Publisher:	Glencoe/McGraw-Hill
Program Title:	*Chemistry: Concepts and Applications* © 2005
Components:	Student Edition (SE) Teacher's Wraparound Edition (TWE)
Grade Level(s):	
Intended Audience:	DISCIPLINE**CHEMISTRY**; **DISCIPLINE INVESTIGATION AND EXPERIMENTATION**

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		**CHEMISTRY**						
		Atomic and Molecular Structure The periodic table displays the elements in increasing atomic number and shows how periodicity of the physical and chemical properties of the elements relates to atomic structure. As a basis for understanding this concept:						
9-12	1a	Students know how to relate the position of an element in the periodic table to its atomic number and atomic mass.	SE: 66-68, 87-88, 90-94	SE: 87-88, 90-94, 95, 98-99, 100-101	SE: 87-88, 90-94, 95, 98-99, 100-101			
9-12	1b	Students know how to use the periodic table to identify metals, semimetals, non-metals, and halogens.	SE: 95, 103-105	SE: 95, 102-107, 111-113	SE: 95, 102-107, 111-113, 263-265			
9-12	1c	Students know how to use the periodic table to identify alkali metals, alkaline earth metals and transition metals, trends in ionization energy, electronegativity, and the relative sizes of ions and atoms.	SE: 92-93, 103-106	SE: 92-93, 103-106, 258-261, 263-265, 282-285	SE: 92-93, 103-106, 258-261, 262, 263-265, 266-268, 282-285, 292-295			

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9-12	1d	Students know how to use the periodic table to determine the number of electrons available for bonding.	SE: 98-99, 231-233	SE: 98-99, 231-233, 236-237, 238-239, 242	SE: 98-99, 231-233, 236-237, 238-239, 242, 243-247			
9-12	1e	Students know the nucleus of the atom is much smaller than the atom yet contains most of its mass.	SE: 63-65, 130, 230-231	SE: 63-65, 130, 230-231	SE: 63-65, 130, 230-231			
9-12	1f*	Students know how to use the periodic table to identify the lanthanide, actinide, and transactinide elements and know that the transuranium elements were synthesized and identified in laboratory experiments through the use of nuclear accelerators.	SE: 102-104, 294-295	SE: 102-104, 294-295	SE: 102-104, 294-295			
9-12	1g*	Students know how to relate the position of an element in the periodic table to its quantum electron configuration and to its reactivity with other elements in the table.	SE: 130 TWE: 84-85	SE: 130, 230-235, 238-242 TWE: 84-85, 248-249	SE: 130, 230-235, 238-242, 244-247, 250-251 TWE: 84-85, 248-249			
9-12	1h*	Students know the experimental basis for Thomson's discovery of the electron, Rutherford's nuclear atom, Millikan's oil drop experiment, and Einstein's explanation of the photoelectric effect.	SE: 61-62, 63-66 TWE: 68	SE: 61-62, 63-66, 230-231 TWE: 68	SE: 61-62, 63-66, 230-231 TWE: 68			
9-12	1i*	Students know the experimental basis for the development of the quantum theory of atomic structure and the historical importance of the Bohr model of the atom.	SE: 69-70	SE: 69-70, 230-231, 232	SE: 69-70, 230-231, 232 TWE: 238			
9-12	1j*	Students know that spectral lines are the result of transitions of electrons between energy levels and that these lines correspond to photons with a frequency related to the energy spacing between levels by using Planck's relationship ($E = hv$).	SE: 74-75, 77, 234-235	SE: 74-75, 77, 231, 234-235 TWE: 76	SE: 74-75, 77, 231, 232, 233-235 TWE: 76, 242			

