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| Publisher: | Glencoe/McGraw-Hill |
| Program Title: | *Life Science* © 2005 |
| Components: | Student Edition (SE)<br>Teacher Wraparound Edition (TWE) |
| Grade Level(s): | 9th - 12th Grade |
| Intended Audience: | DISCIPLINE **- BIOLOGY** |

**Standards Map - Basic Comprehensive Program**
**Grades Nine Through Twelve - Science**

**Pursuant to the State Board approved, *Science Content Standards for California Public Schools, Kindergarten Through Grade Twelve***
**Standards that all students are expected to achieve in the course of their studies are unmarked.**
**Standards that all students should have the opportunity to learn are marked with an asterisk (*).**

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| | | | | | | Meets Standard | | |
| Grade | Standard # | Text of Standard | Introduced | Practiced | Taught to Mastery | Y | N | Local Education Agency Evaluator Notes |
| **DISCIPLINE** | | **BIOLOGY/LIFE SCIENCES** | | | | | | |
| | | **Cell Biology**<br>The fundamental life processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of the organism's cells. As a basis for understanding this concept: | | | | | | |
| 9-12 | 1a | Students know cells are enclosed within semipermeable membranes that regulate their interaction with their surroundings. | SE: 40 | SE: 74-77, 79-80, 89, 187<br>TWE: 74-77, 79-80 | SE: 70-79, 89, 187<br>TWE: 74-77, 79 | | | |
| 9-12 | 1b | Students know enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions, and the pH of the surroundings. | SE: 71, 80-83, 653<br>TWE: 71 | SE: 71, 83, 524-528, 653<br>TWE: 71, 524-525 | SE: 80-83, 112, 524-528, 653<br>TWE: 524-525 | | | |

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| 9-12 | 1c | Students know how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure. | SE: 39, 52, 658<br>TWE: 39 | SE: 52-54, 658 | SE: 39, 52-55, 187, 658, 662-663<br>TWE: 39 | | | |
| 9-12 | 1d | Students know the central dogma of molecular biology outlines the flow of information from transcription of ribonucleic acid (RNA) in the nucleus to translation of proteins on ribosomes in the cytoplasm. | SE: 40-42<br>TWE: 40 | SE: 112-114<br>TWE: 112-113 | SE: 112-115<br>TWE: 112-113, 115 | | | |
| 9-12 | 1e | Students know the role of the endoplasmic reticulum and Golgi apparatus in the secretion of proteins. | SE: 43<br>TWE: 43 | SE: 43<br>TWE: 43 | SE: 43<br>TWE: 43 | | | |
| 9-12 | 1f | Students know usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide. | SE: 42 | SE: 82, 85<br>TWE: 82 | SE: 304-307<br>TWE: 304-307 | | | |
| 9-12 | 1g | Students know the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide. | SE: 42<br>TWE: 42 | SE: 307-309<br>TWE: 307-308 | SE: 307-309<br>TWE: 307-308 | | | |
| 9-12 | 1h | Students know most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors. | SE: 71, 113<br>TWE: 113 | SE: 513-515<br>TWE: 513 | SE: 513-515<br>TWE: 513 | | | |
| 9-12 | 1i* | Students know how chemiosmotic gradients in the mitochondria and chloroplast store energy for ATP production. | See Glencoe's *Biology: The Dynamics of Life*, California Edition © 2005. | | | | | |

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| 9-12 | 1j* | Students know how eukaryotic cells are given shape and internal organization by a cytoskeleton or cell wall or both. | SE: 39<br>TWE: 39 | SE: 39-40, 187, 190, 240-243<br>TWE: 39, 243 | SE: 39-40, 187, 190, 240-243<br>TWE: 39, 243 | | | |
| | | **Genetics**<br>Mutation and sexual reproduction lead to genetic variation in a population. As a basis for understanding this concept: | | | | | | |
| 9-12 | 2a | Students know meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type. | SE: 105 | SE: 105-107<br>TWE: 106-107 | SE: 105-107, 109<br>TWE: 106-107, 109 | | | |
| 9-12 | 2b | Students know only certain cells in a multicellular organism undergo meiosis. | SE: 104 | SE: 104-105<br>TWE: 105 | SE: 104-105<br>TWE: 105 | | | |
| 9-12 | 2c | Students know how random chromosome segregation explains the probability that a particular allele will be in a gamete. | SE: 127<br>TWE: 127 | SE: 127-136<br>TWE: 127, 129, 130, 132-133, 135 | SE: 127-132, 134-136<br>TWE: 127, 129, 130, 132-133, 135 | | | |
| 9-12 | 2d | Students know new combinations of alleles may be generated in a zygote through the fusion of male and female gametes (fertilization). | SE: 104, 633<br>TWE: 105 | SE: 104-105, 107, 126-127, 633<br>TWE: 105 | SE: 104-105, 107, 126-127, 633<br>TWE: 105 | | | |
| 9-12 | 2e | Students know why approximately half of an individual's DNA sequence comes from each parent. | SE: 126-127<br>TWE: 127 | SE: 126-127<br>TWE: 127 | SE: 126-127, 132<br>TWE: 127 | | | |
| 9-12 | 2f | Students know the role of chromosomes in determining an individual's sex. | SE: 138 | SE: 138 | SE: 138 | | | |

