

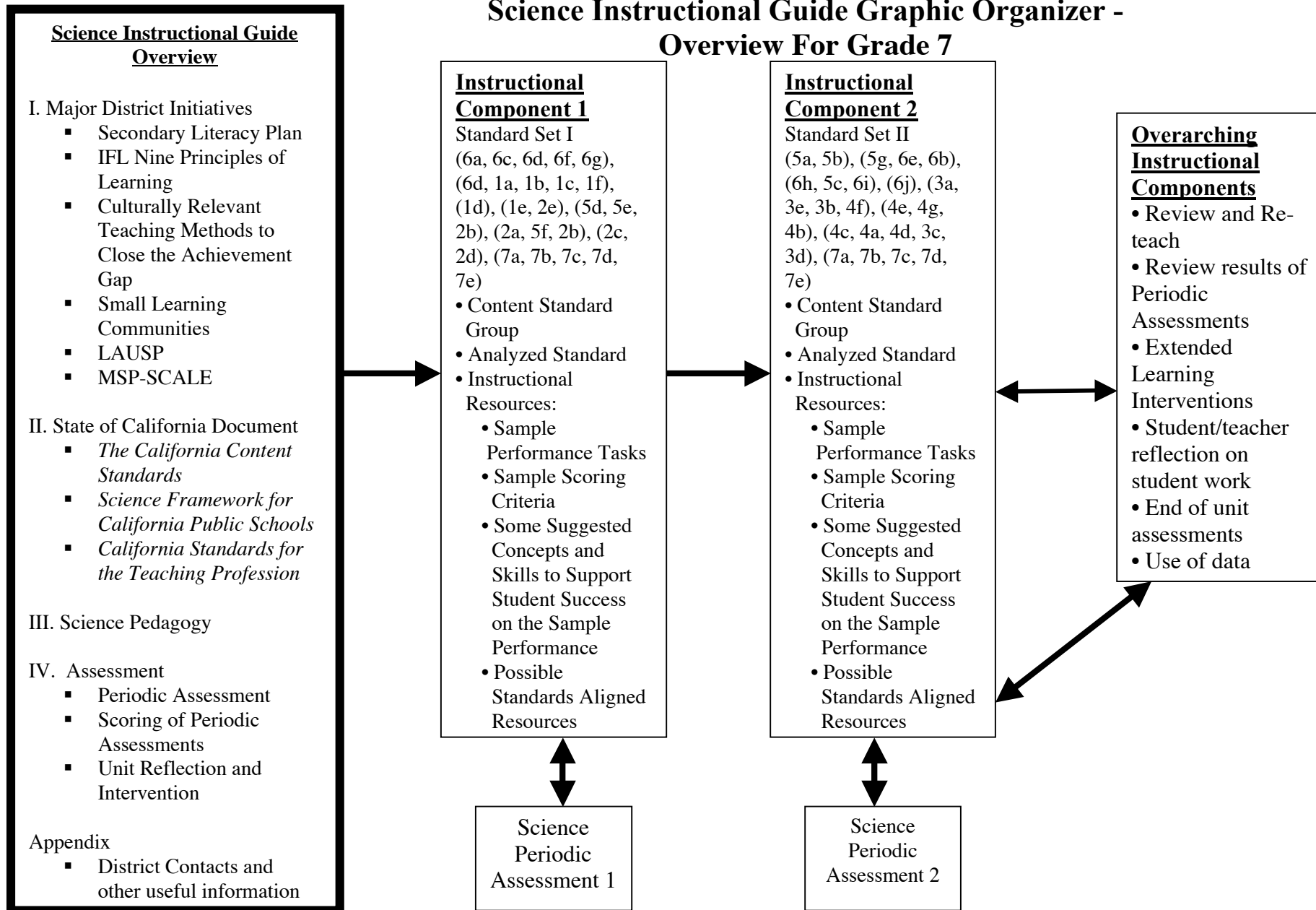
7th Grade

Periodic Assessments Organizer

This page will serve as a reference for you. Please fill in your appropriate track periodic assessment dates. Also fill in the dates for reflection, intervention, and enrichment following the first periodic assessments.

Grade 7 Periodic Assessment	Periodic Assessment I	Reflection, Intervention, Enrichment	Periodic Assessment II	Reflection, Intervention, Enrichment
Assessment Window Single Track				
Assessment Window Three Tracks				
Assessment Window Four Tracks				

Science Instructional Guide Graphic Organizer - Overview For Grade 7



**LAUSD - Middle School Instructional Guide
Legend for Matrix Chart**

NOTE: The *Instructional Guide Matrix* lays out an “instructional pathway” that teachers may use as a guide for teaching the Standards Sets for each Instructional Component. Explanations within each box or column of the Legend on this page describe the information that a teacher will find in the boxes and columns of the matrix that follows this Legend.

Standards for Instructional Component

The Standard Sets lay the foundation for each Instructional Component. The standards to be learned during this Instructional Component are listed numerically and alphabetically for easy reference and do not intend to suggest any order of teaching the standards.

Content Standard Group:

The standards within each Standard Set are organized into smaller “Standard Groups” that provide a conceptual approach for teaching the standards within each Instructional Component.

Key Concept for the Content Standard Group: The Key Concept signifies the “big idea” for that Standard Group.

