

PHYSICAL SCIENCE W/ A FOCUS ON EARTH (Grade 9-12) FOCUS STANDARDS, PACING, AND BLUEPRINT

Quarter 1 (page 2 of 2)

Focus Standards	Suggested # of instructional days*	Textbook Chapters**	# of questions on benchmark exam***	
CST Blueprint Weight 10%	Unit Standard: I & E 1. 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:			
b. Identify and communicate sources of unavoidable experimental error.	3	Ch 1 pp. 12-13	0	
c. Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.	3	Ch 1 pp. 12-13	7	
f. Distinguish between hypothesis and theory as scientific terms.	3	Ch 1 pp. 10-11, 15	4	
j. Recognize the issues of statistical variability and the need for controlled tests.	3	Ch 1 p. 11	0	
h. Read and interpret topographic and geologic maps.	8	Ch 3 pp. 63-65, 74-75	6	
CST Blueprint Weight n/a%	Unit Standard: CHEMISTRY 1. 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:			
a. Students know how to relate the position of an element in the periodic table to its atomic number and atomic mass.	5	Ch 4 pp. 81-86	4	
CST Blueprint Weight n/a%	Unit Standard: CHEMISTRY 2. 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:			
a. Students know atoms combine to form molecules by sharing electrons to form covalent or metallic bonds or by exchanging electrons to form ionic bonds.	2	Ch 4 pp. 89-92	0	
CST Blueprint Weight 15%	Unit Standard: EARTH 3. Plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth's surface. As the basis for understanding this concept:			
c. Students know how to explain the properties of rocks based on the physical and chemical conditions in which they formed, including plate tectonic processes. (Topics related to plate tectonics are emphasized in quarter 2)	10	Ch 5 Ch 6	5	
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Academic Year: 2009-2010			[Revised 4/09]	

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Quarter 2

Focus Standards	Suggested # of instructional days*	Textbook Pages**	# of questions on benchmark exam***
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CST Blueprint Weight 15%	Unit Standard: EARTH 3. Plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth’s surface. As the basis for understanding this concept:
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a. Students know features of the ocean floor (magnetic patterns, age, and sea-floor topography) provide evidence of plate tectonics.	5	Ch 10 pp. 239-246	4
b. Students know the principal structures that form at the three different kinds of plate boundaries.	10	Ch 10 pp. 247-254	6
c. Students know how to explain the properties of rocks based on the physical and chemical conditions in which they formed, including plate tectonics. <i>(Topics related to the physical and chemical properties of rocks are emphasized in quarter 1)</i>	1	(Ch 5 & 6)	0
d. Students know why and how earthquakes occur and the scales used to measure their intensity and magnitude.	10	Ch 12 pp. 294-305	6
e. Students know there are two kinds of volcanoes: one kind with violent eruptions producing steep slopes and the other kind with voluminous lava flows producing gentle slopes.	3	Ch 13 pp. 318-325	4

CST Blueprint Weight 8.3%	Unit Standard: EARTH 8. Life has changed Earth’s atmosphere, and changes in the atmosphere affect conditions for life. As a basis for understanding this concept:
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a. Students know the thermal structure and chemical composition of the atmosphere.	5	Ch 22 pp. 546-561	5
b. Students know how the composition of Earth’s atmosphere has evolved over geologic time and know the effect of outgassing, the variations of carbon dioxide concentration, and the origin of atmospheric oxygen.	2	Ch 27 p. 689	0
c. Students know the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities.	5	Ch 22 pp. 546-561	3

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Quarter 3 (page 1 of 2)

Focus Standards	Suggested # of instructional days*	Textbook Chapters**	# of questions on benchmark exam***
CST Blueprint Weight 13.3% Unit Standard: EARTH 5. Heating of Earth’s surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. As a basis for understanding this concept: d. Students know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms. <i>(Benchmark test will NOT focus on geographic distribution of marine organisms)</i>	8	Ch 20 pp. 496-499 Ch 21 pp. 519-531	5
CST Blueprint Weight 8.3% Unit Standard: EARTH 4. Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. As a basis for understanding this concept: a. Students know the relative amount of incoming solar energy compared with Earth’s internal energy and the energy used by society. b. Students know the fate of incoming solar radiation in terms of reflection, absorption, and photosynthesis. c. Students know the different atmospheric gases that absorb the Earth’s thermal radiation and the mechanism and significance of the greenhouse effect.	2 2	pp. 34-36 pp. 555-558 Ch 22 pp. 555-558 pp. 547-549 pp. 555-558	0 3 3
CST Blueprint Weight 13.3% Unit Standard: EARTH 5. Heating of Earth’s surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. As a basis for understanding this concept: a. Students know how differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat. b. Students know the relationship between the rotation of Earth and the circular motions of ocean currents and air in pressure centers. c. Students know the origin and effects of temperature inversions.	4	Ch 22 pp. 561-563 Ch 22 p. 554	6 0 0
CST Blueprint Weight 8.3% Unit Standard: EARTH 6. Climate is the long-term average of a region’s weather and depends on many factors. As a basis for understanding this concept: a. Students know weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere. b. Students know the effects on climate of latitude, elevation, topography, and proximity to large bodies of water and cold or warm ocean currents.	1 5	Ch 23 pp. 575-576, Ch 24 pp. 601-603 Ch 23 pp. 575-576, Ch 25 pp. 631-636	0 6