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| 9-12 | 2g | Students know how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents. | SE: 128-132 TWE: 128-132 | SE: 128-132, 135, 139 TWE: 128-133 | SE: 128-132, 135, 139-140 TWE: 128-133 | | | |
| 9-12 | 3 | A multicellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization. As a basis for understanding this concept: | | | | | | |
| 9-12 | 3a | Students know how to predict the probable outcome of phenotypes in a genetic cross from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive). | SE: 128-132, 135, 139 TWE: 128-133 | SE: 128-132, 135, 139 TWE: 128-133 | SE: 128-132, 135, 139 TWE: 128-133, 138-139 | | | |
| 9-12 | 3b | Students know the genetic basis for Mendel's laws of segregation and independent assortment. | SE: 126-129 TWE: 127, 129 | SE: 127-133 TWE: 127, 129-133 | SE: 127-132 TWE: 127, 129-132 | | | |
| 9-12 | 3c* | Students know how to predict the probable mode of inheritance from a pedigree diagram showing phenotypes. | SE: 139-140 TWE: 139 | SE: 139-140 TWE: 139 | SE: 139-140 TWE: 139 | | | |
| 9-12 | 3d* | Students know how to use data on frequency of recombination at meiosis to estimate genetic distances between loci and to interpret genetic maps of chromosomes. | See Glencoe's *Biology: The Dynamics of Life,* California Edition © 2005. | | | | | |

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| 9-12 | 4 | Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. As a basis for understanding this concept: | | | | | | |
| 9-12 | 4a | Students know the general pathway by which ribosomes synthesize proteins, using tRNAs to translate genetic information in mRNA. | SE: 112-113 TWE: 113 | SE: 112-114 TWE: 113 | SE: 112-114 TWE: 113 | | | |
| 9-12 | 4b | Students know how to apply the genetic coding rules to predict the sequence of amino acids from a sequence of codons in RNA. | SE: 111-113 TWE: 113 | SE: 111-113 TWE: 113 | SE: 111-113 TWE: 113 | | | |
| 9-12 | 4c | Students know how mutations in the DNA sequence of a gene may or may not affect the expression of the gene or the sequence of amino acids in an encoded protein. | SE: 114 TWE: 114 | SE: 114-115, 137-139 TWE: 114, 137 | SE: 114-115, 137-140 TWE: 114, 137 | | | |
| 9-12 | 4d | Students know specialization of cells in multicellular organisms is usually due to different patterns of gene expression rather than to differences of the genes themselves. | SE: 114 | SE: 114 | SE: 114 | | | |
| 9-12 | 4e | Students know proteins can differ from one another in the number and sequence of amino acids. | SE: 113 TWE: 113 | SE: 113 TWE: 113 | SE: 113 TWE: 113 | | | |
| 9-12 | 4f* | Students know why proteins having different amino acid sequences typically have different shapes and chemical properties. | See Glencoe's *Biology: The Dynamics of Life,* California Edition © 2005. | | | | | |