Content Standard Group	Analyzed Standards	Instructional Resources
<p>The Standards grouped here cover the Key Concept.</p>	<p>Analyzed Standards are a translation of the State's content standards (that begin with students know) into statements of student performance that describes both the activity and the "cognitive" demand placed on the students. The detailed description of the</p>	<p>Sample Performance Task</p> <p>The Performance Tasks are instructional/assessment tasks aligned to one of more of the Analyzed Standards in a Standards Group. Teachers may want to adopt or adapt these Performance Tasks for use in their classroom instructional programs. Each Performance Task sets “clear expectations” for student performance, engages the students in academically rigorous learning activities, and provides opportunities for conceptual development through accountable talk if the task is done in groups.</p>

	<p>detailed description of the content standards in the <i>Science Framework for California Public Schools: Kindergarten Through Grade Twelve (2003)</i> was used extensively in the development of the analyzed standards.</p>	<p>Sample Scoring Criteria for Performance Task</p> <p>Scoring criteria that teachers might use to score the sample performance task.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <p>These are “scaffolding” strategies that teachers might use in designing instruction that will provide students with the skills, knowledge, and conceptual understanding to perform successfully on the task.</p> <p>Possible Standards Aligned Resources</p> <p>A. References from State-Adopted Textbooks</p> <p>Textbook references from LAUSD adopted series that have been correlated with the Content Standard Group. (The standard(s) for each reference are in parenthesis before the page numbers.)</p> <p>B. Sample Activities Aligned to the Standards</p> <p>This section provides activities which the teacher may choose to use or develop.</p>
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**LAUSD - Middle School Instructional Guide
Seventh Grade Science**

Instructional Component 1- *Cell Biology, Genetics, Structure and Function in Living Systems, Physical Principles in Living Systems, Investigation and Experimentation: Standard Sets 1, 2, 5, 6, and 7*

Standards for Instructional Component 1

Standard Set 1: Cell Biology- All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope. As a basis for understanding this concept:

- 1a. Students know cells function similarly in all living organisms.
- 1b. Students know the characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls.
- 1c. Students know the nucleus is the repository for genetic information in plant and animal cells.
- 1d. Students know that mitochondria liberate energy for the work that cells do and that chloroplasts capture sunlight energy for photosynthesis.
- 1e. Students know cells divide to increase their numbers through a process of mitosis, which results in two daughter cells with identical sets of chromosomes.
- 1f. Students know that as multicellular organisms develop, their cells differentiate.

Standard Set 2: Genetics - A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences. As a basis for understanding this concept:

- 2a. Students know the differences between the life cycles and reproduction methods of sexual and asexual organisms.
- 2b. Students know sexual reproduction produces offspring that inherit half their genes from each parent.
- 2c. Students know an inherited trait can be determined by one or more genes.
- 2d. Students know plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies (or alleles) of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive.
- 2e. Students know DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell.

Standard Set 5: Structure and Function in Living Systems (*Note Parent permission is necessary to teach these standards that might be addressed in Health) - The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function. As a basis for understanding this concept:

- *5d. Students know how the reproductive organs of the human female and male generate eggs and sperm and how sexual activity may lead to fertilization and pregnancy.

*5e. Students know the function of the umbilicus and placenta during pregnancy.

5f. Students know the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit.

Standard Set 6: Physical Principles in Living Systems - Physical principles underlie biological structures and functions. As a basis for understanding this concept:

6a. Students know visible light is a small band within a very broad electromagnetic spectrum.

6c. Students know light travels in straight lines if the medium it travels through does not change.

6d. Students know how simple lenses are used in a magnifying glass, the eye, a camera, a telescope, and a microscope.

6f. Students know light can be reflected, refracted, transmitted, and absorbed by matter

6g. Students know the angle of reflection of a light beam is equal to the angle of incidence. 6d. Students know how simple lenses are used in a magnifying glass, the eye, a camera, a telescope, and a microscope.

Standard Set 7: Investigation and Experimentation - Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

7a. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data and display data.

7b. Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.

7c. Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.

7d. Construct scale models, maps, and appropriately labeled diagrams to communicate scientific knowledge (e.g. motion of Earth's plates and cell structure).

7e. Communicate the steps and results from an investigation in written reports and oral presentations.

Grade 7 Instructional Component 1 Content Standard Group 1

Standards for Component 2 Standard Group 1:

- 6a. Students know visible light is a small band within a very broad electromagnetic spectrum.
- 6c. Students know light travels in straight lines if the medium it travels through does not change.
- 6d. Students know how simple lenses are used in a magnifying glass, the eye, a camera, a telescope, and a microscope.
- 6f. Students know light can be reflected, refracted, transmitted, and absorbed by matter.
- 6g. Students know the angle of reflection of a light beam is equal to the angle of incidence.

Key Concept for the Component 1 Standard Group 1: The properties of light explain how images are perceived as light moves through different media and into the eye.

Content Standard Group	Analyzed Standards	Instructional Resources
6a, 6c, 6d, 6f, 6g	<ul style="list-style-type: none"> •Students differentiate the components of the electromagnetic spectrum. (6a) •Students analyze the pathways light travels through one or more media. (6c) • Students correlate the structure of a lens with its function. (6d) •Students categorize how light interacts with different types of media. (6f) 	<p>Sample Performance Task Student will construct diagrams (blueprints) of a pinhole camera (no lens), a compound microscope, and a telescope that demonstrate the correct pathway that light will travel and focus in order to produce an image. The student will also provide a written explanation for each diagram. (6a, 6c, 6g, I&E 7a, 7b, 7c)</p> <p>Sample Scoring Criteria for Performance Task Student diagrams should include accurately labeled diagrams that clearly and correctly demonstrate how light travels to make a focused image through a pinhole camera (no lens), a compound microscope, and a telescope. The written explanation should include an accurate description how each instruments focuses light to produce an image.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • diagrams showing light reflecting and refracting through convex and concave lenses • light behavior through different media such has air, glass, water • diagrams showing how instruments such as a pinhole camera, microscope and telescope work

	<p>•Students determine the angle of reflection based on the angle of incidence. (6g)</p>	<p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (6a, c, d, f) 53, 54, 56-58, 63</p> <p><u>Prentice</u> (6a, c, d, f) 698-701, 310</p> <p><u>Glencoe</u> (6a) 786-798 (6c) 800-801 (6d) 801-803, 806-810 (6e) 793-798, 800-803</p>
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Grade 7 Instructional Component 1 Content Standard Group 2

