

SCIENCE SAURUS:
A STUDENT HANDBOOK © 2002
GRADES 6-8

correlated to

**Grade Level Expectations
for the
Sunshine State Standards**

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EDUCATION GROUP



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ScienceSaurus: A Student Handbook © 2002
correlated to
Grade Level Expectations for the Sunshine State Standards
Grade 6

Strand A: The Nature of Matter

Standard 1

The student understands that all matter has observable, measurable properties.

Benchmark S.C.A.1.3.1

The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows ways in which substances differ (for example, mass, volume, shape, density, texture, reaction to heat and light).	Student Handbook: 059-062, 063-067, 068, 071-072, 302, 308

Benchmark S.C.A.1.3.2

The student understands the difference between weight and mass.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that mass is the amount of material in an object.	Student Handbook: 063, 250, 276

Benchmark S.C.A.1.3.3

The student knows that temperature measures the average energy of motion of the particles that make up the substance.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that increasing the average motion of the particles in a substance increases the temperature of the substance.	Student Handbook: 302
2. understands that decreasing the average motion of the particles decreases the temperature.	Student Handbook: 302
3. determines the effect of a change in temperature on common materials (for example, butter, food coloring in water, isopropol alcohol).	Student Handbook: 253, 254

Benchmark S.C.A.1.3.4

The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that matter may exist as solids, liquids, and gases.	Student Handbook: 250, 251, 252-273
2. knows that molecular motion increases from solids to liquids to gases.	Student Handbook: 253, 254

Benchmark S.C.A.1.3.5

The student knows the difference between a physical change in a substance (e.g., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows the physical properties of various substances.	Student Handbook: 251, 252
2. knows the chemical properties of various substances.	Student Handbook: 251, 252
3. knows the difference between a physical and chemical change.	Student Handbook: 252

Benchmark S.C.A.1.3.6

The student knows that equal volumes of different substances may have different masses.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that equal volumes of different substances may have different masses.	Student Handbook: 245
2. uses the water displacement method to find the volume of common items (for example, rocks, nails, marbles).	Student Handbook: 062

Standard 2

The student understands the basic principles of atomic theory.

Benchmark S.C.A.2.3.1

The student describes and compares the properties of particles and waves.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that particles and objects may be either neutral or have a positive or negative charge.	Student Handbook: 315
2. knows the properties of waves (frequency, amplitude, wavelength).	Student Handbook: 306
3. knows how to compare and contrast the properties of particles and waves.	Student Handbook: 306-313

Benchmark S.C.A.2.3.2

The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands the behavior of charged particles as evidenced by simple static electricity experiments.	Student Handbook: 316
2. determines the charge of an ion by comparing the number of protons and electrons associated with it.	Student Handbook: 263

Benchmark S.C.A.2.3.3

The student knows that radiation, light, and heat are forms of energy used to cook food, treat diseases, and provide energy.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows forms of radiant energy and their applications to everyday life (for example, visible, microwave, radio).	Student Handbook: 304-305

Strand B: Energy

Standard 1

The student recognizes that energy may be changed in form with varying efficiency.

Benchmark S.C.B.1.3.1

The student identifies forms of energy and explains that they can be measured and compared.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows different types of energy and the units used to quantify the energy (for example, solar, nuclear, electrical, chemical).	Student Handbook: 300
2. understands that energy can be converted from one form to another (for example, solar energy to heat energy).	Student Handbook: 328

Benchmark S.C.B.1.3.2

The student knows that energy cannot be created or destroyed, but only changed from one form to another.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that energy can be changed in form.	Student Handbook: 299, 305
2. uses examples to demonstrate common energy transformations.	Student Handbook: 300

Benchmark SC.B.1.3.3

The student knows that the various forms in which energy comes to Earth from the Sun (e.g., visible light, infrared, and microwave).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows types of radiant energy that come to Earth from the Sun (for example, visible, infrared, ultraviolet).	Student Handbook: 350
2. knows the effect of sunlight on photosynthetic pigments.	Student Handbook: 079, 107

Standard 2

The student understands the interaction of matter and energy.

Benchmark SC.B.2.3.1

The student knows that most events in the universe (e.g., weather changes, moving cars, and the transfer of a nervous impulse in the human body) involve some form of energy transfer and that these changes almost always increase the total disorder of the system and its surroundings, reducing the amount of useful energy.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that energy moves through systems.	Student Handbook: 134, 135, 136-137

Strand C: Force and Motion

Standard 1

The student understands that types of motion may be described, measured, and predicted.

Benchmark SC.C.1.3.1

The student knows that the motion of an object can be described by its position, direction of motion, and speed.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that a change in motion and position can be measured.	Student Handbook: 275
2. knows ways to measure time intervals.	Student Handbook: 070
3. knows ways to estimate speed.	Student Handbook: 284

Benchmark S.C.C.1.3.2

The student knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. uses common items (a pebble dropped in water, a marble dropped in sand) to demonstrate that vibrations in materials set up visible disturbances that spread away from a force in all directions.	Student Handbook: 306

Standard 2

The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

Benchmark S.C.C.2.3.3

The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. recognizes the result of several forces acting on an object.	Student Handbook: 274, 275
2. knows that the net force is dependent on the direction and magnitude of forces acting on a body.	Student Handbook: 280, 281

Benchmark S.C.C.2.3.4

The student knows that simple machines can be used to change direction or size of a force.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows uses of simple machines.	Student Handbook: 288-294
2. knows advantages and disadvantages of simple machines.	Student Handbook: 288, 289, 290, 291, 294

Benchmark SC.C.2.3.5

The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that an object at rest will stay at rest unless acted upon by an outside force.	Student Handbook: 284
2. knows objects in motion will remain in motion unless acted upon by an outside force.	Student Handbook: 284

Benchmark SC.C.2.3.7

The student knows that gravity is a universal force that every mass exerts on every other mass.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that gravity is a force that causes an object to fall to the ground.	Student Handbook: 276, 285
2. know that gravity causes an object to have weight.	Student Handbook: 276, 285

Strand D: Processes that Shape the Earth

Standard 1

The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth.

