Standard	Content Standards	Performance Expectations	*Biology: Exploring the Science of Life* Student Edition, Annotated Teacher Edition
			Student CD: SE in PDF format with audio files, Spanish activities, Interactive Laboratory activities, Presentation Builder, Graphic Organizer Software Teacher CD: ATE in PDF format, Instructional Interactivities, Presentation Builder, Science notebook and graphics organizer software, Spanish activities
EALR 1: Systems (SYS) - Predictability & Feedback			
9-12 SYSA	*Feedback* is a process in which the *output* of a *system* provides information used to regulate the operation of the *system*. *Positive feedback* increases the disturbance to a *system*. *Negative feedback* reduces the disturbance to a *system*.	Give examples of a positive *feedback system* and *explain* its regulatory mechanism (e.g., global warming causes Earth's ice caps to melt, reflecting less energy to space, increasing temperatures).*a Give examples of a negative *feedback system* and *explain* its regulatory mechanism (e.g., when a human body overheats, it produces sweat that cools the body by evaporation).*a	Ch 2, pg 23, 26 Ch 8, pg 142 Ch 16, pg 288-289 Ch 18, pg 321 Ch 19, pg 338-339 *Critical Thinking*, pg 185, 239 *Figure It Out*, pg 303 *Science Journal*, pg 327 *Connection*, pg 249, 287 Student Workbook, 102, 119 Laboratory Manual, 8c, 16a, 16c Transparencies: Earth's 7 Major Biomes, Wetland Losses in the U.S., Water Cycle
9-12 SYSB	Systems thinking can be especially useful in analyzing complex situations. To be useful, a *system* needs to be specified as clearly as possible.	Determine if a *systems* approach will be helpful in answering a *question* or solving a problem.*b Represent the *system* with a diagram specifying components, boundaries, flows, and *feedbacks*.*a *Describe* relevant *subsystems* and the larger *system* that contains the *system* being analyzed.*a Determine how the *system functions* with respect to other *systems*.	Ch 9, pg 162 Ch 16, pg 281-282, 284-288 Ch 19, pg 334-335, 337-339, 344-347 Student Workbook: 57, 104, 124, 126 Laboratory Manual: 16a Transparency Water Cycle
9-12 SYSC	In complex *systems*, entirely new and unpredictable *properties* may emerge. Consequently, modeling a complex *system* in sufficient detail to make *reliable* predictions may not be possible.	Create a simplified *model* of a complex *system*. Trace the possible consequences of a change in one part of the *system* and *explain how* the simplified *model* may not be adequate to reliably *predict* consequences.	Ch 16, pg 284, 286, 288 *Extend It:* pg 287 *Figure It Out*: pg 162 Student Workbook:104 Laboratory Manual 16a
9-12 SYSD	Systems can be changing or in equilibrium.	Analyze whether or not a *system* (e.g., population) is changing or in *equilibrium*. *c Determine whether a *state* of equilibrium is *static* or *dynamic* (e.g., inflows equal outflows).	Ch 2, pg 23-24 Ch 3, pg 45, 52 Ch 16, pg 271 Ch 18, pg 309-312, 319, 323 Student Workbook, 14, 19, 119 Laboratory Manual, 3c, 18b
EALR 2: Inquiry (INQ) - Conducting Analyses & Thinking Logically			
9-12 INQA Question	Scientists *generate* and *evaluate questions* to *investigate* the *natural world*	*Generate* and *evaluate* a *question* that can be answered through a scientific investigation. Critique *questions generated* by others and *explain* whether or not the *questions* are scientific.*a	Ch 1, pg 7-8 *Extend It*, e.g. pg 165 *Figure It Out*, e.g. pg 76, 85, 251, 390 *Explore It,* pg 9, 198, 213 *Think About It,* e.g. pg 106, 134, 350 Laboratory Manual, viii, e.g. 1c

