use scientific names and the term <i>binomial nomenclature</i> but will not require specific knowledge of an organism’s scientific name and common name. Prior Knowledge: SC.3.L.15.1, SC.3.L.14.2, SC.5.L.14.2 Sample Item: Mushrooms, bread molds and yeasts are classified together in the fungi kingdom. Specific characteristics are used to classify these organisms. Which of the following is a characteristic used to classify these organisms as fungi? A. They are parasites. B. They are unicellular. C. They are prokaryotes. D. They are heterotrophs. ♦</p>							
Access Points for Students with Significant Cognitive Disability								
Independent:			Supported:			Participatory:		
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.		

Appendix A Vocabulary

<p>Abrasion*</p> <p>Acceleration</p> <p>Active transport</p> <p>Air pressure</p> <p>Algae</p> <p>Atmosphere</p> <p>Autotrophs</p> <p>Bacteria</p> <p>Binomial nomenclature</p> <p>Biosphere</p> <p>Carbohydrate</p> <p>Cell</p> <p>Cell cycle</p> <p>Cell membrane</p> <p>Cell theory</p> <p>Cell wall</p> <p>Cellular respiration</p> <p>Centromere</p> <p>Chloroplast</p> <p>class</p> <p>climate*</p> <p>Compact bone</p> <p>condensation*</p> <p>Conduction*</p> <p>controlled variable</p> <p>Convection</p> <p>Cryosphere</p> <p>Cyokinesis</p> <p>Cytoplasm</p> <p>decomposition</p> <p>Delta</p> <p>Deposition</p> <p>Dichotomous key (light, compound and electron microscopes)</p>	<p>Diffusion</p> <p>Displacement</p> <p>empirical evidence</p> <p>Endocytosis</p> <p>Energy* (Kinetic, potential)</p> <p>erosion</p> <p>Eukaryote</p> <p>evaporation*</p> <p>evidence</p> <p>Exocytosis</p> <p>family</p> <p>Fermentation</p> <p>Fertilization</p> <p>Force*</p> <p>Friction*</p> <p>Gamete</p> <p>Genus</p> <p>Global warming</p> <p>Gravity*</p> <p>Greenhouse gas</p> <p>Heat</p> <p>Heterotrophs</p> <p>Homeostasis</p> <p>Hormone reproduction*</p> <p>Humidity*</p> <p>Hydrosphere</p> <p>hypothesis</p> <p>Immunity</p> <p>inference*</p> <p>Interphase</p> <p>interpretation</p> <p>Ionosphere</p> <p>Jet stream</p> <p>Kingdom</p> <p>Law of conservation of energy</p>	<p>Lipid</p> <p>Macromolecule</p> <p>mineral</p> <p>Mitosis</p> <p>Motion*</p> <p>Multicellular</p> <p>Net Force</p> <p>Neuron</p> <p>Newton's 1st, 2nd, and 3rd laws,</p> <p>Nuclei acid</p> <p>Nucleus</p> <p>observation*</p> <p>Order</p> <p>Organ system</p> <p>Organ*</p> <p>Organelle</p> <p>organic matter</p> <p>Organism</p> <p>Osmosis</p> <p>outcome variable (dependent)</p> <p>oxidation</p> <p>Ozone layer</p> <p>Parasites unicellular</p> <p>Passive transport</p> <p>pH</p> <p>Photosynthesis</p> <p>Phylum</p> <p>Precipitation*</p> <p>prediction*</p> <p>Pressure</p> <p>Prokaryotes</p> <p>Protein</p> <p>Protest</p> <p>Radiation</p> <p>Reflex</p>	<p>repetition</p> <p>Replication</p> <p>Resistance(air)</p> <p>rock</p> <p>rock cycle</p> <p>scientific law</p> <p>scientific model</p> <p>Species</p> <p>species</p> <p>Speed*</p> <p>Sperm ovum</p> <p>Spongy bone</p> <p>Stratosphere</p> <p>test variable (independent)</p> <p>theory*</p> <p>Tissue</p> <p>topography</p> <p>transpiration*</p> <p>Troposphere</p> <p>Unicellular</p> <p>vaccine</p> <p>variable*</p> <p>Velocity</p> <p>Virus</p> <p>water cycle*</p> <p>weather</p> <p>weathering*</p> <p>Work</p> <p>Zygote</p>
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Appendix B Vocabulary Scope and Sequence

6 th Grade		7 th Grade		8 th Grade	
Abrasion*	Law of conservation of energy	Allele		Astronomical unit	
Acceleration	Lipid	Amplitude		Boiling point	
Active transport	Macromolecule	Binary fission		Carbon-based	
Air pressure	mineral	Biology		Cellular respiration	
Algae	Mitosis	Budding		Chemical properties	
Atmosphere	Motion*	Commensalism		Chlorophyll	
Autotrophs	Multicellular	Competition		Controlled variable	
Bacteria	Net Force	Consumer*		Dwarf planet	
Binomial nomenclature	Neuron	Controlled variable		Heterogeneous	
Biosphere	Newton's 1 st , 2 nd , and 3 rd laws,	Conducting		Homogeneous	
Carbohydrate	Nuclei acid	Decomposer*		Hypothesis	
Cell	Nucleus	Deforestation		Light year	
Cell cycle	observation*	Desertification		Melting point	
Cell membrane	Order	Dominant		Molecule	
Cell theory	Organ system	Ecosystem*		Nebula	
Cell wall	Organ*	Empirical evidence		Nucleus	
Cellular respiration	Organelle	Evolution (scientific theory of)		Outcome variable (dependent variable)	
Centromere	organic matter	F₁ generation		Photosynthesis	
Chloroplast	Organism	Fault		Pseudoscientific	
class	Osmosis	Fold		Repetition	
climate*	outcome variable (dependent)	Geology		Replication	
Compact bone	oxidation	Heterozygous		Saturation	
condensation*	Ozone layer	Homozygous		Scientific law	
Conduction*	Parasites unicellular	Infiltration		Scientific model	
controlled variable	Passive transport	Mutualism		Scientific theory	
Convection	pH	Natural phenomenon		Solute	
Cryosphere	Photosynthesis	Niche		Solvent	
Cyokinesis	Phylum	Opaque		Systematic observation	
Cytoplasm	Precipitation*	Outcome variable		Test variable (independent variable)	
decomposition	prediction*	P generation			
Delta	Pressure	Parasitism			
Deposition	Prokaryotes	Percolation			
Dichotomous key (light, compound and electron microscopes)	Protein	Predation			
Diffusion	Protest	Producer*			
Displacement	Radiation	Punnett squares			
empirical evidence	Reflex	Physics			
Endocytosis	repetition	Recessive			
	Replication	Regeneration			
	Resistance(air)	Scientific law			

<p>Energy* (Kinetic, potential) erosion Eukaryote evaporation* evidence Exocytosis family Fermentation Fertilization Force* Friction* Gamete Genus Global warming Gravity* Greenhouse gas Heat Heterotrophs Homeostasis Hormone reproduction* Humidity* Hydrosphere hypothesis Immunity inference* Interphase interpretation Ionosphere Jet stream Kingdom</p>	<p>rock rock cycle scientific law scientific model Species species Speed* Sperm ovum Spongy bone Stratosphere test variable (independent) theory* Tissue topography transpiration* Troposphere Unicellular vaccine variable* Velocity Virus water cycle* weather weathering* Work Zygote</p>	<p>Scientific models Scientific theory Test variable Transformation Translucent Transparent Urbanization</p>	
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