Benchmark SC.D.1.3.1

The student knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that the surface of the Earth is constantly changing due to mechanical and chemical action.	Student Handbook: 189, 190

Benchmark SC.D.1.3.2

The student knows over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that sedimentary rock may contain fossils of plants, animals, and microbes.	Student Handbook: 180, 195, 198
2. knows ways the systems of Earth change over time and predicts the causes of the change.	Student Handbook: 194-200

Benchmark SC.D.1.3.3

The student knows how conditions that exist in one system influence the conditions that exist in other systems.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that different events on the Earth change features on Earth (for example, hurricanes, earthquakes, volcanoes).	Student Handbook: 186, 187

Benchmark SC.D.1.3.4

The student knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 2. knows ways that plants and animals reconstitute the soil and alter the landscape.	Student Handbook: 140, 191
3. understands the processes that prevent or cause erosion.	Student Handbook: 192

Benchmark SC.D.1.3.5

The student understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years).

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands the range of time over which natural events occur (for example, lightning in seconds, mountains form over many years).	Student Handbook: 184, 187

Standard 2

The student understands the need for protection of the natural systems on Earth.

Benchmark SC.D.2.3.1

The student understands that quality of life is relevant to personal experience.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that a change in the environment affects the quality of life in different ways for different organisms.	Student Handbook: 340, 341

Benchmark SC.D.2.3.2

The student knows the positive and negative consequences of human action on the Earth's systems.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows the positive and negative consequences of human action on the Earth's systems (for example, farming, transportation, mining, manufacturing).	Student Handbook: 341, 342, 345-353, 369

Strand E: Earth and Space

Standard 1

The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth.

Benchmark S.C.E.1.3.1

The student understands the vast size of our Solar System and the relationship of the planets and their satellites.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows the relationship between tides on Earth and the positions of the Moon, the Sun, and Earth.	Student Handbook: 237
2. knows the relative sizes of the planets, Sun, Solar System, galaxy, and universe.	Student Handbook: 238, 240, 247
3. understands the positions of the Earth, Moon, and Sun during a solar eclipse and a lunar eclipse.	Student Handbook: 236

Benchmark S.C.E.1.3.3

The student understands that our Sun is one of many stars in our galaxy.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that our Sun is one of many stars in our galaxy.	Student Handbook: 245

Strand F: Processes Of Life

Standard 1

The student describes patterns of structure and function in living things.

Benchmark SC.F.1.3.1

The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows ways systems in an organism function and interact (for example, the muscular system provides the ability to move and is supported by the skeletal system when one is present).	Student Handbook: 085-087, 088-090, 091-093, 094-097, 098, 099-102
2. understands the differences between growth and maintenance.	Student Handbook: 097

Benchmark SC.F.1.3.2

The student knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that the cell is the basic unit of structure and function in all living things.	Student Handbook: 076
2. knows that there is great diversity among unicellular organisms.	Student Handbook: 076
3. knows the basic processes that occur in cells.	Student Handbook: 079

Benchmark SC.F.1.3.3

The student knows that in multicellular organisms cells grow and divide to make more cells in order to form and repair various organs and tissues.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that in multicellular organisms cells grow and divide to form and repair various organs and tissues.	Student Handbook: 076, 080

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
2. understands cells reproduce to ensure the growth and repair of tissue.	Student Handbook: 080

Benchmark SC.F.1.3.4

The student knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms.	Student Handbook: 076, 082

Benchmark SC.F.1.3.5

The student explains how the life functions of organisms are related to what occurs within the cell.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that there are structures with particular functions that are unique to certain types of cells (for example, plant cells have cell walls, animal cells do not).	Student Handbook: 077, 078
2. understands the process of osmosis and diffusion.	Student Handbook: 079
3. knows the essential functions in cells.	Student Handbook: 082

Benchmark SC.F.1.3.6

The student knows that the cells with similar functions have similar structures, whereas those with different structures have different functions.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. uses or constructs models of plant and animal cells to identify the basic structures of each.	Student Handbook: 077, 078
2. knows the functions of structures in plant and animal cells.	Student Handbook: 077, 078

Benchmark SC.F.1.3.7

The student knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that behavior is a response to the environment.	Student Handbook: 109-111

Standard 2

The student understands the process and importance of genetic diversity.

Benchmark SC.F.2.3.3

The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows adaptations that aid in species survival (for example, protective coloration, hibernation, delayed implantation).	Student Handbook: 127, 128

Strand G: How Living Things Interact with Their Environment

Standard 1

The student understands the competitive, interdependent, cyclic nature of living things in the environment.

Benchmark SC.G.1.3.3

The student understands that the classification of living things is based on a given set of criteria and is a tool for understanding biodiversity and interrelationships.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that living things are sorted for convenience and identification.	Student Handbook: 150, 151
2. understands that the structural characteristics among animals and plants are more alike as organisms are closer to the same kind of species within a classification level.	Student Handbook: 153, 154

Benchmark SC.G.1.3.4

The student knows that the interactions of organisms with each other and with the non-living parts of their environments result in the flow of energy and the cycling of matter throughout the system.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows the nonliving (abiotic) and living (biotic) aspects of an ecosystem.	Student Handbook: 129-131
2. understands how the components of an ecosystem interact.	Student Handbook: 130, 132, 133-135
3. understands that food chains show specific trophic relationships and food webs are used to illustrate interrelationships of trophic levels.	Student Handbook: 134, 135

Standard 2

The student understands the consequences of using limited natural resources.