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9-12 INQB Investigate	Scientific progress requires the use of various methods appropriate for answering different kinds of research *questions*, a thoughtful plan for gathering data needed to answer the *question*, and care in collecting, analyzing, and displaying the data.	Plan and conduct a scientific investigation, choosing a method appropriate to the *question* being asked. Collect, analyze, and display data using calculators, computers, or other technical devices when available.*b	Ch 1, pg 8-17 Ch 4, pg 63-64 *Explore It,* pg 9, 23, 171, 198, 202, 213, 220, 236, 260, 264, 297, 353, 362 *Extend It,* e.g. pg 165 *Research and Report*, e.g. pg 81, 120, 152 *SciLinks,* pg 3 *Unit Project*, ATE pg 82 Laboratory Manual, viii, e.g. 1b, 1c, 4a, 15c Student Workbook, .e.g. 5-6, 22, 26-27, 80 Transparency: Reading a Ruler Student CD: Presentation Builder
9-12 INQC Explain	Conclusions must be logical, based on *evidence*, and consistent with prior *established* knowledge.	Draw conclusions supported by *evidence* from the investigation and consistent with established scientific knowledge.*c Analyze alternative explanations and decide which best fits the data.*d	Ch 1, pg 11-12 Ch 4, pg 64 *Explore It,* pg 171, 198, 202, 213, 220, 236 *Extend It,* e.g. pg 165 *Explain It,* pg 37 *Figure It Out*, pg 37, 63 *Think About*, pg 258 *SciLinks,* pg 3 *Unit Project*, ATE pg 2, 82, 278 Laboratory Manual, viii, e. g. 1b, 4a, 4b, 4c Student Workbook, e. g. 13, 14, 20, 66 , 80
9-12 INQD Communicate Clearly	The methods and procedures that scientists use to obtain *evidence* must be clearly reported to enhance opportunities for further investigation.	Write a detailed laboratory report that includes: the *question* that motivated the study, a justification for the kind of investigation chosen, *hypotheses* (if any), a description of what was done, a summary of data in tables and graphs, and a conclusion, based on the *evidence*, that responds to the *question*.	Ch 1, pg 12 *Explore It,* pg 9, 171, 198, 213, 220, 236, 264, 297 *Extend It,* e.g. pg 165 *Figure It Out*, pg 63 *SciLinks,* pg 3 *Unit Project*, ATE pg 2, 278 Laboratory Manual, viii, e. g. 1b Student Workbook, e. g. 22, 66-68 Student CD: Presentation Builder
9-12 INQE Model	The essence of scientific investigation involves the development of a *theory* or conceptual *model* that can *generate* testable predictions.	Formulate one or more *hypotheses* based on a *model* or *theory* of a causal *relationship*. Demonstrate creativity and critical thinking to formulate and *evaluate* the *hypotheses*.	Ch 1, pg 8, 19 *Explore It,* pg 9, 23, 171, 198 *Extend It*, pg 165, 202 *Figure It Out*, pg 251, 390 *SciLinks,* pg 3 Laboratory Manual, viii, e. g. 1c Student Workbook, e. g. 12, 80
9-12 INQF Communicate	*Science* is a human endeavor that involves logical reasoning and creativity and entails the testing, revision, and occasional discarding of theories as new *evidence* comes to light.	*Evaluate* an investigation to determine if it was a *valid* means of answering the *question*, and whether or not the results were *reliable*. *e *Describe* the development of a scientific *theory* that illustrates logical reasoning, creativity, testing, revision, and replacement of prior *ideas* in light of new *evidence*.	Ch 1, pg 11-12 *After you Read*, e. g. pg 237, 353 *Explore It,* pg 171, 198, 213, 236, 297, 362 *Extend It,* e. g. pg 96 *Explain It,* e. g. pg 28 *Figure It Out*, pg 37, 63 *SciLinks,* pg 3 *Unit Project*, ATE pg 2, 82, 278 Laboratory Manual, viii, e. g. 1b, 3c, 6b, 11c, 18a, 20c, 22a Student Workbook e. g. 18, 40-41, 66, 80 Student CD: Presentation Builder