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| 9-12 | 5 | The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells. As a basis for understanding this concept: | | | | | | |
| 9-12 | 5a | Students know the general structures and functions of DNA, RNA, and protein. | SE: 111-113 TWE: 110-113 | SE: 111-113 TWE: 110-113 | SE: 111-113 TWE: 110-113 | | | |
| 9-12 | 5b | Students know how to apply base-pairing rules to explain precise copying of DNA during semiconservative replication and transcription of information from DNA into mRNA. | SE: 112-113 TWE: 113 | SE: 112-113 TWE: 113 | SE: 112-113 TWE: 113 | | | |
| 9-12 | 5c | Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products. | SE: 141-143, 228, 294 TWE: 142, 228, 294 | SE: 141-143, 228, 294 TWE: 142, 228, 294 | SE: 141-143, 228, 294 TWE: 142, 228, 294 | | | |
| 9-12 | 5d* | Students know how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, ligation, and transformation) is used to construct recombinant DNA molecules. | SE: 141 | SE: 141-142 TWE: 142 | SE: 141-143 TWE: 142-143 | | | |
| 9-12 | 5e* | Students know how exogenous DNA can be inserted into bacterial cells to alter their genetic makeup and support expression of new protein products. | SE: 141 | SE: 141-143 TWE: 142 | SE: 141-143 TWE: 142-143 | | | |
| | | **Ecology** Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept: | | | | | | |
| 9-12 | 6a | Students know biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats. | SE: 684-685 TWE: 685 | SE: 684-685, 740-743 TWE: 685, 741-743 | SE: 684-685, 740-743 TWE: 685, 741-743 | | | |

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| 9-12 | 6b | Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. | SE: 743 TWE: 694, 743 | SE: 702-703, 743, 752 TWE: 694, 702-703, 743, 752 | SE: 743, 752 TWE: 694, 743, 752 | | | |
| 9-12 | 6c | Students know how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death. | SE: 692 | SE: 692-695, 702-703 TWE: 696-697, 702-703 | SE: 692-695 TWE: 696-697, 702-703 | | | |
| 9-12 | 6d | Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration. | SE: 305, 306, 720-725 TWE: 307-309, 721-725 | SE: 305-309, 720-725 TWE: 307-308, 721-725 | SE: 305-309, 720-725 TWE: 307-309, 721-725 | | | |
| 9-12 | 6e | Students know a vital part of an ecosystem is the stability of its producers and decomposers. | SE: 696-697 | SE: 696-697 | SE: 696-697 | | | |
| 9-12 | 6f | Students know at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid. | SE: 727 TWE: 727 | SE: 727-729 TWE: 727-728 | SE: 727-729 TWE: 727-729 | | | |
| 9-12 | 6g* | Students know how to distinguish between the accommodation of an individual organism to its environment and the gradual adaptation of a lineage of organisms through genetic change. | SE: 158-159 | SE: 158-159 TWE: 158 | SE: 158-159 TWE: 158 | | | |

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| | | **Evolution**<br>The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept: | | | | | | |
| 9-12 | 7a | Students know why natural selection acts on the phenotype rather than the genotype of an organism. | SE: 156-157 | SE: 156-157<br>TWE: 157 | SE: 156-157<br>TWE: 157 | | | |
| 9-12 | 7b | Students know why alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool. | SE: 130-131 | SE: 130-133<br>TWE: 130 | SE: 130-133<br>TWE: 130, 132 | | | |
| 9-12 | 7c | Students know new mutations are constantly being generated in a gene pool. | SE: 114-115 | SE: 114-115<br>TWE: 114 | SE: 114-115, 137<br>TWE: 114, 137 | | | |
| 9-12 | 7d | Students know variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions. | SE: 158 | SE: 158-159, 174-175<br>TWE: 158, 175 | SE: 158-159<br>TWE: 158 | | | |
| 9-12 | 7e* | Students know the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature. | See Glencoe's *Biology: The Dynamics of Life,* California Edition © 2005. | | | | | |

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| 9-12 | 7f* | Students know how to solve the Hardy-Weinberg equation to predict the frequency of genotypes in a population, given the frequency of phenotypes. | See Glencoe's *Biology: The Dynamics of Life,* California Edition © 2005. | | | | | |
| 9-12 | 8 | Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for understanding this concept: | | | | | | |
| 9-12 | 8a | Students know how natural selection determines the differential survival of groups of organisms. | SE: 156-157 | SE: 156-159, 162 TWE: 156-157, 162 | SE: 156-159 TWE: 156-157 | | | |
| 9-12 | 8b | Students know a great diversity of species increases the chance that at least some organisms survive major changes in the environment. | SE: 158 | SE: 158 | SE: 158 | | | |
| 9-12 | 8c | Students know the effects of genetic drift on the diversity of organisms in a population. | SE: 159 | SE: 159 | SE: 159 | | | |
| 9-12 | 8d | Students know reproductive or geographic isolation affects speciation. | SE: 159 | SE: 159 | SE: 159 | | | |
| 9-12 | 8e | Students know how to analyze fossil evidence with regard to biological diversity, episodic speciation, and mass extinction. | SE: 163, 167 | SE: 163-167, 171, 228, 397, 406, 435 TWE: 164-167 | SE: 163-167, 171, 228, 397, 406, 435 TWE: 164-167, 169 | | | |