Benchmark SC.G.2.3.1

The student knows that some resources are renewable and others are nonrenewable.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows renewable and nonrenewable energy sources.	Student Handbook: 323, 325-327

Benchmark SC.G.2.3.2

The student knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. distinguishes between biotic and abiotic factors in the environment.	Student Handbook: 129-132

Benchmark SC.G.2.3.3

The student knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that changes in the environment may influence the size, number, or diversity of organisms in an area.	Student Handbook: 128

Benchmark SC.G.2.3.4

The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in the ecosystem.	Student Handbook: 340, 341, 342

Strand H: The Nature of Science

Standard 1

The student uses the scientific processes and habits of mind to solve problems.

Benchmark SC.H.1.3.1

The student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows ways scientific theories may change with new discoveries.	Student Handbook: 002
2. understands that new technology may lead to new discoveries.	Student Handbook: 355, 356, 357

Benchmark S.C.H.1.3.2

The student knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. uses systematic, scientific processes to develop and test hypotheses.	Student Handbook: 006, 007, 008, 010, 015, 018
2. knows that the scientific method is a process that involves a logical and empirical but flexible approach to problem solving.	Student Handbook: 004, 017

Benchmark S.C.H.1.3.3

The student knows that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that that the disciplines of science provide in depth study and information that becomes available for all to share and use.	Student Handbook: 005, 014, 015

Benchmark S.C.H.1.3.4

The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society.	Student Handbook: 010, 011, 012, 014, 015
2. uses accurate records, openness, and replication of experiments to ensure creditability.	Student Handbook: 005, 010, 011, 012, 014

Benchmark S.C.H.1.3.5

The student knows that a change in one or more variables may alter the outcome of an investigation.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands the importance of the control in an experiment.	Student Handbook: 008
2. knows how to identify the independent and dependent variables in an experiment.	Student Handbook: 008
3. uses appropriate experimental design, with consideration for rules, time, and materials required to solve a problem.	Student Handbook: 008

Benchmark S.C.H.1.3.6

The student recognizes the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivations.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows selected scientists and their accomplishments.	Student Handbook: 450-461
2. knows that scientists who make contributions to knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Student Handbook: 019

Benchmark S.C.H.1.3.7

The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. uses criteria necessary to determine the veracity of the data.	Student Handbook: 009

Standard 2

The student understands that most natural events occur in comprehensible, consistent patterns.

Benchmark S.C.H.2.3.1

The student recognizes that patterns exist within and across systems.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that most natural events occur in patterns.	Student Handbook: 012

Standard 3

The student understands that science, technology, and society are interwoven and interdependent.

Benchmark S.C.H.3.3.1

The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that science ethics demand scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.	Student Handbook: 022, 024, 025
2. uses appropriate procedures for safety in the classroom, home, and community.	Student Handbook: 022, 023, 024, 025

Benchmark S.C.H.3.3.2

The student knows that special care must be taken in using animals in scientific research.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that appropriate care, safe practices, and ethical treatment are necessary when animals are involved in scientific research.	Student Handbook: 040

Benchmark S.C.H.3.3.3

The student knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.	Student Handbook: 361

Benchmark S.C.H.3.3.4

The student knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows some ways that scientific discoveries create new technologies that affect society (for example, geographic information systems, gene mapping, electronic communication).	Student Handbook: 369-370

Benchmark S.C.H.3.3.5

The student understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that the advancement of science, mathematics, and technology is ongoing and influenced by a diverse population of scientists.	Student Handbook: 450-461

Benchmark SC.H.3.3.6

The student knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. knows that scientific contributions may result in diverse technological products.	Student Handbook: 361

Benchmark SC.H.3.3.7

The student knows that computers speed up and extend people’s ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. uses a computer to collect, analyze, and report scientific findings.	Student Handbook: 009



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correlated to
Grade Level Expectations for the Sunshine State Standards
Grade 7

Strand A: The Nature of Matter

Standard 1

The student understands that all matter has observable, measurable properties.

Benchmark S.C.A.1.3.1

The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. uses a variety of measurements to describe the physical properties of matter (for example, volume and mass).	Student Handbook: 053-072

Benchmark S.C.A.1.3.2

The student understands the difference between weight and mass.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that weight is the result of gravitational pull on an object.	Student Handbook: 276

Benchmark S.C.A.1.3.3

The student knows the temperature measures the average energy of motion of the particles that make up the substance.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the difference between heat and temperature.	Student Handbook: 302

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
2. knows that relative changes of position and motion of atoms in a solid, liquid, and gas are the result of an increase or decrease in temperature.	Student Handbook: 254

Benchmark S.C.A.1.3.4

The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the direction of energy flow when a change in the phase of matter occurs.	Student Handbook: 253

Benchmark S.C.A.1.3.5

The student knows the difference between a physical change in a substance (e.g., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that physical changes do not result in new substances.	Student Handbook: 252
2. knows that chemical changes result in new substances with different characteristics.	Student Handbook: 252
3. knows chemical and physical changes that occur in nature.	Student Handbook: 251

Benchmark S.C.A.1.3.6

The student knows that equal volumes of different substances may have different masses.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. determines the volumes of different substances that have equal masses.	Student Handbook: 068

Standard 2

The student understands the basic principles of atomic theory.

Benchmark S.C.A.2.3.1

The student describes and compares the properties of particles and waves.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that charged particles and objects will attract or repel each other.	Student Handbook: 315
2. knows the relationship between frequency and wavelength (the greater the frequency of the wave, the smaller the wavelength of the wave).	Student Handbook: 306, 309, 313

Benchmark S.C.A.2.3.2

The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that protons and neutrons are located in the nucleus of the atom while electrons exist in areas of probability outside of the nucleus.	Student Handbook: 256
2. understands that the mass of an atom is concentrated in the nucleus where the protons and neutrons are located.	Student Handbook: 257
3. determines the mass number and atomic number of an atom from the number of protons and neutrons.	Student Handbook: 265
4. understands that most of the atom is empty space.	Student Handbook: 257

Strand B: Energy

Standard 1

The student recognizes that energy may be changed in form with varying efficiency.