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		Chemical Bonds Biological, chemical, and physical properties of matter result from the ability of atoms to form bonds from electrostatic forces between electrons and protons and between atoms and molecules. As a basis for understanding this concept:						
9-12	2a	Students know atoms combine to form molecules by sharing electrons to form covalent or metallic bonds or by exchanging electrons to form ionic bonds.	SE: 131-135, 172-173, 302-309	SE: 131-135, 140-142, 147, 172-173, 302-309 TWE: 300-301	SE: 131-135, 140-142, 147, 172-173, 302-309, 313-314 TWE: 300-301			
9-12	2b	Students know chemical bonds between atoms in molecules such as H2, CH4, NH3, H2CCH2, N2, Cl2 , and many large biological molecules are covalent.	SE: 138-140, 308-311, 680-689	SE: 138-142, 174-175, 308-311, 670-672, 680-689	SE: 138-142, 174-175, 180-183, 308-311, 315-325, 623-633, 670-672, 680-689			
9-12	2c	Students know salt crystals, such as NaCl, are repeating patterns of positive and negative ions held together by electrostatic attraction.	SE: 134-135, 155-157, 345	SE: 134-135, 136-137, 147, 154-157, 345	SE: 134-135, 136-137, 143, 147, 154-157, 345			
9-12	2d	Students know the atoms and molecules in liquids move in a random pattern relative to one another because the intermolecular forces are too weak to hold the atoms or molecules in a solid form.	SE: 144-145, 147	SE: 144-145, 147, 332-333	SE: 144-145, 147, 332-333, 344			
9-12	2e	Students know how to draw Lewis dot structures.	SE: 79, 98, 142, 308, 315	SE: 79, 98, 133, 139, 142, 175, 308, 315 TWE: 147	SE: 79, 98, 133, 139, 142, 175, 315, 318-324, 629 TWE: 147, 309, 325			

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
9-12	2f*	Students know how to predict the shape of simple molecules and their polarity from Lewis dot structures.	SE: 139, 315-319	SE: 139, 142, 315-319, 330-333 TWE: 147	SE: 139, 142, 315-319, 321-325, 330-333 TWE: 147			
9-12	2g*	Students know how electronegativity and ionization energy relate to bond formation.	SE: 303-306 TWE: 263	SE: 303-306, 308-311 TWE: 263, 310	SE: 303-306, 308-311 TWE: 263, 310			
9-12	2h*	Students know how to identify solids and liquids held together by Van der Waals forces or hydrogen bonding and relate these forces to volatility and boiling/melting point temperatures.	SE: 311, 330-333, 438-439	SE: 311, 330-333, 357, 437-439, 451-454 TWE: 445	SE: 311, 330-333, 344-345, 357, 437-439, 442-443, 451-454 TWE: 445			
		Conservation of Matter and Stoichiometry The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants. As a basis for understanding this concept:						
9-12	3a	Students know how to describe chemical reactions by writing balanced equations.	SE: 192-193, 198-201, 556-559	SE: 192-193, 198-201, 203, 206-207, 542-543	SE: 192-193, 198-201, 203, 206-207, 414-419, 539-541, 556-559, 567-570			
9-12	3b	Students know the quantity one mole is set by defining one mole of carbon 12 atoms to have a mass of exactly 12 grams.	SE: 405-407 TWE: 406	SE: 407 TWE: 406	SE: 407 TWE: 406			
9-12	3c	Students know one mole equals 6.02x1023 particles (atoms or molecules).	SE: 403-407 TWE: 407	SE: 403-407 TWE: 407	SE: 403-407 TWE: 407			