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| 9-12 | 8f* | Students know how to use comparative embryology, DNA or protein sequence comparisons, and other independent sources of data to create a branching diagram (cladogram) that shows probable evolutionary relationships. | SE: 160, 167-169 | SE: 160, 167-169 | SE: 160, 167-169 | | | |
| 9-12 | 8g* | Students know how several independent molecular clocks, calibrated against each other and combined with evidence from the fossil record, can help to estimate how long ago various groups of organisms diverged evolutionarily from one another. | See Glencoe's *Biology: The Dynamics of Life,* California Edition © 2005. | | | | | |
| | | **Physiology**<br>As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept: | | | | | | |
| 9-12 | 9a | Students know how the complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide. | SE: 523, 541, 550, 556, 568, 577 | SE: 523-531, 541-545, 550-551, 556, 568-569, 571, 577-581, 583 TWE: 523, 527-528, 531, 583 | SE: 523-529, 541-545, 548, 550-551, 555-556, 568-569, 571, 576-582 TWE: 523, 527-529, 548, 555, 576, 582 | | | |

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| 9-12 | 9b | Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment. | SE: 594 | SE: 594-601 TWE: 595-597, 600-601 | SE: 594-602 TWE: 595-597, 600-602 | | | |
| 9-12 | 9c | Students know how feedback loops in the nervous and endocrine systems regulate conditions in the body. | SE: 599-601 | SE: 599-601, 626 | SE: 599-602, 626 TWE: 602 | | | |
| 9-12 | 9d | Students know the functions of the nervous system and the role of neurons in transmitting electrochemical impulses. | SE: 594-595 | SE: 594-597 TWE: 595-597 | SE: 594-597, 602 TWE: 595-597, 602 | | | |
| 9-12 | 9e | Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response. | SE: 595-596 | SE: 594-601 TWE: 594-601 | SE: 594-601 TWE: 594-601 | | | |
| 9-12 | 9f* | Students know the individual functions and sites of secretion of digestive enzymes (amylases, proteases, nucleases, lipases), stomach acid, and bile salts. | SE: 524 | SE: 524-525, 527 TWE: 524-525 | SE: 524-525, 527 TWE: 524-525 | | | |
| 9-12 | 9g* | Students know the homeostatic role of the kidneys in the removal of nitrogenous wastes and the role of the liver in blood detoxification and glucose balance. | SE: 528, 578 | SE: 528, 578-581, 583 TWE: 578-581, 583 | SE: 528, 578-582 TWE: 578-582 | | | |
| 9-12 | 9h* | Students know the cellular and molecular basis of muscle contraction, including the roles of actin, myosin, $Ca^{+2}$ , and ATP. | SE: 495 | SE: 495 | SE: 495 | | | |
| 9-12 | 9i* | Students know how hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms. | SE: 622, 630, 640 | SE: 622-627, 630-631, 640 TWE: 623-625, 630 | SE: 622-627, 630-631, 640 TWE: 623-626, 630 | | | |

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| 9-12 | 10 | Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response: | | | | | | |
| 9-12 | 10a | Students know the role of the skin in providing nonspecific defenses against infection. | SE: 497, 652 | SE: 497, 652 | SE: 497, 652 | | | |
| 9-12 | 10b | Students know the role of antibodies in the body's response to infection. | SE: 654 | SE: 654-655 TWE: 654 | SE: 654-655 TWE: 654, 656 | | | |
| 9-12 | 10c | Students know how vaccination protects an individual from infectious diseases. | SE: 655-656 TWE: 655 | SE: 655-656 TWE: 655 | SE: 655-656 TWE: 655 | | | |
| 9-12 | 10d | Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections. | SE: 657-658, 660-664 | SE: 657-658, 660-665 TWE: 657-658, 660-665 | SE: 657-658, 660-664 TWE: 657-658, 660-664 | | | |
| 9-12 | 10e | Students know why an individual with a compromised immune system (for example, a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign. | SE: 663 | SE: 663 | SE: 663 | | | |
| 9-12 | 10f* | Students know the roles of phagocytes, B-lymphocytes, and T-lymphocytes in the immune system. | SE: 556, 654 | SE: 556-557, 654 TWE: 557 | SE: 556-557, 654 TWE: 557 | | | |