Benchmark SC.B.1.3.1

The student identifies forms of energy and explains that they can be measured and compared.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows examples of uses of energy in the home and ways to measure its use.	Student Handbook: 328

Benchmark SC.B.1.3.2

The student knows that energy cannot be created or destroyed, but only changed from one form to another.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the difference between potential and kinetic energy.	Student Handbook: 300
2. knows ways to change energy from potential to kinetic.	Student Handbook: 302

Benchmark SC.B.1.3.3

The student knows that the various forms in which energy comes to Earth from the Sun (e.g., visible light, infrared, and microwave).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the characteristics, effects, and common uses of ultraviolet, visible and infrared light.	Student Handbook: 309

Benchmark SC.B.1.3.4

The student knows that the energy conversions are never 100% efficient (e.g., some energy is transformed to heat and is unavailable for further useful work).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that useful energy is lost as heat energy in every energy conversion.	Student Handbook: 137

Standard 2

The student understands the interaction of matter and energy.

Benchmark SC.B.2.3.2

The student knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (e.g., nonrenewable fossil fuels).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that fossil fuels are found in the Earth, they are nonrenewable, and the advantages and disadvantages of their use.	Student Handbook: 325

Strand C: Force and Motion

Standard 1

The student understands that types of motion may be described, measured, and predicted.

Benchmark SC.C.1.3.1

The student knows that the motion of an object can be described by its position, direction of motion, and speed.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that the motion of an object can be described by its position, direction of motion, and speed.	Student Handbook: 284

Benchmark SC.C.1.3.2

The student knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows factors that influence the amount of damage vibrations can cause.	Student Handbook: 186
2. knows intensity of some common waves.	Student Handbook: 186, 307
3. knows some causes and effects of waves.	Student Handbook: 186

Standard 2

The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

Benchmark SC.C.2.3.1

The student knows that many forces (e.g., gravitational, electrical, and magnetic) act at a distance (e.g., without contact).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the properties of forces.	Student Handbook: 275-279, 280-282
2. knows that like poles of the magnet (two north poles or two south poles) will repel and opposite poles (north and south) will attract.	Student Handbook: 320
3. knows that a simple electromagnet uses both electrical force and a magnetic force.	Student Handbook: 321
4. knows the difference between parallel and series circuits.	Student Handbook: 318

Benchmark SC.C.2.3.3

The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 2. understands that as objects fall to Earth, speed increases until they reach terminal velocity.	Student Handbook: 285

Benchmark SC.C.2.3.4

The student knows that simple machines can be used to change the direction or size of a force.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands uses and combinations of simple machines in complicated machines.	Student Handbook: 288-294

Benchmark SC.C.2.3.7

The student knows that gravity is a universal force that every mass exerts on every other mass.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that gravity is a force exerted on a mass that causes an object to have weight.	Student Handbook: 276
2. knows that gravity is a force that holds the Solar System together.	Student Handbook: 238

Strand D: Processes that Shape the Earth

Standard 1

The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth.

Benchmark S.C.D.1.3.1

The student knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the relationship between run-off and the development of a river system.	Student Handbook: 192
2. understands the action of ground water to form aquifers, caverns, and sinkholes.	Student Handbook: 353
3. knows the ways in which the Earth's surface is eroded and reshaped (for example, weathering, erosion, deposition).	Student Handbook: 180, 188, 192, 195

Benchmark S.C.D.1.3.2

The student knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that fossils are used to predict and explain the similarities and differences of organisms that lived in the past and compare them with those living today.	Student Handbook: 126, 128

Benchmark S.C.D.1.3.3

The student knows how conditions that exist in one system influence the conditions that exist in other systems.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that changes on the surface of the Earth affect living systems.	Student Handbook: 182

Benchmark SC.D.1.3.4

The student knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the ways in which living things reshape the landscape (for example, bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion).	Student Handbook: 140, 191

Benchmark SC.D.1.3.5

The student understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years).

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. uses a geologic timeline to illustrate the occurrence of processes on Earth.	Student Handbook: 200

Standard 2

The student understands the need for protection of the natural systems on Earth.

Benchmark SC.D.2.3.1

The student understands that quality of life is relevant to personal experience.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows ways to conserve and recycle resources (for example, develops and uses a personal action plan to use recyclable materials whenever possible).	Student Handbook: 338, 339

Strand E: Earth and Space

Standard 1

The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth.

Benchmark S.C.E.1.3.1

The student understands the vast size of our Solar System and the relationship of the planets and their satellites.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the relative sizes of planets.	Student Handbook: 238, 240
2. understands the distances of the planets and the asteroid belt from the Sun are vast.	Student Handbook: 241
3. understands the relationship between the phases of the Moon and the positions of the Moon, Earth, and Sun as the Moon revolves around the Earth.	Student Handbook: 235
4. understands the revolution and rotation of the Moon relative to the Earth, and knows that the same side of the Moon always faces the Earth.	Student Handbook: 239
5. understands that the tilt of the Earth on its axis as it rotates causes seasonal changes.	Student Handbook: 234

Benchmark S.C.E.1.3.2

The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows characteristics of the inner planets and outer planets.	Student Handbook: 240
2. knows basic features of the Moon and the moons of other planets.	Student Handbook: 239

Benchmark SC.E.1.3.3

The student understands that our Sun is one of many stars in our galaxy.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows some of the constellations of stars in the sky.	Student Handbook: 248

Benchmark SC.E.1.3.4

The student knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the life cycle of a star.	Student Handbook: 245
2. knows the process used to determine the age of a star.	Student Handbook: 245

Strand F: Processes of Life

Standard 1

The student describes patterns of structure and function in living things.

Benchmark SC.F.1.3.1

The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation.