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9-12 INQG Intellectual Honesty	Public *communication* among scientists is an essential aspect of research. Scientists *evaluate* the *validity* of one another's investigations, check the *reliability* of results, and *explain* inconsistencies in findings.	Participate in a scientific discussion about their own investigations and those performed by others. Respond to *questions* and criticisms, and if appropriate, revise explanations based on these discussions.	*Explore It,* e. g. pg 9, 198, 220 *Extend It,* e. g. pg 96, 202 *Figure It Out,* pg. 37 Laboratory Manual, viii, e. g. 11b, 18a, 20c Student Workbook: 11-12, 20-21, 38
9-12 INQH Intellectual Honesty	Scientists carefully *evaluate* sources of information for *reliability* before using that information. When referring to the *ideas* or findings of others, they cite their sources of information.	Provide appropriate citations for all *ideas*, findings, and information used in any and all written reports. *Explain* the consequences for failure to provide appropriate citations.	Ch 1, pg 12 *Explore It,* pg 198, 260, 264 *Extend It,* e. g. pg 96 *SciLinks,* pg 3 *Unit Project*, ATE pg 2, 278 Laboratory Manual, viii, e. g. 1b, 3c, 6b Student Workbook, e. g.18, 20-21, 66 Student CD: Presentation Builder
EALR 3: Application (APP) - Combining Science & Technology to Solve Problems			
9-12 APPA	*Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.	*Describe* ways that scientific *ideas* have influenced society or the development of differing cultures. List *questions* that scientists *investigate* that are stimulated by the needs of society (e.g., medical research, *global climate* change).	Ch 1, pg 12 Ch 3, pg 35-38 Ch 5, pg 96-97 Ch 8, pg. 149 Ch 18, pg. 321 Ch 24, pg 443 *People in Science*, pg 9 *Connection*, e. g. pg 27, 38, 443 *Science Journal*, pg 80-81, 120-121, 152-153, 206-207, 276-277, 326-327, 460-461 *Reading Links*, ATE e.g. pg 19, 33, 55, 79, 105, 119, 133, 151, 167, 185, 205, 220, *SciLinks,* e.g. pg 3, 20, 34, 56, 83, 106, 123, 134, 155, 168, 186, 209, 224, 240 *Unit Project*, ATE pg 2, 82, 122, 154, 208, 278, 328 Laboratory Manual, e. g. 5c, 18a Student Workbook, 19, 20-21, 33 Student CD: Presentation Builder
9-12 APPB	The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different solutions.	Work collaboratively with other students to *generate ideas* for solving a problem. Identify *criteria* and *constraints*, research the problem, and *generate* several possible *solutions*.	Ch 1, pg 8 *Explore It,* pg 9, 198, 220 *Extend It*, pg 96, 165, 202, 215 Laboratory Manual, viii, e. g. 1c

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9-12 APPC	Choosing the best *solution* involves comparing alternatives with respect to *criteria* and *constraints*, then building and testing a *mode* or other representation of the final design.	Choose the best *solution* for a problem, create a model or drawing of the final design, and devise a way to test it. Redesign the *solution*, if necessary, then present it to peers.*b	Ch 1, pg 8-10 *Explore It,* pg 9, 198, 220 *Figure It Out*, pg 37 *Extend It,* e. g. pg 96, 165, 202 *Research and Report*, pg 81, 120, 152, 206, 276, 327, 461 *Unit Project*, ATE pg 2, 82, 122, 154, 208, 278, 328 Laboratory Manual, viii, e. g. 1b, 1c, 3c, 6b, 6c, 8c, 11c, 18a, 18b, 20c 22a Student Workbook, e. g. 40-41, 66-68, 104 Transparency: Reading a Ruler Student CD: Presentation Builder
9-12 APPD	The ability to solve problems is greatly enhanced by use of mathematics and information technologies.	Use proportional reasoning, *functions*, graphing, and estimation to solve problems.*a*b*c Use computers, probes, and software when available to collect, display, and analyze data.	Ch 1, pg 10-11, 13-17 Ch 4, pg 63-64 Ch 17, pg 296 *Explore It,* pg 171, 213, 220, 231, 260, 353, 362 *SciLinks,* e.g. pg 3, 20, 34, 56, 83, 106, 123, 134, 155, 168, 186, 209, 224, 240, *Unit Project*, ATE pg 2, 82, 122, 154, 208, 278, 328 Student Workbook, 19, 26, 161, 168 Laboratory Manual, viii, e. g. 1b, 1c, 3c, 6b, 8c, 11c, 22a Transparency: Reading a Ruler Student CD: Graphic Organizer, Presentation Builder