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
9-12	3d	Students know how to determine the molar mass of a molecule from its chemical formula and a table of atomic masses and how to convert the mass of a molecular substance to moles, number of particles, or volume of gas at standard temperature and pressure.	SE: 406-409, 414	SE: 406-409, 412-413, 414-419, 426-427	SE: 406-409, 412-413, 414-419, 426-427			
9-12	3e	Students know how to calculate the masses of reactants and products in a chemical reaction from the mass of one of the reactants or products and the relevant atomic masses.	SE: 406-409 TWE: 410-411	SE: 406-409, 412-413, 414-419 TWE: 410-411, 426-427	SE: 406-409, 412-413, 414-419 TWE: 410-411, 426-427			
9-12	3f*	Students know how to calculate percent yield in a chemical reaction.	SE: 421, 424-425	SE: 421, 422-423, 424-425	SE: 421, 424-425			
9-12	3g*	Students know how to identify reactions that involve oxidation and reduction and how to balance oxidation-reduction reactions.	SE: 552-553, 554-559, 570, 584-587, 599-603	SE: 554-559, 560-561, 567-568, 584-587, 588-595, 599-603, 606-607 TWE: 552-553, 562, 564-565	SE: 552-553, 554-559, 560-561, 562, 563-564, 567-568, 569, 570, 571, 572, 574-575, 584-587, 588-595, 608-615 TWE: 565			
		Gases and their Properties The kinetic molecular theory describes the motion of atoms and molecules and explain the properties of gases. As a basis for understanding this concept:						
9-12	4a	Students know the random motion of molecules and their collisions with a surface create the observable pressure on that surface.	SE: 344, 372-374	SE: 344, 372-374, 382-383, 384-385	SE: 344, 372-374, 382-383, 384-385, 386			
9-12	4b	Students know the random motion of molecules explains the diffusion of gases.	SE: 342	SE: 342, 351-353	SE: 342, 351-353, 360-361			

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
9-12	4c	Students know how to apply the gas laws to relations between the pressure, temperature, and volume of any amount of an ideal gas or any mixture of ideal gases.	SE: 374-375, 382-383, 391-393	SE: 374-375, 382-383, 384-385, 391-393	SE: 374-375, 382-383, 384-385, 386, 391-393, 394-396 TWE: 398			
9-12	4d	Students know the values and meanings of standard temperature and pressure (STP).	SE: 376, 395 TWE: 402	SE: 376, 395 TWE: 402	SE: 376, 395 TWE: 402			
9-12	4e	Students know how to convert between the Celsius and Kelvin temperature scales.	SE: 349-350	SE: 349-350, 789	SE: 349-350, 789			
9-12	4f	Students know there is no temperature lower than 0 Kelvin.	SE: 349-350	SE: 349-350	SE: 349-350			
9-12	4g*	Students know the kinetic theory of gases relates the absolute temperature of a gas to the average kinetic energy of its molecules or atoms.	SE: 342-343, 348-353	SE: 342-343, 348-353, 374-375	SE: 342-343, 348-353, 374-375			
9-12	4h*	Students know how to solve problems by using the ideal gas law in the form $PV = nRT$.	SE: 419-420	SE: 419-420	SE: 419-420			
9-12	4i*	Students know how to apply Dalton's law of partial pressures to describe the composition of gases and Graham's law to predict diffusion of gases.	SE: 343 TWE: 359	SE: 343 TWE: 359	SE: 343 TWE: 359			
		Acids and Bases Acids, bases, and salts are three classes of compounds that form ions in water solutions. As a basis for understanding this concept:						
9-12	5a	Students know the observable properties of acids, bases, and salt solutions.	SE: 480-483 TWE: 498-499, 527, 538-539	SE: 480-483, 487, 488, 501, 503, 504-505 TWE: 498-499, 538-539	SE: 480-483, 487, 488, 501, 503 TWE: 498-499, 527, 538-539			

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
9-12	5b	Students know acids are hydrogen-ion-donating and bases are hydrogen-ion-accepting substances.	SE: 483-486, 526-527 TWE: 498-499	SE: 483-486, 488-489, 501, 503, 504-505, 526-527 TWE: 498-499	SE: 483-486, 488-489, 501, 503, 517, 520, 526-527 TWE: 498-499, 506-507			
9-12	5c	Students know strong acids and bases fully dissociate and weak acids and bases partially dissociate.	SE: 483-486, 497-500	SE: 483-486, 488-489, 497-500 TWE: 517	SE: 483-486, 488-489, 497-500 TWE: 497, 517			
9-12	5d	Students know how to use the pH scale to characterize acid and base solutions.	SE: 500-503 TWE: 535	SE: 500-503, 504-505, 506-508 TWE: 535	SE: 500-503, 504-505, 506-508, 531-533 TWE: 535, 536			
9-12	5e*	Students know the Arrhenius, Brønsted-Lowry, and Lewis acid–base definitions.	SE: 526 TWE: 486, 516, 517, 527	SE: 526 TWE: 486, 516, 517, 527	SE: 526 TWE: 486, 516, 517, 527			
9-12	5f*	Students know how to calculate pH from the hydrogen-ion concentration.	SE: 502 TWE: 503	SE: 502 TWE: 503	SE: 502 TWE: 503			
9-12	5g*	Students know buffers stabilize pH in acid–base reactions.	SE: 531, 532	SE: 531, 532, 533 TWE: 507	SE: 531, 532, 533 TWE: 507			
		Solutions Solutions are homogenous mixtures of two or more substances. As a basis for understanding this concept						
9-12	6a	Students know the definitions of solute and solvent.	SE: 23 TWE: 458	SE: 23, 450, 453 TWE: 454-455, 458, 473	SE: 23, 450, 453 TWE: 454-455, 458, 473			
9-12	6b	Students know how to describe the dissolving process at the molecular level by using the concept of random molecular motion.	SE: 451-454	SE: 451-454, 455	SE: 451-454, 712			