<p>Standards for Component 1 Standard Group 2:</p> <p>6d. Students know how simple lenses are used in a magnifying glass, the eye, a camera, a telescope, and a microscope.</p> <p>1a. Students know cells function similarly in all living organisms.</p> <p>1b. Students know the characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls.</p> <p>1c. Students know the nucleus is the repository for genetic information in plant and animal cells.</p> <p>1f. Students know that as multicellular organisms develop, their cells differentiate.</p> <p>Key Concept for Component 1 Standard Group 2: The development of lenses and microscopes led to the discovery of cells and their functions.</p>		
Content Standard Group	Analyzed Standards	Instructional Resources
1a, 1b, 1c, 1f	<p>•Students compare how cells function in different organisms.</p>	<p>Sample Performance Task</p> <p>Student will create a Venn Diagram to compare characteristics of plant cells to animal cells. Student should make sure that the characteristics that are held in common are in the shared space and that those</p>

<ul style="list-style-type: none"> •Students differentiate between plant and animal cells. (1b) •Students identify nuclei in prepared slides. (1b) •Students explain the function of nucleus. (1b) •Students explain that the genetic material for the cell is found in the nucleus in both plants and animals. (1c) •Students construct a timeline of the development of a multicellular organism that reflect cell differentiation. (1f) •Students compare different types of cells in a multicellular organism. (1f) •Students diagram the various levels of 	<p>that are unique are in the proper outer areas of the Venn Diagram. (1b, I&E 7d)</p> <p>Sample Scoring Criteria for Performance Task A proficient response should include the following (from the CA Framework): Plant cell outer area of Venn Diagram: chloroplast, large central vacuole, cell wall determines shape of cell. Animal cell outer area of Venn Diagram: cytoskeleton determines shape of cell. Shared area of Venn Diagram: cell membrane, nucleus, mitochondria</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • plant cell parts from CA Framework • animal cell parts from CA Framework • Venn Diagram usage <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (6d) 66-69, 519 (1a) 36, 80-81, 85, 87, 90-91, 98-99, 104: (1b) 92-93, 95, 97-98, 112 (1c) 90-91, 93, 98-99 (1f) 36, 82-84, 89, 91</p> <p><u>Prentice</u> (6d) 8-9, 11, 703-705 (1a) 10, 13-15, 16-17, 18-21 (1b) 16-17 (1c) 4-7, 10: (1f) 208, 735-739</p> <p><u>Glencoe</u> (6d) 801-803, 806-810 (1a) 48-56 (1b) 50, 55, 57</p>
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	organization in a multicellular organism. (1f)	<p>(1c) 96-100 (1f) 56</p> <p><i>B. Sample Activities Aligned to the Standards</i> <i>Explore with magnifying glass and microscope (7a, 7, c, 7d):</i> <i>Prepared slides</i></p> <ul style="list-style-type: none"> • <i>Plant Cells</i> • <i>Red Onion/Onion Cells</i> • <i>Animal Cells</i> • <i>Goldfish tails</i> • <i>Root Cells</i> <p><i>Fast plants (7a-7e)</i></p>
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Grade 7 Instructional Component 1 Content Standard Group 3

Standard for Component 1 Content Standard Group 3:		
1d. Students know that mitochondria liberate energy for the work that cells do and that chloroplasts capture sunlight energy for photosynthesis.		
Key Concept for Component 1 Content Standard Group 3: Chloroplasts capture solar energy in the form of glucose that is used by mitochondria to liberate energy for the work that cells do.		
Content Standard Group	Analyzed Standards	Instructional Resources
1d	<ul style="list-style-type: none"> •Students compare how plants and animals obtain and use energy. (1d) •Students diagram the relationship between photosynthesis and respiration. (1d) 	<p>Sample Performance Task Student will create a picture book to explain how energy available for human movement is obtained from the energy captured by plants from the Sun. Include photosynthesis and respiration and the relationship between photosynthesis and respiration, diagrams, simple chemical equations, labeled pictures with mitochondria, chloroplasts. Be sure to explain the proper sequence of events in all pictures and diagrams starting with energy from the Sun. Information should be gathered from a variety of print and Internet resources. (1d, I&E 7b, 7d)</p> <p>Sample Scoring Criteria for Performance Task</p>

A proficient response should include the following (from the CA Framework):
Role of chloroplasts (include discussion of pigment) in photosynthesis to capture energy from sunlight;
simple correct chemical formulae: chemical energy transfer from plants to animals; role of mitochondria
in respiration in liberating energy for work in cells

Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task

- ways in which plants and animals obtain energy
- parts of a chemical equation – reactants and products
- chemical equations for respiration and photosynthesis
- flow-charts of energy transfer to plants and to animals

Possible Standards Aligned Resources

A. References from State-Adopted Textbooks

Holt

(1d) 112-114, 284-286

Prentice

(1d) 46-48

Glencoe

(1d) 51, 55

Grade 7 Instructional Component 1 Content Standard Group 4

Standards for Component 1 Standard Group 4:

1e. Students know cells divide to increase their numbers through the process of mitosis, which results in two daughter cells with identical sets of chromosomes.

2e. Students know DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell.

Key Concept for Component 1 Standard Group 4: The process of mitosis passes DNA, the genetic material, to every new cell in an organism.