9-12 APPE	Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All solutions involve consequences, some intended others not.	Analyze a societal issue that may be addressed through *science* and/or *technology*. *Compare* alternative *solutions* by *considering trade-offs* and unintended consequences (e.g., removing dams to increase salmon spawning).	Ch 18, pg 315, 322-323 *Connection*, e. g. pg 322 *Science Journal*, pg 326-327 Laboratory Manual, e. g. 18a Student Workbook, e. g. 20-22 *Reading Links*, ATE e. g. pg 19, 325 *SciLinks,* pg 279, 308 *Unit Project*, ATE pg 278 Student CD: Presentation Builder
9-12 APPF	It is important for all citizens to *apply science* and *technology* to critical issues that influence society.	Critically analyze scientific information in current events to make personal choices, or to inform public-policy decisions.*d	Ch 18, pg 322-323 *Connection*, e. g. pg 27 *Science Journal*, pg 120-121, 152-153, 206-207, 327, 460-461 Laboratory Manual, e. g. 18a Student Workbook : e. g.. 20-21, 66 *Reading Links*, ATE pg 293, 307, 325, 431, 447, 459 *SciLinks,* pg 294, 308, 418, 432, 448 *Unit Project*, ATE pg 278 Student CD: Presentation Builder

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EALR 4: Life Science - Structures and Functions of Living Organisms (LS1) - *Processes Within Cells*			
9-11 LS1A	Carbon-containing *compounds* are the building blocks of life. *Photosynthesis* is the process that plant cells use to combine the energy of sunlight with molecules of carbon dioxide and water to produce energy-rich *compounds* that contain carbon (*food*) and release oxygen.	*Explain how* plant cells use p*hotosynthesis* to produce their own food. Use the following equation to illustrate how plants rearrange *atoms* during *photosynthesis*: 6CO2+6H2O+light energy —> C6H12O6+6O2 *a *Explain* the importance of *photosynthesis* for both plants and animals, including humans.	Ch 2, pg 25, 28 Ch 3, pg 43, 48, 50 Ch 9, pg 161-163 Ch 11, pg 192, 196-198 Student Workbook, 19-21, 58 Laboratory Manual, 9a, 9b Transparencies: Photosynthesis, Leaf Cross Section
9-11 LS1B	The gradual combustion of carbon-containing *compounds* within cells, called *cellular respiration*, provides the primary energy source of living o*rganisms*; and the combustion of carbon by burning of *fossil fuels* provides the primary energy source for most of modern society.	*Explain how* the process of *cellular respiration* is similar to the burning of *fossil fuels* (e.g., both processes involve combustion of carbon containing c*ompounds* to transform chemical energy to a different *form* of energy). *a	Ch 2, pg 25, 28 Ch 3, pg 49-50 Ch 9, pg 162 Ch 11, pg 191 Ch 16, pg 287 Ch 20, pg 353 Ch 21, pg 386 Student Workbook, 19-21 Laboratory Manual, 9a, 9b
9-11 LS1C	Cells contain specialized parts for determining its essential *functions*, such as regulation of cellular activities, energy capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement.	Draw, label, and *describe* the *functions* of components of essential structures within cells (e.g., cellular *membrane*, *nucleus*, *chromosome*, *chloroplast*, *mitochondrion*, *ribosome*)	Ch 2, pg 22 Ch 3, pg 39-47 Ch 7, pg 129 Ch 8, pg 136-137 Ch 19, pg 331 Transparencies: Animal Cell, Plant Cell Student Workbook, 17, 20-21, 50-51 Laboratory Manual, 3b