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Quarter 3 (page 2 of 2)

	Focus Standards	Suggested # of instructional days*	Textbook Chapters**	# of questions on benchmark exam***
CST Blueprint Weight 13.3%	Unit Standard: EARTH 5. Heating of Earth’s surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. As a basis for understanding this concept: e. Students know rain forests and deserts on Earth are distributed in bands at specific latitudes.	5	Ch 25 pp. 637-640	0
CST Blueprint Weight 8.3%	Unit Standard: EARTH 6. Climate is the long-term average of a region’s weather and depends on many factors. As a basis for understanding this concept: c. Students know how Earth’s climate has changed over time, corresponding to changes in Earth’s geography, atmospheric composition, and other factors, such as solar radiation and plate movement.	1	Ch 22 pp. 641-646	0
CST Blueprint Weight 11.7%	Unit Standard: EARTH 1. Astronomy and planetary exploration reveal the solar system’s structure, scale, and change over time. As a basis for understanding this concept: a. Students know how the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system. b. Students know the evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago. c. Students know the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from Earth today. f. Students know the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in mass extinctions of life on Earth.	5 5 3 2	Ch 26 pp. 659-660, Ch 27 pp. 685-687 Ch 29 755-760 Ch 27 pp. 685-687 Ch 27 pp. 688-690 Ch 28 pp. 739-740, 743-744	5 3 0 0

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PHYSICAL SCIENCE W/ A FOCUS ON EARTH (Grade 9-12) FOCUS STANDARDS, PACING, AND BLUEPRINT

Quarter 4 (page 1 of 2)

Focus Standards	Suggested # of instructional days*	Textbook Chapters**	# of questions on benchmark exam***
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CST Blueprint Weight 11.7%	Unit Standard: EARTH 1. Astronomy and planetary exploration reveal the solar system's structure, scale, and change over time. As a basis for understanding this concept:		
e. Students know the Sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.	3	Ch 29 pp. 756-757	5
d. Students know the evidence indicating that the planets are much closer to Earth than the stars are.	2	Ch 30 p. 779	0

CST Blueprint Weight 8.3%	Unit Standard: EARTH 2. Earth-based and space-based astronomy reveal the structure, scale, and changes in stars, galaxies, and the universe over time. As a basis for understanding this concept:		
c. Students know the evidence indicating that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.	1	Ch 30 pp. 783-787	0
d. Students know that stars differ in their life cycles and that visual, radio, and X-ray telescopes may be used to collect data that reveal those differences.	5	Ch 30 pp. 775-788	5
a. Students know the solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years.	1	Ch 30 pp. 791	0
b. Students know galaxies are made of billions of stars and comprise most of the visible mass of the universe.	5	Ch 30 pp. 790-791	3
g.*Students know how the red-shift from distant galaxies and the cosmic background radiation provide evidence for the "big bang" model that suggests that the universe has been expanding for 10 to 20 billion years.	1	Ch 30 pp. 778, 794-795	3

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Quarter 4 (page 2 of 2)

Focus Standards	Suggested # of instructional days*	Textbook Chapters**	# of questions on benchmark exam***
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CALIFORNIA CLOSE-UP

This section of the textbook, which immediately follows chapter 30, should be used to support standards with specific California emphases; note pages are labeled C1-C31 in textbook.

CST Blueprint Weight 8.3% Unit Standard: EARTH 9. The geology of California underlies the state’s wealth of natural resources as well as its natural hazards. As a basis for understanding this concept:

a. Students know the resources of major economic importance in California and their relation to California’s geology.	2	C 16-21	3
b. Students know the principal natural hazards in different California regions and the geologic basis of those hazards.	5	C 22-25	3
c. Students know the importance of water to society, the origins of California’s fresh water, and the relationship between supply and need.	4	C 4-7 C 16-17	3

CST Blueprint Weight 3.3% Unit Standard: I & E 1. 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:

m. 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.	10	n/a	0
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