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| **DISCIPLINE** | | **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 four strands, students should develop their own questions and perform investigations. Students will: | | | | | | |
| 9-12 | 1a | Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data. | SE: 46, 56-57, 103, 116-117, 262-263, 446-447, 502-503, 760-761 | SE: 46, 56-57, 103, 116-117, 262-263, 446-447, 502-503, 760-761 | SE: 46, 56-57, 103, 116-117, 262-263, 446-447, 502-503, 760-761 | | | |
| 9-12 | 1b | Identify and communicate sources of unavoidable experimental error. | TWE: 29, 37, 87, 145, 175, 293, 319, 419, 531, 559, 643 | TWE: 29, 37, 87, 145, 175, 293, 319, 419, 531, 559, 643 | TWE: 29, 37, 87, 145, 175, 293, 319, 419, 531, 559, 643 | | | |
| 9-12 | 1c | Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions. | SE: 318-319, 672-673, 702-703 TWE: 29, 37, 87, 145, 175, 419, 531 | SE: 318-319, 672-673, 702-703 TWE: 29, 37, 87, 145, 175, 419, 531 | SE: 318-319, 672-673, 702-703 TWE: 29, 37, 87, 145, 175, 419, 531 | | | |
| 9-12 | 1d | Formulate explanations by using logic and evidence. | SE: 28-29, 174-175, 292-293, 310, 530-531 | SE: 28-29, 174-175, 292-293, 310, 530-531 | SE: 28-29, 174-175, 292-293, 310, 530-531 | | | |

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| 9-12 | 1e | Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions. | SE: 487 | SE: 487 | SE: 487 | | | |
| 9-12 | 1f | Distinguish between hypothesis and theory as scientific terms. | SE: 8, 10<br>TWE: 10 | SE: 8, 10<br>TWE: 10 | SE: 8, 10<br>TWE: 10 | | | |
| 9-12 | 1g | Recognize the usefulness and limitations of models and theories as scientific representations of reality. | SE: 133, 792-793<br>TWE: 133, 792-793 | SE: 133, 792-793<br>TWE: 133, 792-793 | SE: 133, 792-793<br>TWE: 133, 792-793 | | | |
| 9-12 | 1h | Read and interpret topographic and geologic maps. | See Glencoe's *Earth Science* © 2005. | | | | | |
| 9-12 | 1i | Analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem). | SE: 160, 166, 740-743<br>TWE: 160, 165, 166, 740-743 | SE: 160, 166, 740-743<br>TWE: 160, 165, 166, 740-743 | SE: 160, 166, 740-743<br>TWE: 160, 165, 166, 740-743 | | | |
| 9-12 | 1j | Recognize the issues of statistical variability and the need for controlled tests. | SE: 133, 292-293<br>TWE: 133 | SE: 133, 292-293<br>TWE: 133 | SE: 133, 292-293<br>TWE: 133 | | | |
| 9-12 | 1k | Recognize the cumulative nature of scientific evidence. | SE: 19-21, 51, 126-143, 154-161, 612-613, 657-660<br>TWE: 156 | SE: 19-21, 51, 126-143, 154-161, 612-613, 657-660<br>TWE: 156 | SE: 19-21, 51, 126-143, 154-161, 612-613, 657-660<br>TWE: 156 | | | |

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| Grade | Standard # | Text of Standard | Introduced | Practiced | Taught to Mastery | Y | N | Local Education Agency Evaluator Notes |
| 9-12 | 1l | Analyze situations and solve problems that require combining and applying concepts from more than one area of science. | SE: 21, 42, 73, 167, 338, 429, 606, 685, 718, 750 TWE: 165, 166 | SE: 21, 42, 73, 167, 338, 429, 606, 685, 718, 750 TWE: 165, 166 | SE: 21, 42, 73, 167, 338, 429, 606, 685, 718, 750 TWE: 165, 166 | | | |
| 9-12 | 1m | Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California. | SE: 248, 262-263, 282, 294, 760-761 TWE: 248, 501 | SE: 248, 262-263, 282, 294, 760-761 TWE: 248, 501 | SE: 248, 262-263, 282, 294, 760-761 TWE: 248, 501 | | | |
| 9-12 | 1n | Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e.g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets). | SE: 19, 51, 155 | SE: 19, 51, 155 | SE: 19, 51, 155 | | | |

Publisher Notes/Additional Comments (note to publishers: please include grade level/standard when listing comments):

** For more information, see Notes.