9-11 LS1D	The cell is surrounded by a membrane that separates the interior of the cell from the outside world and determines which substances may enter and which may leave the cell.	*Describe* the structure of the cell membrane and how the membrane regulates the flow of materials into and out of the cell.	Ch 2, pg 22 Ch 3, pg 39, 43-47 Ch 19, pg 331 *Figure It Out,* pg 45 Student Workbook, 19-20 Laboratory Manual, 3c Transparency: Photosynthesis
9-11 LS1E	The *genetic information* responsible for inherited *characteristics* is encoded in the DNA molecules in *chromosomes*. DNA is composed of four subunits (A,T,C,G). The sequence of subunits in a *gene* specifies the amino acids needed to make a protein. *Proteins* express inherited traits (e.g., eye color, hair texture) and carry out most cell *function*.	*Describe* how DNA molecules are long chains linking four subunits (smaller molecules) whose sequence encodes *genetic information*. Illustrate the process by which *gene* sequences are copied to produce proteins.	Ch 2, pg 31 Ch 4, pg 65-66, 71-73 Ch 5, pg 94 Student Workbook, 26, 28, 156 Laboratory Manual, 4c, 4b Transparency: Combination of Alleles

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9-11 LS1F	All of the *functions* of the cell are based on *chemical reactions*. Food molecules are broken down to provide the energy and the chemical constituents needed to synthesize other molecules. Breakdown and synthesis are made possible by proteins called *enzyme*s. Some of these *enzymes* enable the cell to store energy in special chemicals, such as ATP, that are needed to drive the many other *chemical reactions* in a cell.	*Explain how* cells break down food molecules and use the constituents to synthesize proteins, sugars, fats, DNA and many other molecules that cells require. *Describe* the role that *enzymes* play in the breakdown of food molecules and synthesis of the many different molecules needed for cell structure and *function*. *Explain how* cells extract and store energy from food molecules.	Ch 3, pg 41-42, 39 Ch 19, pg 331 Ch 20, pg 353 Ch 21, pg 380-383, 385-386 Student Workbook, 18, 135-141 Laboratory Manual, 21b
9-11 LS1G	Cells use the DNA that forms their genes to encode *enzymes* and other proteins that allow a cell to grow and divide to produce more cells, and respond to the *environment*.	*Explain that* regulation of cell *functions* can occur by changing the activity of proteins within cells and/or by changing whether and how much particular genes are expressed.	Ch 3, pg 42, 53 Ch 4, pg 73 Ch 18, pg 318 Student Workbook, 20 Laboratory Manual, 2c
9-11 LS1H	Genes are carried on *chromosomes*. Animal cells contain two copies of each *chromosome* with *genetic information* that regulate body structure and *functions*. Cells divide by a process called *mitosis,* in which the *genetic information* is copied so that each new cell contains exact copies of the original *chromosomes*.	*Describe* and *model* the process of *mitosis*, in which one cell divides, producing two cells, each with copies of both *chromosomes* from each pair in the original cell.	Ch 3, pg 53 Ch 4, pg 67 Ch 7, pg 130 Student Workbook, 17, 23, 27, 42 Transparency: Mitosis
9-11 LS1I	Egg and sperm cells are formed by a process called *meiosis* in which each resulting cell contains only one representative *chromosome* from each pair found in the original cell. *Recombination* of *genetic information* during *meiosis* scrambles the *genetic information*, allowing for new *genetic* combinations and *characteristics* in the offspring. Fertilization restores the original number of *chromosome* pairs and reshuffles the *genetic information*, allowing for *variation* among offspring.	*Describe* and *model* the processes of *meiosis*, in which egg and sperm cells are formed with only one set of *chromosomes* from each parent. *Model* and *explain* the process of *genetic recombination* that may occur during *meiosis* and how this then results in differing *characteristics* in offspring. *Describe* the process of fertilization that restores the original *chromosome* number, while reshuffling the *genetic information*, allowing for *variation* among offspring. *Predict* the outcome of specific *genetic* crosses involving two *characteristics* *a,*b	Ch 4, pg 57-59, 63-64, 66, 68-69, 70 Ch 5, pg 87 Ch 10, pg 169-170 Ch 23, pg 418-419 *Science Journal*, pg 120-121 Student Workbook, 23, 27 Laboratory Manual, 23c Transparency, Meiosis