Content Standard Group	Analyzed Standards	Instructional Resources
1e, 2e	<ul style="list-style-type: none"> •Students illustrate the sequence of events in the process of mitosis. (1e) •Students construct a model of DNA. (2e) 	<p>Sample Performance Task Student will create a “mitosis mobile.” The mobile should represent the mother cell at the top and show all the in-between stages leading up to the two resulting daughter cells. Appropriate labels and explanations of each of these stages of the mitotic division should be documented and included. (1e, 2e, I&E: 7d, 7e)</p> <p>Sample Scoring Criteria for Performance Task A proficient mobile should contain the following: models or illustrations representing each step in mitosis; a clear sequence of events leading from mother cell to the two daughter cells; detailed explanations of each of these stages.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • mitosis stages and descriptions of stages • construct a simple mobile • graph the cell cycle • research mitosis from standards-aligned resources • graph bacterial growth through textbook or cut-and-paste activity • view time-lapse sequence of mitosis to observe chromosome segregation via internet, DVD, VHS, or other media source

		<p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> <i>(1e) 116-119:</i> <i>(2e) 90, 91, 152-157</i></p> <p><u>Prentice</u> <i>(1e) 53-56</i> <i>(2e) 57-58</i></p> <p><u>Glencoe</u> <i>(1e) 97-100, 105-106</i> <i>(2e) 100, 110-111</i></p> <p><i>B. Sample Activities Aligned to the Standards</i></p> <p><i>Prepared Mitosis slides</i></p>
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Grade 7 Instructional Component 1 Content Standard Group 5

<p>Standards for Component 1 Standard Group 5: (*Note Parent permission is necessary to teach these standards that might be addressed in Health)</p> <p>*5d. Students know how the reproductive organs of the human female and male generate eggs and sperm and how sexual activity may lead to fertilization and pregnancy.</p> <p>*5e. Students know the function of the umbilicus and placenta during pregnancy.</p> <p>2b. Students know sexual reproduction produces offspring that inherit half their genes from each parent.</p> <p>Key Concept for Component 1 Standard Group 5: Sexual Reproduction in humans requires the combination of an egg and a sperm.</p>		
<p>Content Standard Group</p>	<p>Analyzed Standards</p>	<p>Instructional Resources</p>

<p>*5d, *5e, 2b</p>	<p>OBTAIN PARENT PERMISSION</p> <ul style="list-style-type: none"> •Students diagram the male and female human reproductive organs. (*5d) •Students describe the sequence of events that may lead to fertilization. (*5d) •Students explain how the umbilicus and placenta support the fetus during gestation. (*5e) •Students describe the transmission of materials across the placenta. (*5e) 	<p>Sample Performance Task Student will draft a persuasive letter asking a pregnant mother to stop smoking or using drugs. Letters should be in a modified block-style format and include objective as well as subjective arguments with supporting details from research. (*5e, I&E 7b, 7d, 7e)</p> <p>Sample Scoring Criteria for Performance Task A proficient letter should include the following; block style business letter format; a balanced argument of the pros and cons of smoking and drug usage based on current research findings;</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • diagram and study the uterus of a pregnant woman • diagram the flow of materials across the placenta and identify the structures involved in the process • discuss how a fetus gets nutrients and eliminates (gets rid of) wastes • research and review articles on “drug-babies” • review examples of letters and review the block style format and content • create a rubric for a persuasive letter <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (*5d) 398, 408, 543, 547-550B (Parent permission slips needed) (*5e) 258-259, 261-263, 270-271, 280-283, 598 (2b) 116-117, 333-334, 365-366: 38-39, 130-132, 134, 135-139, 142-143, 152, 578</p> <p><u>Prentice</u> (*5d) 346-350 (*5e) 249-250, 306-307, 342-344, 348-349 (2b) 87-90</p> <p><u>Glencoe</u> (*5d) 448-451 (*5e) 582-585, 605, 610</p>
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		<p>(2b) 104-109, 110-114, 116</p> <p><i>B. Sample Activities Aligned to the Standards</i> <i>Fast Plants (7a-7e)</i> <i>Wards – wasps lab (7a-7e)</i></p>
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Grade 7 Instructional Component 1 Content Standard Group 6

<p>Standards for Component 1 Standard Group 6: 2a. Students know the differences between the life cycles and reproduction methods of sexual and asexual organisms. 5f. Students know the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit. 2b. Students know sexual reproduction produces offspring that inherit half their genes from each parent. Key Concept for Component 1 Standard Group 6: There are two types of reproduction in multicellular organisms.</p>		
Content Standard Group	Analyzed Standards	Instructional Resources
2a, 5f, 2b	<ul style="list-style-type: none"> •Students summarize the sequence of events in the life cycles of organisms that reproduce sexually and asexually. (2a) •Students compare sexual reproduction and asexual reproduction. (2a) •Students describe the sequence of events that may lead to fertilization. (5f) 	<p>Sample Performance Task Student will use a graphic organizer (Venn Diagram) to compare sexual to asexual reproduction in organisms. Student should include hermaphroditic organisms in their diagram. Include at least three items in each area of the diagram. The outer areas should be sexual and asexual reproduction, with the center shared area showing the shared characteristics (2a, 5f; I&E: 7d)</p> <p>Sample Scoring Criteria for Performance Task A proficient response will include the following: Venn Diagram with at least three items/characteristics of organisms that reproduce sexually and asexually; for example, in the outer area for sexual reproduction, separate male and female reproductive organs, meiosis, internal fertilization; for the outer area for asexual reproduction, simple mitosis, budding, spore production; for the shared area, offspring, transmission of traits, and continuation of gene pool.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • utilize multimedia to study life cycles of organisms that reproduce sexually and asexually • review fertilization in various organisms

	<p>•Students illustrate the reproductive process of flowering plants. (5f)</p> <p>•Students discuss how the diploid number of chromosomes is maintained in humans. (2b)</p>	<ul style="list-style-type: none"> • outline the characteristics of organisms that reproduce sexually • outline the characteristics of organisms that reproduce asexually • use semantic analysis (comparison chart using plusses and minuses) for the comparison of the characteristics of organisms that reproduce sexually and asexually <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (2a) 398, 408, 543, 547-550B. Parent permission slips needed. (5f) 258-259, 261-263, 270-271, 280-283, 598 (2b) 116-117, 333-334, 365-366</p> <p><u>Prentice</u> (2a) 346-350, 352-353 (5f) 249-250, 306-307, 342-344, 348-349 (2b) 87-90</p> <p><u>Glencoe</u> (2a) 104-108, 116, 122-127, 579, 580, 594 (5f) 132-138, 147, 285-286, 300-304, 307 (2b) 104-109, 110-114, 116</p> <p><i>B. Sample Activities Aligned to the Standards</i> Fast Plants (7a-7e) Wards – wasps lab (7a-7e)</p>
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Grade 7 Instructional Component 1 Content Standard Group 7

Standards for Component 1 Standard Group 7:

2c. Students know an inherited trait can be determined by one or more genes.