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
9-12	6c	Students know temperature, pressure, and surface area affect the dissolving process.	SE: 459-460, 469 TWE: 453	SE: 459-460, 469 TWE: 453, 459	SE: 459-460, 469 TWE: 453, 459, 469			
9-12	6d	Students know how to calculate the concentration of a solute in terms of grams per liter, molarity, parts per million, and percent composition.	SE: 460-461 TWE: 458	SE: 460-461, 541-544 TWE: 458	SE: 460-461, 541-544 TWE: 458			
9-12	6e*	Students know the relationship between the molality of a solute in a solution and the solution's depressed freezing point or elevated boiling point.	SE: 464-465, 466	SE: 464-465, 466	SE: 464-465, 466			
9-12	6f*	Students know how molecules in a solution are separated or purified by the methods of chromatography and distillation.	SE: 22, 171, 326-327	SE: 22, 171, 312, 326-327, 354-355, 638	SE: 22, 171, 312, 326-327, 354-355, 638			
		Chemical Thermodynamics Energy is exchanged or transformed in all chemical reactions and physical changes of matter. As a basis for understanding this concept:						
9-12	7a	Students know how to describe temperature and heat flow in terms of the motion of molecules (or atoms).	SE: 348-352 TWE: 711	SE: 348-352, 364, 374, 717, 726	SE: 348-352, 364, 374, 717, 726			
9-12	7b	Students know chemical processes can either release (exothermic) or absorb (endothermic) thermal energy.	SE: 708-709, 711-712, 726	SE: 708-709, 711-712, 713-714, 719-721, 722-723, 726 TWE: 732	SE: 708-709, 711-712, 713-714, 719-721, 722-723, 726 TWE: 706-707, 716-717, 732			
9-12	7c	Students know energy is released when a material condenses or freezes and is absorbed when a material evaporates or melts.	SE: 360-361, 362-363, 364-365	SE: 360-361, 362-363, 364-365	SE: 360-361, 362-363, 364-365			
9-12	7d	Students know how to solve problems involving heat flow and temperature changes, using known values of specific heat and latent heat of phase change.	SE: 360-361, 444-446	SE: 360-361, 444-446	SE: 360-361, 444-446			

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9-12	7e*	Students know how to apply Hess's law to calculate enthalpy change in a reaction.	See *Glencoe's Chemistry: Matter and Change* © 2005					
9-12	7f*	Students know how to use the Gibbs free energy equation to determine whether a reaction would be spontaneous.	See *Glencoe's Chemistry: Matter and Change* © 2005					
		Reaction Rates Chemical reaction rates depend on factors that influence the frequency of collision of reactant molecules. As a basis for understanding this concept						
9-12	8a	Students know the rate of reaction is the decrease in concentration of reactants or the increase in concentration of products with time.	SE: 218-220	SE: 218-220, 713-714	SE: 218-220, 713-714, 726			
9-12	8b	Students know how reaction rates depend on such factors as concentration, temperature, and pressure.	SE: 218-220 TWE: 215	SE: 218-220, 222-223 TWE: 215, 218-219	SE: 218-220, 222-223, 713-714 TWE: 215, 218-219			
9-12	8c	Students know the role a catalyst plays in increasing the reaction rate.	SE: 222-223 TWE: 714	SE: 222-223, 715, 730 TWE: 714	SE: 222-223, 715, 730 TWE: 217, 714, 730-731			
9-12	8d*	Students know the definition and role of activation energy in a chemical reaction.	SE: 218 TWE: 223	SE: 218, 713-714 TWE: 223	SE: 218, 713-714, 726 TWE: 217, 223			