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EALR 4: Life Science - Ecosystems (LS2) - *Maintenance and Stability of Populations*			
9-11 LS2A	*Matter* and *energy* is *transferred* and cycled through living and nonliving components in *ecosystems*. The cycling of *matter* and *energy* is important for maintaining the health and sustainability of an *ecosystem*.	*Explain how* plants and animals cycle carbon and nitrogen within an *ecosystem. Explain how* both matter and energy cycle in ecosystems, resulting in the formation of differing chemical compounds and heat.	Ch 2, pg 25, 28 Ch 3, pg 48-50 Ch 8, pg 142, 149 Ch 16, pg 283-288 Student Workbook, 104-105, , 106, 109-113 Laboratory Manual, 16b Transparency: Food Web in a Desert Community, Earth's 7 Major Biomes
9-11 LS2B	Living *organisms* have the capacity to produce very large *populations*. *Population density* is the number of individuals of a particular *population* living in a given amount of space.	*Evaluate* the conditions necessary for rapid *population growth* (e.g., given adequate living and nonliving resources and no disease or predators, *populations* of an *organism* increase at rapid rates). Given *ecosystem* data, calculate the *population density* of an *organism*.*a	Ch 16, pg 281-282 Ch 18, pg 308-312, 315, 319 Student Workbook, 104-105, 114-115, 119, 121 Laboratory Manual, 18b Transparency: Carrying Capacity
9-11 LS2C	*Population growth* is limited by the availability of matter and energy found in resources, the size of the *environment*, and the presence of competing and/or predatory *organisms*.	*Explain factors,* to include matter and energy, in the *environment* that limit the growth of plant and animal *populations* in natural *ecosystems*.*a	Ch 2, pg 23- 28 Ch 5, pg 84-87, 102-103 Ch 9, pg 157 Ch 16, pg 280-283, 289, 291 Ch 17, pg 296 Ch 18, pg 308-312, 314-315 *Science Journal* pg 207, 327 Laboratory Manual, 9c, 16a, 16c, 18b Student Workbook, 29, 34, 58, 104, 106, 107, 120-121 Transparencies: Carrying Capacity; Food Web in a Desert Community
9-11 LS2D	Scientists represent *systems* in the *natural world*, using mathematical *models*.	Draw a *systems* diagram to illustrate and *explain* why introduced (nonnative) *species* often do poorly and have a tendency to die out, as well as why they sometimes do very well and *force* out native *species*. *a, *b	Ch 11, pg 207 Ch 16, pg 285 Ch 18, pg 312, 319, 323, 325 Student Workbook, 11, 104, 107, 121 Laboratory Manual, 16a, 16c
9-11 LS2E	Interrelationships of *organisms* may *generate ecosystems* that are stable for hundreds or thousands of years. *Biodiversity* refers to the different kinds of *organisms* in specific *ecosystems* or on the planet as a whole.	*Compare* the *biodiversity* of *organisms* in different types of *ecosystems* (e.g., rain forest, grassland, desert) noting the interdependencies and interrelationships among the *organisms* in these different *ecosystems*.	Ch 16, pg 284-285, 290 Ch 17, pg 294-295, 298-305 *Science Journal* , pg 327 *Connections,* pg 291 *Research and Report*, pg 327 Student Workbook, 104 Transparencies Earth's Major Biomes; Food Web in the Desert; Wetland Losses in the U.S.