2d. Students know plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies (or alleles) of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive.

Key Concept for Component 1 Standard Group 7: Inherited traits are determined by genes.

Content Standard Group	Analyzed Standards	Instructional Resources
2c, 2d	<ul style="list-style-type: none"> •Students correlate the genes of an organism to its inherited traits. (2c, 2d) •Students discuss the relationship between genotype and phenotype. (2c) •Students predict phenotypes of potential based on an understanding of dominant and recessive alleles. (2c) 	<p>Sample Performance Task Student will create a display of at least two drawings of characteristics that illustrate the relationship between genotype and phenotype. An explanation of dominant and recessive alleles as well as multiple gene inheritance must be included. (2c, 2d, I&E: 7b, 7d,)</p> <p>Sample Scoring Criteria for Performance Task The display should include the following: a brief explanation of the relationship between phenotype and genotype; a clear description of dominant and recessive alleles; at least one example of multiple-gene inheritance; a minimum of two illustrations showing characteristics dominant, recessive and multiple-gene alleles.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • review how to create posters and charts and how to organize information for visual impact/effectiveness (poster, chart) • discuss and identify certain traits of several organisms and include the terms dominant and recessive alleles/traits in your discussion • research and discuss examples of organisms exhibiting multiple gene inheritance • create a fictitious living organism with specific dominant and recessive traits and then use a punnet square to indicate a possible cross <p>Possible Standards Aligned Resources</p>

	<p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (2c) 135-137, 142, 156, 158-161, 164-167, 298, 310 (2d) 133-136</p> <p><u>Prentice</u> (2c) 102-107 (2d) 70-75, 80-82</p> <p><u>Glencoe</u> (2c) 151-158 (2d) 154-158, 160-162</p> <p><i>B. Sample Activities Aligned to the Standards</i></p> <p><i>Fast Plants: Who's the father? (7a-7e)</i></p>
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**LAUSD - Middle School Instructional Guide
Seventh Grade Science**

Instructional Component 2 - *Evolution, Earth and Life History, Structure and Function in Living Systems, Physical Principles in Living Systems, Investigation and Experimentation: Standard Sets 3, 4, 5, 6, and 7*

Standards for Instructional Component 2

Standard Set 3: Evolution - Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:

- 3a. Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.
- 3b. Students know the reasoning used by Charles Darwin in reaching his conclusion that natural selection is the mechanism of evolution.
- 3c. Students know how independent lines of evidence from geology, fossils, and comparative anatomy provide the basis for the theory of evolution.
- 3d. Students know how to construct a simple branching diagram to classify living groups of organisms by shared derived characteristics and how to expand the diagram to include fossil organisms.
- 3e. Students know that extinction of a species occurs when the environment changes and that the adaptive characteristics of a species are insufficient for its survival

Standard Set 4: Earth and Life History - Evidence from rocks allows us to understand the evolution of life. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept:

- 4a. Students know Earth processes today are similar to those that occurred in the past and slow geologic processes have large cumulative effects over long periods of time.
- 4b. Students know the history of life on Earth has been disrupted by major catastrophic events, such as major volcanic eruptions or the impacts of asteroids.
- 4c. Students know that the rock cycle includes the formation of new sediment and rocks and that rocks are often found in layers, with the oldest generally on the bottom.
- 4d. Students know that evidence from geologic layers and radioactive dating indicates Earth is approximately 4.6 billion years old and that life on this planet has existed for more than 3 billion years.
- 4e. Students know fossils provide evidence of how life and environmental conditions have changed
- 4f. Students know how movements of Earth's continental and oceanic plates through time, with associated changes in climate and geographic connections, have affected the past and present distribution of organisms.
- 4g. Students know how to explain significant developments and extinctions of plant and animal life on the geologic time scale.

Standard Set 5: Structure and Function in Living Systems - The anatomy and physiology of plants and animals illustrate the

complementary nature of structure and function. Physical principles underlie biological structures and functions. As a basis for understanding this concept:

- 5a. Students know plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.
- 5b. Students know organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.
- 5c. Students know how bones and muscles work together to provide a structural framework for movement.
- 5g. Students know how to relate the structures of the eye and ear to their functions.

Standard Set 6: Physical Principles in Living Systems - Physical principles underlie biological structures and functions. As a basis for understanding this concept:

- 6b. Students know that for an object to be seen, light emitted by or scattered from it must be detected by the eye.
- 6e. Students know that white light is a mixture of many wavelengths (colors) and that retinal cells react differently to different wavelengths.
- 6h. Students know how to compare joints in the body (wrist, shoulder, thigh) with structures used in machines and simple devices (hinge, ball-and-socket, and sliding joints).
- 6i. Students know how levers confer mechanical advantage and how the application of this principle applies to the musculoskeletal system.
- 6j. Students know that contractions of the heart generate blood pressure and that heart valves prevent backflow of blood in the circulatory system.

Standard Set 7: Investigation and Experimentation - Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

- 7a. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data and display data.
- 7b. Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.
- 7c. Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
- 7d. Construct scale models, maps, and appropriately labeled diagrams to communicate scientific knowledge (e.g. motion of Earth's plates and cell structure).
- 7e. Communicate the steps and results from an investigation in written reports and oral presentations.

Grade 7 Instructional Component 2 Content Standard Group 1

Standards for Component 2 Standard Group 1:

5a. Students know plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.

5b. Students know organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.

Key Concept for Component 2 Standard Group 1: Living things have levels of organization that are specific, yet all levels work together in that living thing.