Grade Level Expectations, Grade 6	ScienceSaurus, Grades 6-8
The student: 1. understands that the systems within living things respond to changes in the environment (for example, allergens and carcinogens).	Student Handbook: 095, 098

Benchmark SC.F.1.3.2

The student knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands the concept of multicellular organisms.	Student Handbook: 076

Benchmark SC.F.1.3.6

The student knows that the cells with similar functions have similar structures, whereas those with different structures have different functions.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that there are many similarities among the great diversity of living things.	Student Handbook: 074, 075

Benchmark SC.F.1.3.7

The student knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. determines the behavioral responses of different organisms to common stimuli (for example, temperature, light, pressure, moisture).	Student Handbook: 109

Standard 2

The student understands the process and importance of genetic diversity.

Benchmark SC.F.2.3.1

The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the differences between and advantages of sexual and asexual reproduction.	Student Handbook: 108, 114
2. knows common types of asexual reproduction.	Student Handbook: 114

Benchmark SC.F.2.3.3

The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the life cycles of a variety of organisms, including non-flowering and flowering plants, insects, amphibians, reptiles, birds, and mammals.	Student Handbook: 106, 108

Strand G: How Living Things Interact with Their Environment

Standard 1

The student understands the competitive, interdependent, cyclic nature of living things in the environment.

Benchmark SC.G.1.3.1

The student knows that viruses depend on other living things.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 2. knows ways that viruses depend on other living things.	Student Handbook: 098
3. knows that viruses may causes diseases in other living things.	Student Handbook: 098

Benchmark SC.G.1.3.2

The student knows that biological adaptations include changes in structures, behaviors, or physiology that enhance reproductive success in a particular environment.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that biological adaptations include changes in structures, behaviors, or physiology that enhance reproductive success in a particular environment.	Student Handbook: 127

Benchmark SC.G.1.3.3

The student understands that the classification of living things is based on a given set of criteria and is a tool for understanding biodiversity and interrelationships.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows how to design and use a dichotomous guide to identify organisms based on structural characteristics.	Student Handbook: 164

Benchmark SC.G.1.3.4

The student knows that the interactions of organisms with each other and with the non-living parts of their environments result in the flow of energy and the cycling of matter throughout the system.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands how the carbon dioxide-oxygen cycle, water cycle, and nitrogen cycle are important for the survival of organisms.	Student Handbook: 138, 139, 216
2. knows the interrelationships in a local ecosystem.	Student Handbook: 130, 132, 133

Benchmark SC.G.1.3.5

The student knows that life is maintained by a continuous input of energy from the sun and by the recycling of the atoms that make up the molecules of living organisms.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands ways matter is recycled (for example, water cycle, carbon cycle).	Student Handbook: 138, 216, 330
2. knows that life on earth is dependent upon a continuous supply of energy from the sun.	Student Handbook: 136, 137
3. understands that individual food chains occur within a food web and that both show the flow of energy.	Student Handbook: 134, 135, 137

Standard 2

The student understands the consequences of using limited natural resources.

Benchmark SC.G.2.3.1

The student knows that some resources are renewable and others are nonrenewable.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands the importance of informed use of natural resources.	Student Handbook: 323-331, 332-344

Benchmark SC.G.2.3.2

The student knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows biotic and abiotic components in a small, local area and ways they interact (for example, field, pond).	Student Handbook: 129, 130
2. understands the consequences that might result when changes occur in populations.	Student Handbook: 130, 131, 132
3. understands that changes in one part of the ecosystem will affect other parts of the ecosystem.	Student Handbook: 140

Benchmark SC.G.2.3.3

The student knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows possible causes for a species to become threatened, endangered, or extinct.	Student Handbook: 128, 340

Benchmark SC.G.2.3.4

The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows ways that human activities may deliberately or inadvertently alter the equilibrium in the ecosystem.	Student Handbook: 341, 342, 343, 348, 349, 350, 351, 353

Strand H: The Nature of Science

Standard 1

The student uses the scientific processes and habits of mind to solve problems.

Benchmark SC.H.1.3.1

The student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. understands that new scientific knowledge is often used to reevaluate existing theories.	Student Handbook: 005

Benchmark SC.H.1.3.2

The student knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. uses systematic, scientific processes to solve problems and reach conclusions.	Student Handbook: 002, 013

Benchmark S.C.H.1.3.3

The student knows that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise.	Student Handbook: 366, 367

Benchmark S.C.H.1.3.4

The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. extends and refines use of accurate records, openness, and replication of experiments to ensure credibility.	Student Handbook: 010, 017

Benchmark S.C.H.1.3.5

The student knows that a change in one or more variables may alter the outcome of an investigation.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of how to identify the independent and dependent variables in an experiment.	Student Handbook: 008
2. extends and refines use of appropriate experimental design, with consideration for rules, time, and materials required to solve a problem.	Student Handbook: 008
3. uses rules, time, and materials in ways that ensure the identification and separation of variables in an experiment to solve a problem.	Student Handbook: 008

Benchmark S.C.H.1.3.6

The student recognizes the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivations.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of selected scientists and their accomplishments and recognizes their varied backgrounds, talents, interests, and goals.	Student Handbook: 450-461

Benchmark S.C.H.1.3.7

The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. uses criteria necessary to determine the validity of a scientific experiment.	Student Handbook: 002, 008, 017, 018

Standard 2

The student understands that most natural events occur in comprehensible, consistent patterns.

Benchmark S.C.H.2.3.1

The student recognizes that patterns exist within and across systems.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that natural events (for example, seasons, hurricanes) occur in patterns.	Student Handbook: 234

Standard 3

The student understands that science, technology, and society are interwoven and interdependent.