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9-11 LS2F	The *concept* of *sustainable development* supports adoption of policies that enable people to obtain the resources they need today, without limiting the ability of future *generations* to meet their own needs. Sustainable processes include substituting renewable for nonrenewable resources, recycling, and using fewer resources.	*Explain how* scientific *concepts* and findings relate to a resource issue currently under discussion in the state of Washington (e.g., removal of dams to facilitate salmon spawning in rivers; construction of *wind* farms).* a,*b,*c. *Explain how* the *concept* of *sustainable development* may be applied to a current resource issue in the state of Washington.*a,*b,*c.	Ch18 , pg 315, 320-323 *Science Journal* pg 327 *Connections,* pg 152, 322 Student Workbook, 119-121 Transparency: Wetland Losses in the U.S
EALR 4: Life Science - Biological Evolution (LS3) - *Mechanisms of Evolution*			
9-11 LS3A	Biological *evolution* is due to: (1) *genetic variability* of offspring due to *mutations* and *genetic recombination*, (2) the potential for a *species* to increase its numbers, (3) a finite supply of resources, and (4) *selection* by the *environment* for those offspring better able to survive and produce offspring.	*Explain* biological *evolution* as the consequence of the *interactions* of four *factors*: *population growth*, inherited variability of offspring, a finite supply of resources, and *natural selection* by the *environment* of offspring better able to survive and reproduce. *Predict* the *effect* on a *species* if one of these *factors* should change.*a	Ch 5, pg 84-86, 100-103 Ch 16, pg 289-290 Ch 17, pg 296 Ch 18, p 309-310, 316-318 Ch 24, pg 436 Laboratory Manual, 5c, 24c *Science Journal*, pg 121 Student Workbook, 29-31, 119-121
9-11 LS3B	Random changes in the *genetic* makeup of cells and *organisms* (*mutations*) can cause changes in their physical *characteristics* or behaviors. If the *genetic mutations* occur in eggs or sperm cells, the changes will be inherited by offspring. While many of these changes will be harmful, a small minority may allow the offspring to better survive and reproduce.	*Describe* the molecular process by which *organisms* pass on physical and behavioral traits to offspring, as well as the *environmental* and *genetic factors* that cause minor differences (*variations*) in offspring or occasional "mistakes" in the copying of *genetic* material that can be inherited by future *generations* (*mutations*). *Explain how* a *genetic mutation* may or may not allow a *species* to survive and reproduce in a given *environment*.	Ch 4, pg 58-62, 70, 74-77 Ch 5, pg 87 Ch 23, pg 420 *Science Journal*, pg 121, 206 Student Workbook, 34, 156 Laboratory Manual, 5b
9-11 LS3C	The great *diversity* of *organisms* is the result of more than 3.5 billion years of *evolution* that has filled available *ecosystem niches* on Earth with life forms.	*Explain how* the millions of different *species* alive today are related by descent from a *common* ancestor. *Explain that* genes in *organisms* that are very different (e.g., yeast, flies, and mammals) can be very similar because these *organisms* all share a *common* ancestor.	Ch 5, pg 94-99 Ch 9, pg 158-159 Ch 13, pg 230 Ch 14, pg 243 Ch 15, pg 270 Ch 16, pg 290-291 Student Workbook, 33, 105 Transparency: Geological Time Scale

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9-11 LS3D	The *fossil* record and anatomical and molecular similarities observed among diverse *species* of living *organisms* provide *evidence* of biological *evolution*.	Using the *fossil* record and anatomical and/or molecular (DNA) similarities as *evidence*, formulate a *logical argument* for biological *evolution* as an explanation for the development of a representative *species* (e.g., birds, horses, elephants, whales).	Ch 5, pg 89-94, 96-99, 101, 100-103 Ch 6, pg 108-109 Ch 9, pg 158-159 Ch 10, pg 169 Ch 13, pg 225, 230 Ch 14, pg 243 Ch 15, pg 261, 270 *Connection,* pg 159 *Science Journal*, pg 327, 152 Student Workbook, 31, 33, 34 Transparency: Geological Time Scale
9-11 LS3E	*Biological classifications* are based on how *organisms* are related, reflecting their evolutionary history. Scientists *infer relationships* from physiological traits, *genetic information*, and the ability of two *organisms* to produce fertile offspring.	Classify *organisms*, using similarities and differences in physical and functional *characteristics*. *Explain* similarities and differences among closely related *organisms* in terms of biological *evolution* (e.g., "Darwin's finches" had different beaks due to food sources on the islands where they evolved).	Ch 5, pg 87, 90-94, 100-103 Ch 6, pg 106-117 Student Workbook, 36, 38 Laboratory Manual, 6b Transparencies: Classification System, Domains and Kingdoms, Geological Time Scale