Content Standard Group	Analyzed Standards	Instructional Resources
5a, 5b	<ul style="list-style-type: none"> • Students compare the levels of organizational structure and function in plants and animals. (5a) • Students explain how organs, tissues, and cells work together to keep an organism alive. (5b) • Given a system and failure of an organ or part in that system, predict the effect. (5b) 	<p>Sample Performance Task Student uses a T graph to chart five levels of organization in both plant structure and human body and rank them in order of complexity starting from the cell and moving to the more complex. Student should explain with details the relationship among the organizational levels in the graph. (5a, 5b, I&E: 7d, 7e)</p> <p>Sample Scoring Criteria for Performance Task A proficient response should include a completed T graph showing the following: at least five levels of organization in plants and animals ranked from simplest to the most complex, a detailed and complete explanation of the relationship of the organizational levels. (5a, 5b)</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • use multimedia resources to review the organization levels in both plants and animals • describe basic types and functions of tissues in both plants and animals • outline examples of relationships that exist among the different levels of organization

		<p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (5a & 5b) 80-83, 89, 306, 460, 464-468, 472, 476</p> <p><u>Prentice</u> (5a) Ch. 16-1, p. 510, Ch. 16-1, pp. 511-516 (5b) Ch. 16-2, pp. 512-514</p> <p><u>Glencoe</u> (5a) 54-57,256 (5b) 493-495, 499-500</p> <p><i>B. Sample Activities Aligned to the Standards</i></p> <p><u>Prentice Unit 4 Resources</u></p>
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Grade 7 Instructional Component 2 Content Standard Group 2

<p>Standards for Component 2 Standard Group 2:</p> <p>5g. Students know how to relate the structures of the eye and ear to their functions.</p> <p>6e. Students know that white light is a mixture of many wavelengths (colors) and that retinal cells react differently to different wavelengths.</p> <p>6b. Students know that for an object to be seen, light emitted by or scattered from it must be detected by the eye.</p> <p>Key Concept for Component 2 Standard Group 2 The eye and the ear have specific structures which function in specific ways so sight and hearing are possible.</p>		
Content Standard Group	Analyzed Standards	Instructional Resources
5g, 6e, 6b	<ul style="list-style-type: none"> Students identify the structures/functions of the ear and eye and explain how the parts work together. (5g) 	<p>Sample Performance Task</p> <p>Student diagrams the path of light rays as they move through the nearsighted eye, identifying each part of the eye and explaining what happens to the light rays. Student repeats the same procedure for the farsighted eye. (5g, I&E: 7d, 7c)</p>

<ul style="list-style-type: none"> • Students recall that the retinal cells react differently to different wavelengths. • Students discuss that white light is a mixture of different wavelengths. (6e) • Students compare and contrast the difference between light and pigment. (6e) • Students diagram the pathway of light for objects to be seen. (6b) 	<p>Student diagrams the path of a sound wave as it passes from the external to the middle and inner ear identifying each part of the ear and explaining what happens to the sound wave as it reaches the eardrum. (5g, I&G: 7g, 7e)</p> <p>Sample Scoring Criteria for Performance Task A proficient response should include the following: the major anatomical parts of both the eye and the ear including the lens, retina (with its cones and rods), iris, pupil, the outer ear, the middle ear and its corresponding parts (eardrum or tympanic membrane, malleus, incus, stapes,) and the inner ear should be labeled. The eye diagram should correctly show the different focal points for the farsighted and nearsighted eye. The ear diagram should correctly show the path of the sound waves and have the correct description of what the major parts of the ear do.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • review the following topics: vibrations, sound waves, concave and convex lenses, nearsightedness and farsightedness • Look up information to answer the following questions for a teacher-led class discussion: How do you see? How does light travel? How does light enter the eye? How is light focused? How do the major parts of the eye and ear function? <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (5g) 59, 65, 67, 332, 340-341, 384, 159, 518-520, 528-529 (6e) 53, 61-64 (6b) 61, 65, 518, 530</p> <p><u>Prentice</u> (5g) Ch. 22-4, p. 702 (6e) Ch. 22-3, p. 699, Ch. 22-4, p. 704 (6b) Ch. 22-4, p.704</p> <p><u>Glencoe</u> (6h) Ch. 16-1 444-445</p>
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		<p><i>B. Sample Activities Aligned to the Standards</i></p> <p><i>Paper eye model: Anchor activities (I&E 7d)</i></p> <p><i>Eye diagram worksheet-Pinhole camera- anchor activities (I&E 7d)</i></p> <p><i>Search for Colorblindness tests websites</i></p>
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Grade 7 Instructional Component 2 Content Standard Group 3

Standards for Component 2 Standard Group 3		
<p>6h. Students know how to compare joints in the body (wrist, shoulder, thigh) with structures used in machines and simple devices (hinge, ball-and-socket, and sliding joints).</p> <p>5c. Students know how bones and muscles work together to provide a structural framework for movement.</p> <p>6i. Students know how levers confer mechanical advantage and how the application of this principle applies to the musculoskeletal system.</p> <p>Key Concept for Component 2 Standard Group 3: Muscles, bones, and joints work in specific ways so movement is possible.</p>		
Content Standard Group	Analyzed Standards	Instructional Resources
6h, 5c, 6i	<ul style="list-style-type: none"> • Students compare joints in the body with structures used in machines and simple devices. (6h) • Students analyze the interactions between bones, muscles and joints to allow for movement in a particular joint. (5c) • Students demonstrate and 	<p>Sample Performance Task</p> <p>Student will choose one body joint (wrist, shoulder, and thigh) to illustrate, annotate, and explain in detail. The diagram should include all the bones and muscles involved in the movement of this joint, name of the joint, and identification as of the type of joint (hinge, ball-and-socket, sliding). The student will also identify an example of an everyday device with movement similar to that of the chosen body joint. The student will diagram the device, label its parts, and describe how its movement is similar to that of the chosen body joint. (6h, 5c, I&E: 7b, 7d, 7e)</p> <p>Sample Scoring Criteria for Performance Task</p> <p>The poster should include the following: an annotated drawing of a specific body joint with a detailed explanation of the type of body joint and the bones and muscles used to move the joint; a detailed and labeled drawing of a device exhibiting movement similar to that of the chosen body joint; a description of the comparison between both joints.</p>

