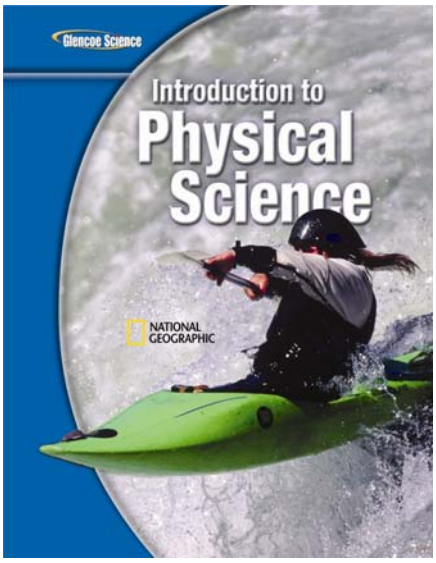
Glencoe

Science Standards
Grades 6-8

Nevada



Introduction to Physical Science

STANDARDS		PAGE REFERENCES
Scientific Inquiry (Nature of Science Unifying Concept A) Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.		
By the end of grade band, students know and are able to do everything required in earlier grades and:		
N.8.A	**Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.**	
N.8.A.1	Students know how to identify and critically evaluate information in data, tables, and graphs. E/S	**Student Edition:** 27-29, 56-59, 81-85, 677-678 *Applying Math* 17 *Applying Science* 390, 477 *Design Your Own Lab* 60-61, 450-451 *Lab* 115, 299 *Math Skill Handbook* 703, 710-711 **Teacher Wraparound Edition:** D 29; LD 57; R 85

Codes used for Teacher Wraparound Edition pages are the initial caps of headings on that page.

STANDARDS		PAGE REFERENCES
N.8.A.2	Students know how to critically evaluate information to distinguish between fact and opinion. E/S	**Student Edition:** 6-7, 12-13, 27-30, 72-73, 78-79, 250 *Integrate History* 536 *Science and History* 94 *Science Skill Handbook* 670, 677-678 **Teacher Wraparound Edition:** CD 18; FF 30; FYI 29; IM 78
N.8.A.3	Students know that different explanations can be given for the same evidence. E/S	**Student Edition:** 26, 30 *Integrate History* 536, 629 *Lab* 31 *Science and Society* 606 *Science and History* 94 **Teacher Wraparound Edition:** D 512; VL 25
N.8.A.4	Students know how to design and conduct a controlled experiment. E/L	**Student Edition:** 18 *Design Your Own Lab* 208-209, 450-451, 480-481, 510-511, 540-541 *Lab* 32-33, 270-271 *Science Skill Handbook* 674 **Teacher Wraparound Edition:** IM 18
N.8.A.5	Students know how to use appropriate technology and laboratory procedures safely for observing, measuring, recording, and analyzing data. E/L	**Student Edition:** 19, 44-49, 50-54, 57-59 *Design Your Own Lab* 208-209, 450-451, 540-541 *Lab* 55, 240-241 *Math Skill Handbook* 703, 707-711 *MiniLab* 44 *Science Skill Handbook* 674-677, 679-681 **Teacher Wraparound Edition:** QD 47; TPK 50
N.8.A.6	Students know that scientific inquiry includes evaluating results of scientific investigations, experiments, observations, theoretical and mathematical models, and explanations proposed by other scientists. E/S	**Student Edition:** 7, 16-17, 22-26, 28-30 *Accidents in Science* 302 *Applying Science* 89, 111, 390 *Science and History* 152, 542 *Science and Society* 272, 512, 606 *Science Skill Handbook* 670-671, 678 **Teacher Wraparound Edition:** DI 16; MM 25; VL 7

STANDARDS		PAGE REFERENCES
N.8.A.7	Students know there are multiple methods for organizing items and information. E/S	**Student Edition:** 15, 28, 57-59, 81, 650-652, 656-658 *Applying Science* 167, 390, 651 *Design Your Own Lab* 150-151 *Lab* 32-33, 86 *MiniLab* 8 *National Geographic* 82, 657 *Science and Society* 662 *Science Skill Handbook* 670-673 *Technology Skill Handbook* 694-695 **Teacher Wraparound Edition:** A 656; DI 17; UA 652
	Science, Technology, and Society (Nature of Science Unifying Concept B) Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people's lives. While many of technology's effects on society are regarded as desirable, other effects are seen as less desirable. Instruction in this area should not be solely in science or technology courses, but should be shared by science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and at the same time society influences the development of technology and its impact on culture.	
	By the end of grade band, students know and are able to do everything required in earlier grades and:	
	N.8.B Students understand the interactions of science and society in an ever-changing world.	
N.8.B.1	Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.	**Student Edition:** 205, 378, 388-395 *Integrate Environment* 656 *Integrate History* 205 *Integrate Life Science* 443 *Science and Society* 452, 606 *Use the Internet Lab* 396-397 **Teacher Wraparound Edition:** CC 253
N.8.B.2	Students know scientific knowledge is revised through a process of incorporating new evidence gained through ongoing investigation and collaborative discussion. E/S	**Student Edition:** 6-7, 12, 16-17, 26, 74-79, 81-85 *Science and History* 542 *Science and Society* 696 *Science Skill Handbook* 678 **Teacher Wraparound Edition:** A 84; DI 165; IM 15; VL 7