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		Chemical Equilibrium Chemical equilibrium is a dynamic process at the molecular level. As a basis for understanding this concept:						
9-12	9a	Students know how to use LeChatelier's principle to predict the effect of changes in concentration, temperature, and pressure.	SE: 211-215 TWE: 220	SE: 211-215, 216-217 TWE: 220	SE: 211-215, 216-217, 356 TWE: 220			
9-12	9b	Students know equilibrium is established when forward and reverse reaction rates ar equal.	SE: 211-215 TWE: 220	SE: 211-215 TWE: 212-213, 220	SE: 211-215 TWE: 212-213, 220			
9-12	9c*	Students know how to write and calculate an equilibrium constant expression for a reaction.	SE: 851	SE: 851	SE: 851			
		Organic Chemistry and Biochemistry The bonding characteristics of carbon allow the formation of many different organic molecules of varied sizes, shapes, and chemical properties and provide the bio-chemical basis of life. As a basis for understanding this concept:						
9-12	10a	Students know large molecules (polymers), such as proteins, nucleic acids, and starch, are formed by repetitive combinations of simple subunits.	SE: 648-649, 653-658	SE: 648-649, 653-658, 660, 670-672, 680-684	SE: 648-649, 653-658, 660, 670-672, 680-684, 689-690			
9-12	10b	Students know the bonding characteristics of carbon that result in the formation of a large variety of structures ranging from simple hydrocarbons to complex polymers and biological molecules.	SE: 323-325, 622-624	SE: 622-624, 629-633, 640-647	SE: 622-624, 629-633, 640-647, 649, 654-658, 670-672, 680-686			
9-12	10c	Students know amino acids are the building blocks of proteins.	SE: 670-672 TWE: 671	SE: 670-672 TWE: 671	SE: 670-672 TWE: 671			
9-12	10d*	Students know the system for naming the ten simplest linear hydrocarbons and isomers that contain single bonds, simple hydrocarbons with double and triple bonds, and simple molecules that contain a benzene ring.	SE: 624-628, 630-636, 640-645	SE: 624-628, 630-636, 640-645	SE: 624-628, 630-636, 640-645			

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9-12	10e*	Students know how to identify the functiona groups that form the basis of alcohols, ketones, ethers, amines, esters, aldehydes, and organic acids.	SE: 640-645, 646-647	SE: 640-645, 646-647	SE: 640-645, 646-647			
9-12	10f*	Students know the R-group structure of amino acids and know how they combine to form the polypeptide backbone structure of proteins.	SE: 670-672 TWE: 671, 672	SE: 670-672 TWE: 671, 672	SE: 670-672 TWE: 671, 672			
		Nuclear Processes Nuclear processes are those in which an atomic nucleus changes, including radioactive decay of naturally occurring and human-made isotopes, nuclear fission, and nuclear fusion. As a basis for understanding this concept:						
9-12	11a	Students know protons and neutrons in the nucleus are held together by nuclear forces that overcome the electromagnetic repulsio between the protons.	See *Glencoe's Chemistry: Matter and Change* © 2005					
9-12	11b	Students know the energy release per gram of material is much larger in nuclear fusion or fission reactions than in chemical reactions. The change in mass (calculated by $E = mc2$) is small but significant in nuclear reactions.	SE: 761, 762-767 TWE: 761	SE: 761, 762-767 TWE: 761	SE: 761, 762-767 TWE: 761			
9-12	11c	Students know some naturally occurring isotopes of elements are radioactive, as are isotopes formed in nuclear reactions.	SE: 744-745 TWE: 749	SE: 744-745, 748, 775 TWE: 749	SE: 744-745, 748, 757, 773, 775, 777 TWE: 749			
9-12	11d	Students know the three most common forms of radioactive decay (alpha, beta, and gamma) and know how the nucleus changes in each type of decay.	SE: 747-750 TWE: 749, 759	SE: 747-750 TWE: 749, 759	SE: 747-750 TWE: 749, 750, 759			
9-12	11e	Students know alpha, beta, and gamma radiation produce different amounts and kinds of damage in matter and have different penetrations.	SE: 747-749 TWE: 750	SE: 747-749, 776 TWE: 750	SE: 747-749, 776 TWE: 750			