	<p>exemplify how levers confer mechanical advantage and how the application of this principle applies to the musculoskeletal system. (6i)</p>	<p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • In-class discussion of the following topics: What is a joint? What is an immovable joint? A movable joint? Range of Motion? • brainstorm and then research (using the web) the types of body joints and devices with similar joints <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (6h) 470-471 (5c) 472-473 (6i) 471</p> <p><u>Prentice</u> (6h) pp. 536, 537 (5c) pp. 541-543 (6i) pp. 546, 547, 548, 549</p> <p><u>Glencoe</u> (6h) 444-445 (6i) 448-449</p> <p><i>B. Sample Activities Aligned to the Standards</i> Chicken wing dissection <u>Prentice I&E 7a 7c 7e</u></p>
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Grade 7 Instructional Component 2 Content Standard Group 4

<p>Standard for Component 2 Standard Group 4: 6j. Students know that contractions of the heart generate blood pressure and that heart valves prevent backflow of blood in the circulatory system.</p> <p>Key Concept for Component 2 Standard Group 4: The heart's contractions pumps blood that flows one way because of the heart valves preventing backflow.</p>
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Content Standard Group	Analyzed Standards	Instructional Resources
6j	<ul style="list-style-type: none"> • Students illustrate, and explain how contractions of the heart generate blood pressure. (6j) • Students describe how a heart valve works and provide a correlation or example of a valve. (6j) 	<p>Sample Performance Task Students will make and illustrate a chart that compares heart valves to any type of valve (musical instrument valves, water spigot valves, gas valves, etc.). Include a brief description of the type and function of each valve with the comparison chart. (6j, I&E: 7b, 7d)</p> <p>Sample Scoring Criteria for Performance Task A proficient response will also include a comparison of heart valves with at least three other valve types. The chart should include annotated drawings of each valve depicting structural similarities and differences.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • Review the route that blood follows through the circulatory system. • Using models or science textbooks investigate how heart valves work and briefly describe their operation. • Use library resources to research the function of different types of valves. <p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (6j) 490-492</p> <p><u>Prentice</u> (6j) 604, 605</p> <p><u>Glencoe</u> (6j) 493</p> <p><i>B. Sample Activities Aligned to the Standards</i> STCMS - Body Systems Kit</p>

Grade 7 Instructional Component 2 Content Standard Group 5

Standards for Component 2 Standard Group 5:

- 3a. Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.
- 3e. Students know that extinction of a species occurs when the environment changes and that the adaptive characteristics of a species are insufficient for its survival
- 3b. Students know the reasoning used by Charles Darwin in reaching his conclusion that natural selection is the mechanism of evolution.
- 4f. Students know how movements of Earth’s continental and oceanic plates through time, with associated changes in climate and geographic connections, have affected the past and present distribution of organisms.

Key Concept for Component 2 Standard Group 5: Diversity, evolution and extinction are caused by genetic variation, environmental and geographic factors.

Content Standard Group	Analyzed Standards	Instructional Resources
3a, 3e, 3b, 4f	<ul style="list-style-type: none"> •Students examine the role that genetic variation and environmental factors play in the process of evolution. (3a) • Students determine the role of these factors in the diversity of organism. (3a) • Students given an environmental change, relate an animal’s characteristics to its survival. (3e) • Students summarize, 	<p>Sample Performance Task Student will design a model or illustration of a species of organism using two genetic variations for at least two characteristics. The student will also describe the two characteristics and tell how these characteristics relate to their organisms survival in a teacher-defined environment. (3a, 3e, I&E: 7d.)</p> <p>Sample Scoring Criteria for Performance Task The organism should include at least two genetic variations for each of the two different characteristics, explain how the characteristics affect survival in the teacher-defined environment.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • The following topics should be discussed: animal adaptation to their physical environment, weather, food chains • Review the events that could possibly lead to extinction of a species (habitat loss, increased competition for resources, newly introduced predators). • Discuss Natural Selection

	<p>outline or diagram the reasoning used by Charles Darwin in reaching his conclusion that natural selection is the mechanism of evolution. (3b)</p> <ul style="list-style-type: none"> • Students identify and explain factors that contribute to the distribution of animals. (4f) 	<p>Possible Standards Aligned Resources</p> <p><i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> <i>(3a) pp. 9, 39, 136- 137, 142,152, 159, 176-178, 188, 192-193, 419, 445</i> <i>(3e) pp. 9, 176-179</i> <i>(3b) pp. 184-188, 190-191</i> <i>(4f) pp. 192-193, 206-207, 397</i></p> <p><u>Prentice</u> <i>(3a) pp. 140-146</i> <i>(3e) pp. 149, 154, 155</i> <i>(3b) pp. 140-141</i> <i>(4f) pp. 146, 190, 192</i></p> <p><u>Glencoe</u> <i>(3a) pp. 177-185, 202</i> <i>(3b) pp. 179-181</i> <i>(3e) pp. 184-185, 192-195, 198-201, 283-284, 1018</i></p> <p><i>B. Sample Activities Aligned to the Standards</i></p> <p><i>Adapt-a-Bird: TOPS learning systems</i> <i>“You say you want an Evolution” NY Times Learning Network website (I&E 7b, 7e)</i> <i>“Darwin’s Darlings: Celebrating the Evolution of the Polar Bear” NY Times Learning Network website (I&E 7b, 7e)</i></p>
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Grade 7 Instructional Component 2 Content Standard Group 6

Standards for Component 2 Standard Group 6:

4e. Students know fossils provide evidence of how life and environmental conditions have changed.

4g. Students know how to explain significant developments and extinctions of plant and animal life on the geologic time scale.