Benchmark S.C.H.3.3.1

The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.	Student Handbook: 358, 361
2. uses appropriate procedures for safety in the classroom, home, and community.	Student Handbook: 020, 021-045

Benchmark S.C.H.3.3.2

The student knows that special care must be taken in using animals in scientific research.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows the care, safe practices, and ethical treatment that are appropriate when using animals in field and laboratory research.	Student Handbook: 040

Benchmark S.C.H.3.3.3

The student knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.	Student Handbook: 361

Benchmark S.C.H.3.3.4

The student knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that the designs used for technological improvements should consider the values of society (economic, political, social, ethical, aesthetic).	Student Handbook: 358-361
2. uses knowledge of political, social, and economic ramifications of certain scientific research to evaluate its role in society.	Student Handbook: 364-366

Benchmark S.C.H.3.3.5

The student understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that scientific and technological contributions are made by individuals of different ethnic, economic, and cultural backgrounds.	Student Handbook: 019, 450-461

Benchmark S.C.H.3.3.6

The student knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. knows that scientific contributions may result in diverse technological products.	Student Handbook: 361

Benchmark S.C.H.3.3.7

The student knows that computers speed up and extend people’s ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others.

Grade Level Expectations, Grade 7	ScienceSaurus, Grades 6-8
The student: 1. extends and refines use of a computer to collect, analyze, and report scientific findings.	Student Handbook: 009



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correlated to
Grade Level Expectations for the Sunshine State Standards
Grade 8

Strand A: The Nature of Matter

Standard 1

The student understands that all matter has observable, measurable properties.

Benchmark S.C.A.1.3.1

The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. determines the physical properties of matter that can be observed without altering the substance (for example, mass, volume, boiling point, density).	Student Handbook: 251, 252
2. knows the difference between transparent, translucent, and opaque objects.	Student Handbook: 311

Benchmark S.C.A.1.3.2

The student understands the difference between weight and mass.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that weight will vary with the location of the mass in the universe, but the mass will remain constant.	Student Handbook: 276

Benchmark S.C.A.1.3.3

The student knows the temperature measures the average energy of motion of the particles that make up the substance.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that the average kinetic energy of the atoms or molecules of different objects varies with their temperature.	Student Handbook: 302

Benchmark S.C.A.1.3.4

The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that changes in energy cause phase changes.	Student Handbook: 253, 254

Benchmark S.C.A.1.3.5

The student knows the difference between a physical change in a substance (e.g., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows how to use clues (for example, change in color or form) to determine whether a change is chemical or physical.	Student Handbook: 252

Benchmark S.C.A.1.3.6

The student knows that equal volumes of different substances may have different masses.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. determines the relationship between mass and volume of an assortment of common substances.	Student Handbook: 068, 250

Standard 2

The student understands the basic principles of atomic theory.

Benchmark S.C.A.2.3.1

The student describes and compares the properties of particles and waves.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that matter is mostly neutral, but that particles can attain a charge by the gain or loss of electrons.	Student Handbook: 256
2. understands the relationship between the energy of a wave and its frequency (the greater the frequency of the wave, the greater the energy of the wave).	Student Handbook: 306, 309
3. understands the relationship of energy and wavelength to the electromagnetic spectrum.	Student Handbook: 309

Benchmark S.C.A.2.3.2

The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that there is an energy difference between an electron near the nucleus and one further away.	Student Handbook: 256
2. knows that when electrons are transferred from one substance to another, the general properties of both substances change.	Student Handbook: 263

Benchmark S.C.A.2.3.3

The student knows that radiation, light, and heat are forms of energy used to cook food, treat diseases, and provide energy.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of uses of forms of energy to improve the quality of life.	Student Handbook: 304

Strand B: Energy

Standard 1

The student recognizes that energy may be changed in form with varying efficiency.

Benchmark SC.B.1.3.1

The student identifies forms of energy and explains that they can be measured and compared.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that energy can be transferred by radiation, conduction, and convection.	Student Handbook: 304
2. knows examples of natural and man-made systems in which energy is transferred from one form to another.	Student Handbook: 335

Benchmark SC.B.1.3.2

The student knows that energy cannot be created or destroyed, but only changed from one form to another.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands how the principle of conservation of energy is applied during an energy transfer.	Student Handbook: 333, 334, 335

Benchmark SC.B.1.3.3

The student knows that the various forms in which energy comes to Earth from the Sun (e.g., visible light, infrared, and microwave).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways to measure the various forms of energy that come from the Sun.	Student Handbook: 309

Benchmark SC.B.1.3.4

The student knows that the energy conversions are never 100% efficient (e.g., some energy is transformed to heat and is unavailable for further useful work).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that energy conversions are never 100% efficient and that some energy is transformed to heat and is unavailable for further useful work (for example, a food pyramid reflects the energy that is used and lost in each part of a food chain).	Student Handbook: 137
2. knows that a transfer of thermal energy occurs in chemical reactions.	Student Handbook: 301

Benchmark SC.B.1.3.5

The student knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature.	Student Handbook: 302, 303
2. knows that the average kinetic energy of the atoms or molecules that make up an object changes when the temperature of the object changes.	Student Handbook: 301, 302
3. understands that energy changes cause weather to change (for example, formation of high and low pressure systems in the atmosphere results from changes in temperature).	Student Handbook: 218

Benchmark SC.B.1.3.6

The student knows the properties of waves (e.g., frequency, wavelength, and amplitude); that each wave consists of a number of crests and troughs; and the effects of different media on waves.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that sound travels in a medium (cannot travel in a vacuum), and travels at different speeds through various media.	Student Handbook: 312
2. knows the parts of a wave (crest, trough, wavelength, amplitude).	Student Handbook: 306, 307
3. understands that wavelength determines the colors of visible light.	Student Handbook: 309
4. understands that wavelength determines the pitch of sound.	Student Handbook: 313
5. knows that waves vary greatly in character (for example, sound, ultraviolet, infrared, ocean waves).	Student Handbook: 305, 309, 312

Standard 2

The student understands the interaction of matter and energy.