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Matter (Physical Science Unifying Concept A) Matter has various states with unique properties that can be used as a basis for organization. The relationship between the properties of matter and its structure is an essential component of study in the physical sciences. The understanding of matter and its properties leads to practical applications, such as the capability to liberate elements from ore, create new drugs, manipulate the structure of genes and synthesize polymers.		
By the end of grade band, students know and are able to do everything required in earlier grades and:		
P.8.A	**Students understand the properties and changes of properties in matter.**	
P.8.A.1	Students know particles are arranged differently in solids, liquids, and gases of the same substance. E/S	**Student Edition:** 102-106, 107-114, 136, 144, 175 *Integrate Chemistry* 646 *Lab* 115 *National Geographic* 110, 176 **Teacher Wraparound Edition:** DI 137; FYI 103; IM 109; QD 106; TPK 107
P.8.A.2	Students know elements can be arranged in the periodic table which shows repeating patterns that group elements with similar properties. E/S	**Student Edition:** 81-85, 164-167, 645 *Lab* 86 *National Geographic* 82 **Teacher Wraparound Edition:** A 84; UA 165
P.8.A.3	Students know methods for separating mixtures based on the properties of the components. E/S	**Student Edition:** 90, 219-220 *Applying Science* 89 **Teacher Wraparound Edition:** DI 89; FYI 144; QD 90
P.8.A.4	Students know atoms often combine to form molecules, and that compounds form when two or more different kinds of atoms chemically bond. E/S	**Student Edition:** 87-88, 171, 173-175, 177-178, 218, 224, 250 *Lab* 179 **Teacher Wraparound Edition:** A 140; D 175; R 256; VL 177
P.8.A.5	Students know mass is conserved in physical and chemical changes. E/S	**Student Edition:** 74, 194-195 *Applying Math* 196 *MiniLab* 194 **Teacher Wraparound Edition:** FF 195; FYI 74; LD 75; VL 195

STANDARDS		PAGE REFERENCES
P.8.A.6	Students know matter is made up of tiny particles called atoms. E/S	**Student Edition:** 73-75, 80 *Integrate History* 73 **Teacher Wraparound Edition:** FF 83
P.8.A.7	Students know the characteristics of electrons, protons, and neutrons. E/S	**Student Edition:** 76-78, 163-165, 584-585, 591-592, 616 *Model and Invent Lab* 180-181 **Teacher Wraparound Edition:** A 76; D 77
P.8.A.8	Students know substances containing only one kind of atom are elements which cannot be broken into smaller pieces by normal laboratory processes. E/S	**Student Edition:** 80, 83-85, 166-167, 218 *Applying Science* 167 *Lab* 86 *National Geographic* 82 **Teacher Wraparound Edition:** A 166; FYI 81
	Forces and Motion (Physical Science Unifying Concept B) The laws of motion are used to describe the effects of forces on the movement of objects.	
	By the end of grade band, students know and are able to do everything required in earlier grades and:	
	P.8.B Students understand that position and motion of an object result from the net effect of the different forces acting on it.	
P.8.B.1	Students know the effects of **balanced** and **unbalanced** forces on an object's motion. E/S	**Student Edition:** 310-312, 316, 320-321, 328 *Design Your Own Lab* 330-331 *Lab* 329 *Launch Lab* 309 **Teacher Wraparound Edition:** IM 318; R 322
P.8.B.2	Students know electric currents can produce magnetic forces and magnets can cause electric currents. E/S	**Student Edition:** 621-622, 626-631 *MiniLab* 622 *National Geographic* 623 **Teacher Wraparound Edition:** CD 629; IL 627; QD 624; VL 622

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P.8.B. 3	Students know every object exerts gravitational force on every other object, and the magnitude of this force depends on the mass of the objects and their distance from one another. I/S	**Student Edition:** 317, 521 *Integrate History* 317 *Launch Lab* 5 **Teacher Wraparound Edition:** CC 317
	Energy (Physical Science Unifying Concept C) The total energy of the universe is constant. All events involve the transfer of energy in one form or another. In all energy transfers, the overall effect is that the energy is spread out uniformly.	
	By the end of grade band, students know and are able to do everything required in earlier grades and:	
	P.8.C Students understand transfer of energy.	
P.8.C.1	Students know visible light is a narrow band within the electromagnetic spectrum. I/S	**Student Edition:** 468, 525, 528-529 *Lab* 534 **Teacher Wraparound Edition:** R 533
P.8.C. 2	Students know vibrations (e.g., sounds, earthquakes) move at different speeds in different materials, have different wavelengths, and set up wave-like disturbances that spread away from the source uniformly. E/S	**Student Edition:** 462-465, 468, 471, 492, 501-502 *Design Your Own Lab* 480-481 *Integrate Social Studies* 502 *Launch Lab* 461 *National Geographic* 497 *Science and Society* 512 **Teacher Wraparound Edition:** A 469; FYI 464
P.8.C.3	Students know physical, chemical, and nuclear changes involve a transfer of energy. E/S	**Student Edition:** 146, 374-378, 384-385, 388-389, 391-395, 438-442, 462 *Lab* 149, 386 *Launch Lab* 461 **Teacher Wraparound Edition:** A 469; LD 442; SJ 377; TPK 438
P.8.C.4	Students know energy cannot be created or destroyed, in a chemical or physical reaction, but only changed from one form to another. E/S	**Student Edition:** 380-385, 388-395, 445 *Lab* 149, 386 *National Geographic* 382 **Teacher Wraparound Edition:** D 383, 394

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P.8.C.5	Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation. E/S	**Student Edition:** 107-108, 376, 383-384, 438-442, 445, 448-449 *Design Your Own Lab* 450-451 *Lab* 444 *MiniLab* 441 **Teacher Wraparound Edition:** TPK 438
P.8.C.6	Students know electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes. I/S	**Student Edition:** 591-592, 594-595, 598-601 *Applying Math* 597 *Lab* 603 *MiniLab* 598 **Teacher Wraparound Edition:** AIQ 604; IM 599; MM 600