4b. Students know the history of life on Earth has been disrupted by major catastrophic events, such as major volcanic eruptions or the impacts of asteroids.

Key Concept for Component 2 Standard Group 6 : Fossils are a significant factor in determining the geological time scale and can also indicate how life and environmental conditions have changed over time.

Content Standard Group	Analyzed Standards	Instructional Resources
4e, 4g, 4b	<ul style="list-style-type: none"> • Students justify that fossils evidence indicates how life and environmental conditions have changed over time. (4e) • Students propose a reason for mass extinction and justify your reasoning. (4g) • Students describe the effect of catastrophic events that have disrupted life on Earth. (4b) 	<p>Sample Performance Task Student will create a travel brochure of at least four panels to promote and advertise a period within a given Geological Era. Brochure should include a include title page, examples of fossils, environmental conditions, at least two plants and two animals from that Era, examples of possible extinctions at the end of the Era with justified reasoning based on fossil records, environmental condition changes, or possible catastrophic events. (4e, 4g, 4b, I&E 7d, 7b)</p> <p>Sample Scoring Criteria for Performance Task A proficient response will include the following: a brochure of at least four panels (one of the panels is the title page) with fossil samples, at least two animals and plants from that era, information on possible extinctions and their possible cause(s), a description of environmental conditions and changes, and any catastrophic events that occurred.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • Look up brochure samples and styles on the web • Research fossil evidence and environmental conditions of the various Eras • Discuss living organisms that inhabited the Earth during the various eras • Review major catastrophic events <p>Possible Standards Aligned Resources <i>A. References from State-Adopted Textbooks</i></p>

		<p><u>Holt</u> (4e) 178-179, 202-203, 225, (4g) 204-205, 207, 209, 212 (4b) 205, 207, 209, 212</p> <p><u>Prentice</u> (4e) Ch. 6-1, pp. 164, 166, 167, 168 (4g) Ch. 6-4, p. 179, 180, 181 (4b) Ch. 6-4, pp. 188-189, 190-191, 194-195, 196, Ch. 7-2, p. 216</p> <p><u>Glencoe</u> (4e) 1005-1009 (4g) 1006, 1010-1016, 1026-1027, 1022 (4b) 988, 1015</p> <p><i>B. Sample Activities Aligned to the Standards</i> Unit 2 resources – <u>Prentice Hall</u> <i>Explorations through Time</i> <i>Explosions and Extinctions: Life Through time book GEMS</i></p>
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Grade 7 Instructional Component 2 Content Standard Group 7

Standards for Component 1 Standard Group 7:

- 4c. Students know that the rock cycle includes the formation of new sediment and rocks and that rocks are often found in layers, with the oldest generally on the bottom.
- 4a. Students know Earth processes today are similar to those that occurred in the past and slow geologic processes have large cumulative effects over long periods of time.
- 4d. Students know that evidence from geologic layers and radioactive dating indicates Earth is approximately 4.6 billion years old and that life on this planet has existed for more than 3 billion years.
- 3c. Students know how independent lines of evidence from geology, fossils, and comparative anatomy provide the bases for the theory of evolution.
- 3d. Students know how to construct a simple branching diagram to classify living groups of organisms by shared derived characteristics and how to expand the diagram to include fossil organisms.

Key Concept for Component 2 Standard Group 7: The major factors that are used to determine Earth's history are radioactive dating, geological layers, and fossils.

Content Standard Group	Analyzed Standards	Instructional Resources
4c, 4a, 4d, 3c, 3d	<ul style="list-style-type: none"> • Students determine the relative age of fossils based on their position or location in the rock strata. (4c) • Students predict the long-term geologic effect of a particular geologic process. (4a) • Students know the age of the Earth and life has existed for more than 3 billion years and be able to justify or explain with evidence from geologic layers and radioactive dating. (4d) • Students distinguish between relative and absolute dating. (4d) • Students evaluate 	<p>Sample Performance Task Students will write a summary on how a geologist find the relative age of a rock, and outline the differences between relative and absolute dating. This summary should be modeled after a scientific abstract. (4c, 4d, I&E: 7e)</p> <p>Sample Scoring Criteria for Performance Task The summary is written in the scientific abstract format. It should include a detailed explanation of how rocks are dated. An explanation comparing relative and absolute dating should also be included in the summary.</p> <p>Some Suggested Concepts and Skills to Support Student Success on the Sample Performance Task</p> <ul style="list-style-type: none"> • Introduce students to the concepts of relative time, absolute time, radioactivity and rates of radioactive decay. • Explain that relative age is a concept often used in the study of rocks. • Research for the type of information required to write scientific abstracts and review some examples with students. <p>Possible Standards Aligned Resources <i>A. References from State-Adopted Textbooks</i></p> <p><u>Holt</u> (4c) 178, 202-203, 208, 224 (4a) 184, 202, 206, 208, 224 (4d) 177, 201, 204, 207-208, 210, 223-224 (3c) 177-186, 208-219, 244 (3d) 230-231, 233, 239</p> <p><u>Prentice</u> (4c) pp. 162-163, 164, Ch. 6-2, pp. 170, 171, 172</p>

	<p>how genetic variation, the fossil record, and geologic events account for the evolution or extinction of organisms.(3c)</p> <ul style="list-style-type: none"> • Students construct a simple fossil branching diagram based on shared characteristics. (3d) 	<p>(4a) pp. 162, 164, 167 (4d) pp. 175-178 (3c) pp. 138, 139, 144, 146, 149, 150, 154, 155, 164, 165, 166, 167, 173, 174, 181, 185, 186, 187, 189, 190, 191, 193</p> <p><u>Glencoe</u> (4c) 908-911 (4d) 981,987,994, 989-993 (3d) 184-185, 285, 211-213, 215-216, 220-223 (4a) 984-986, 993,999,1003,1008</p> <p><i>B. Sample Activities Aligned to the Standards</i> Unit 2 resources- <u>Prentice hall</u></p>
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