Benchmark SC.B.2.3.1

The student knows that most events in the universe (e.g., weather changes, moving cars, and the transfer of a nervous impulse in the human body) involve some form of energy transfer and that these changes almost always increase the total disorder of the system and its surroundings, reducing the amount of useful energy.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that as energy is transferred from one system to another there is a reduction in the amount of useful energy.	Student Handbook: 137
2. knows that energy transfer is not efficient.	Student Handbook: 137

Benchmark SC.B.2.3.2

The student knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (e.g., nonrenewable fossil fuels).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands how fossil fuels are formed in the Earth, why they are nonrenewable, and the advantages and disadvantages of their use.	Student Handbook: 325-327

Strand C: Force and Motion

Standard 1

The student understands that types of motion may be described, measured, and predicted.

Benchmark SC.C.1.3.1

The student knows that the motion of an object can be described by its position, direction of motion, and speed.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that speed, velocity, and acceleration can be calculated, estimated, and defined.	Student Handbook: 284, 285, 298
2. knows that the magnitude of linear acceleration can be calculated.	Student Handbook: 284, 285, 298

Benchmark SC.C.1.3.2

The student knows that knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways to measure the frequency of waves.	Student Handbook: 306
2. knows some technological devices that use wave energy (for example, sonar, ultrasound, laser).	Student Handbook: 328

Standard 2

The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted.

Benchmark S.C.C.2.3.1

The student knows that many forces (e.g., gravitational, electrical, and magnetic) act at a distance (e.g., without contact).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that many forces act at a distance.	Student Handbook: 276

Benchmark S.C.C.2.3.2

The student knows common contact forces.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows some common contact forces (for example, friction, buoyancy, tension).	Student Handbook: 279, 296

Benchmark S.C.C.2.3.3

The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. recognizes the forces that act on a given object.	Student Handbook: 274, 275, 277, 278, 279, 280, 281, 282
2. knows that the overall effect of a force can be predicted.	Student Handbook: 275, 276
3. knows that forces may be balanced or unbalanced.	Student Handbook: 280, 281, 282
4. understands that unbalanced forces cause objects to accelerate.	Student Handbook: 282

Benchmark SC.C.2.3.4

The student knows that simple machines can be used to change the direction or size of a force.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that simple machines can be used to change the direction or size of a force.	Student Handbook: 288, 289, 290, 291, 292, 293, 294

Benchmark SC.C.2.3.5

The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force.	Student Handbook: 284

Benchmark SC.C.2.3.6

The student explains and shows the ways in which a net force (that is, the sum of all acting forces) can act on an object (e.g., speeding up an object traveling in the same direction as the net force, slowing down an object traveling in the direction opposite of the net force).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways in which a net force (that is, the sum of all acting forces) can act on an object (for example, speeding up an object traveling in the same direction as the net force, slowing down an object traveling in the direction opposite of the net force).	Student Handbook: 280

Benchmark SC.C.2.3.7

The student knows that gravity is a universal force that every mass exerts on every other mass.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that gravity is a universal force that every mass exerts on every other mass.	Student Handbook: 276

Strand D: Processes that Shape the Earth

Standard 1

The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth.

Benchmark SC.D.1.3.1

The student knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. uses observations and tests to identify mineral samples.	Student Handbook: 179
2. understands how sedimentary, igneous, and metamorphic rocks are formed and categorized.	Student Handbook: 180

Benchmark SC.D.1.3.2

The student knows over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that over the whole Earth, organisms are growing, dying, and decaying and new organisms are being produced.	Student Handbook: 135

Benchmark SC.D.1.3.3

The student knows how conditions that exist in one system influence the conditions that exist in other systems.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways conditions that exist in one system influence the conditions that exist in other systems (for example, the relationship between mountain building, island formation, and trench formation; interactions between the atmosphere and hydrosphere affect weather patterns).	Student Handbook: 187, 207

Benchmark SC.D.1.3.4

The student knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of ways in which living things reshape the landscape.	Student Handbook: 140, 191

Benchmark SC.D.1.3.5

The student understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years).

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands concepts of time and size relating to the interaction of Earth's processes (for example, the distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years).	Student Handbook: 245

Standard 2

The student understands the need for protection of the natural systems on Earth.

Benchmark SC.D.2.3.2

The student knows the positive and negative consequences of human action on the Earth's systems.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that legislation can be adopted to protect the Earth from detrimental human activities.	Student Handbook: 336, 369

Strand E: Earth and Space

Standard 1

The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth.

Benchmark SC.E.1.3.2

The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that available data from various satellite probes show similarities and differences among planets and their moons in our Solar System.	Student Handbook: 239

Benchmark SC.E.1.3.3

The student understands that our Sun is one of many stars in our galaxy.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows the size, temperature, age, and brightness of the Sun compared to some other stars in the Milky Way Galaxy (for example, white dwarfs, red giants).	Student Handbook: 245

Benchmark SC.E.1.3.4

The student knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance.	Student Handbook: 245

Standard 2

The student recognizes the vastness of the universe and the Earth's place in it.

Benchmark SC.E.2.3.1

The student knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System.	Student Handbook: 247

Strand F: Processes of Life

Standard 1

The student describes patterns of structure and function in living things.