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9-12	11f*	Students know how to calculate the amount of a radioactive substance remaining after an integral number of half lives have passed.	SE: 752-753, 754-755, 756-757, 759, 760 TWE: 759	SE: 752-753, 754-755, 756-757, 759, 760 TWE: 759	SE: 752-753, 754-755, 756-757, 759, 760 TWE: 759			
9-12	11g*	Students know protons and neutrons have substructures and consist of particles called quarks.	See *Glencoe's Physics: Principles and Problems* © 2005					
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: 799, 800-801	SE: 799, 800-801	SE: 799, 800-801			
9-12	1b	Identify and communicate sources of unavoidable experimental error.	SE: 793-796	SE: 793-796	SE: 793-796			
9-12	1c	Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.	SE: 793-796	SE: 793-796	SE: 793-796			
9-12	1d	Formulate explanations by using logic and evidence.	SE: 32, 146, 167, 495, 216-217, 424-425, 519, 632, 693, 728-729	SE: 32, 146, 167, 495, 216-217, 424-425, 519, 632, 693, 728-729	SE: 32, 146, 167, 495, 216-217, 424-425, 519, 632, 693, 728-729			

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9-12	1e	Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.	SE: 500-506, 752-753, 756, 808 TWE: 500, 535, 759	SE: 500-506, 752-753, 756, 808 TWE: 500, 535, 759	SE: 500-506, 752-753, 756, 808 TWE: 500, 535, 759			
9-12	1f	Distinguish between hypothesis and theory as scientific terms.	SE: 59	SE: 59	SE: 59			
9-12	1g	Recognize the usefulness and limitations of models and theories as scientific representations of reality.	SE: 10-11, 59, 65, 325, 600, 752-753	SE: 10-11, 59, 65, 325, 600, 752-753	SE: 10-11, 59, 65, 325, 600, 752-753			
9-12	1h	Read and interpret topographic and geologi maps.	SE: 669, 771	SE: 669, 771	SE: 669, 771			
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: 756, 757, 760	SE: 756, 757, 760	SE: 756, 757, 760			
9-12	1j	Recognize the issues of statistical variability and the need for controlled tests.	SE: 38-39, 424-425, 793-798	SE: 38-39, 424-425, 793-798	SE: 38-39, 424-425, 793-798			
9-12	1k	Recognize the cumulative nature of scientific evidence.	SE: 32, 52-55, 61-65, 146, 230-242, 495	SE: 32, 52-55, 61-65, 146, 230-242, 495	SE: 32, 52-55, 61-65, 146, 230-242, 495			
9-12	1l	Analyze situations and solve problems that require combining and applying concepts from more than one area of science.	SE: 203, 232, 280, 307, 566, 632, 693, 727, 772	SE: 203, 232, 280, 307, 566, 632, 693, 727, 772	SE: 203, 232, 280, 307, 566, 632, 693, 727, 772			

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						Meets Standard		
Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Y	N	Local Education Agency Evaluator Notes
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: 32, 60, 146, 447, 495, 537, 569, 659, 728-729	SE: 32, 60, 146, 447, 495, 537, 569, 659, 728-729	SE: 32, 60, 146, 447, 495, 537, 569, 659, 728-729			
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: 52-55, 59, 65, 86-94 TWE: 64, 78	SE: 52-55, 59, 65, 86-94 TWE: 64, 78	SE: 52-55, 59, 65, 86-94 TWE: 64, 78			

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

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