Benchmark SC.F.1.3.1

The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation.	Student Handbook: 082, 083-102

Benchmark SC.F.1.3.2

The student knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows the structures of cells, and their function and ways these mirror the structure and function of multicellular organisms.	Student Handbook: 076
2. understands that cells of unicellular organisms are similar to those of multicellular organisms.	Student Handbook: 076

Benchmark SC.F.1.3.3

The student knows that in multicellular organisms cells grow and divide to make more cells in order to form and repair various organs and tissues.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows the processes of division, growth, and maturation that occur during the cell cycle.	Student Handbook: 080, 081

Benchmark SC.F.1.3.4

The student knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows some of the functions of some types of cells, tissues, organs, and systems in advanced organisms.	Student Handbook: 082

Benchmark SC.F.1.3.5

The student explains how the life functions of organisms are related to what occurs within the cell.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that the diversity of cell structure permits a diversity of functions for the organism.	Student Handbook: 076
2. knows that the cell is a system of organelles that mirrors the systems within multicellular organisms.	Student Handbook: 077, 078

Benchmark SC.F.1.3.6

The student knows that the cells with similar functions have similar structures, whereas those with different structures have different functions.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that the cells with similar functions have similar structures, whereas those with different structures have different functions.	Student Handbook: 075
2. uses tools to identify and compare cell structures (for example, microscope, hand lenses, bioscopes).	Student Handbook: 076

Benchmark SC.F.1.3.7

The student knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways behaviors that are responses to the environment may alter the normal growth, development, maintenance, and reproduction of an organism.	Student Handbook: 109, 110

Standard 2

The student understands the process and importance of genetic diversity.

Benchmark SC.F.2.3.1

The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows the difference between spores and seeds in plant reproduction.	Student Handbook: 153, 155
2. knows that the flower is the reproductive body of a vascular plant and that it is adapted for pollination.	Student Handbook: 108, 114
3. knows the difference between meiosis and mitosis and when each occurs.	Student Handbook: 080, 114

Benchmark SC.F.2.3.2

The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows how dominant and recessive traits are inherited.	Student Handbook: 122
2. uses a Punnett square to predict the results of crosses between pure and hybrid organisms.	Student Handbook: 123

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
3. knows that variations within a species are the result of genetic information being passed from a parent to offspring and that interactions between the genes may occur in the process (for example, blending, crossing-over).	Student Handbook: 121-123

Benchmark SC.F.2.3.3

The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows ways organisms are adapted to their environment.	Student Handbook: 127
2. understands that species have characteristics that enable their populations to cycle within varying periods of time (minutes to hundreds of years).	Student Handbook: 106, 108

Benchmark SC.F.2.3.4

The student knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time.	Student Handbook: 126, 128

Strand G: How Living Things Interact with Their Environment

Standard 2

The student understands the consequences of using limited natural resources

Benchmark S.C.G.2.3.1

The student knows that some resources are renewable and others are nonrenewable.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that some resources are renewable and others are nonrenewable.	Student Handbook: 323, 325-331

Benchmark S.C.G.2.3.3

The student knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that changes in the environment cause changes in populations.	Student Handbook: 131

Benchmark S.C.G.2.3.4

The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of ways that human activities may deliberately or inadvertently alter the equilibrium in the ecosystem.	Student Handbook: 341, 342, 343, 348, 349, 350, 351, 353

Strand H: The Nature of Science

Standard 1

The student uses the scientific processes and habits of mind to solve problems.

Benchmark S.C.H.1.3.1

The student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. know that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.	Student Handbook: 002

Benchmark S.C.H.1.3.2

The student knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines use of systematic, scientific processes to develop and test hypotheses.	Student Handbook: 006, 007-010
2. knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects.	Student Handbook: 002, 005

Benchmark S.C.H.1.3.3

The student knows that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise.	Student Handbook: 366, 367

Benchmark S.C.H.1.3.4

The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines use of accurate records, openness, and replication of experiments to ensure credibility.	Student Handbook: 010, 017

Benchmark S.C.H.1.3.5

The student knows that a change in one or more variables may alter the outcome of an investigation.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of how to identify the independent and dependent variables in an experiment.	Student Handbook: 008
2. extends and refines use of appropriate experimental design, with consideration for rules, time, and materials required to solve a problem.	Student Handbook: 008, 017
3. extends and refines use of rules, time, and materials in ways that ensure the identification and separation of variables in an experiment to solve a problem.	Student Handbook: 008

Benchmark S.C.H.1.3.6

The student recognizes the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivations.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of selected scientists and their accomplishments and recognizes their varied backgrounds, talents, interests, and goals.	Student Handbook: 450-461

Benchmark S.C.H.1.3.7

The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines use of criteria necessary to determine the validity of a scientific experiment.	Student Handbook: 002, 008, 017, 018
2. knows that statistical tests are used to confirm the significance of data.	Student Handbook: 011, 012

Standard 2

The student understands that most natural events occur in comprehensible, consistent patterns.

Benchmark S.C.H.2.3.1

The student recognizes that patterns exist within and across systems.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands the importance of looking for patterns in natural events.	Student Handbook: 012

Standard 3

The student understands that science, technology, and society are interwoven and interdependent.

Benchmark S.C.H.3.3.1

The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that science ethics demand scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.	Student Handbook: 358, 361
2. uses appropriate procedures for safety in the classroom, home, and community.	Student Handbook: 020, 021-045

Benchmark S.C.H.3.3.2

The student knows that special care must be taken in using animals in scientific research.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. extends and refines knowledge of the care, safe practices, and ethical treatment that are appropriate when using animals in field and laboratory research.	Student Handbook: 040

Benchmark S.C.H.3.3.3

The student knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate.	Student Handbook: 361

Benchmark S.C.H.3.3.4

The student knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.	Student Handbook: 358-361

Benchmark S.C.H.3.3.5

The student understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture.	Student Handbook: 450-461

Benchmark S.C.H.3.3.6

The student knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone.	Student Handbook: 014, 015, 439
2. knows ways the scientific enterprise is global and available to all.	Student Handbook: 439

Benchmark S.C.H.3.3.7

The student knows that computers speed up and extend people's ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others.

Grade Level Expectations, Grade 8	ScienceSaurus, Grades 6-8
The student: 1. uses a variety of technologies to collect, analyze, and report scientific findings.	Student Handbook: 009



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