



SOUTH DAKOTA
Science Standards Seventh Grade
Science Level Green © 2005

STANDARDS	PAGE REFERENCES
SEVENTH GRADE NATURE OF SCIENCE STANDARDS	
STUDENTS WILL:	SE: 221
1. analyze societal response to major scientific findings or theories. (example: Einstein's, Galileo's, Madame Curie's)	<i>Science and History</i> 50, 356 <i>Section Review</i> 321 #4 TWE: D 238, 356 MA 195 CD 226 CC 696 DI 294
2. understand the need for continual re-evaluation of scientific knowledge.	SE: 164-165, 221, 334-338 TWE: IM 160 MA 195 SJ 222 CB 223 VL 335
3. describe the limitations of scientific study.	SE: <i>Science and Society</i> 140, 708 TWE: D 80, 204 DE 140
4. investigate uses of hypotheses in science. (example: evaluating relevance of data, determining data to be obtained, interpreting old and new data directly, identifying the need for new information)	SE: 14, 16 <i>National Geographic Society Visualizing</i> 15 TWE: 4F AC 15 D 16
5. evaluate the conclusions to scientific investigations.	SE: <i>Communicating Your Data</i> 66 <i>Lab</i> 98 <i>Model and Invent</i> 138-139, 582-583 TWE: EA 21 AS 139, 583
6. determine the limits of accuracy inherent in a particular measuring device or procedure.	SE: <i>Lab</i> 313, 438 TWE: EA 21, 49, 79, 109
7. control variables to test hypotheses by repeated trials.	SE: <i>Lab</i> 411, 538 TWE: AS 237
8. identify sources of experimental error.	TWE: EA 21, 49, 79, 109, 325
9. interpret to make predictions and/or justify conclusions.	SE: <i>Design Your Own Lab</i> 108-109 <i>Model and Invent</i> 202-203 <i>Lab</i> 266-267, 313, 424-425 TWE: AS 136
10. use research methods to investigate practical and/or personal scientific problems and questions.	SE: <i>Lab</i> 98, 137, 193, 478 <i>Use the Internet</i> 522-523, 738-739

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11. demonstrate appropriate use of apparatus and technologies for investigations.	SE: <i>Design Your Own Lab</i> 108-109, 236-237, 706-707 <i>Lab</i> 231 <i>Use the Internet</i> 296-297 <i>Model and Invent</i> 582-583
12. use proper safety procedures in all investigations.	SE: <i>Lab</i> 35, 266-267, 389, 642-643 <i>Design Your Own Lab</i> 390-391, 458-459 <i>Model and Invent</i> 582-583
SEVENTH GRADE PHYSICAL SCIENCE STANDARDS	
1. describe how the particle theory of matter aids in understanding the structure of matter.	SE: 620-625, 626-628, 632 <i>Section Review</i> 641 #1; 656 #2 <i>National Geographic Society Visualizing</i> 660 TWE: VL 621 DI 625, 653 AS 632
2. classify matter based on observable properties.	SE: <i>Lab</i> 66, 78-79, 521, 599 TWE: AIL 78 AC 654 QD 656 R 656
3. investigate how to use the periodic table of elements as a tool to describe elements.	SE: 247, 800-801 <i>Science Online</i> 801 TWE: TP 246 CC 251 DI 625
4. analyze the differences in particle motion in solids, liquids, and gases. (example: intermolecular bonds in solids restrict the molecules to vibratory motion)	SE: 652-656 <i>Science Online</i> 655 <i>Section Review</i> 656 #1,2 TWE: MA 653 QD 656 AS 656 AC 654 TP 657
5. apply the Law of Conservation of Matter and Energy to investigate and understand changes in matter.	SE: 609, 722-723, 743 #24 <i>Section Review</i> 609 #3,4 <i>Science Online</i> 722
6. understand that the differentiation between homogeneous mixtures (solutions) and heterogeneous mixtures is a matter of scale.	SE: 621-625 <i>Section Review</i> 625 #2,4,6 TWE: DI 623, 625 CU 625 SJ 624 VL 621
7. describe the physical effects of heat transfer, chemical reaction, and mechanical energy on matter.	SE: 565, 598 <i>Figure 5</i> 563 <i>Model and Invent</i> 582-583 <i>Integrate Astronomy</i> 605 TWE: QD 565

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8. investigate and describe scientific principles and technological applications of work, force, and motion.	SE: <i>Science Online</i> 697 <i>Design Your Own Lab</i> 706-707 TWE: SJ 685 VL 685 AS 707 D 697
9. describe mechanical advantage in relation to work, force, and motion.	SE: 440 <i>National Geographic Society Visualizing</i> 441 TWE: AC 441 DI 441
10. differentiate between distance, displacement, speed, velocity, and acceleration.	SE: 684-689 <i>Applying Math</i> 686 <i>MiniLab</i> 687 TWE: US 685 VL 685 DI 686 AC 686 QD 688
11. identify Newton's Laws of Motion.	SE: 691-692, 694-696, 702-705 <i>Section Review</i> 693 #1, 705 #1-6 <i>Integrate Health</i> 691 <i>Applying Math</i> 694 TWE: VL 691 SJ 703
12. compare and contrast the fundamental forces. (example: gravity, electrical, magnetic, nuclear)	SE: 690-691, 696, 704 <i>Section Review</i> 693 #2,3 TWE: QD 696 TF 704
13. describe methods of heat transfer. (example: conduction, radiation, convection)	SE: 99-101, 436 <i>MiniLab</i> 101 <i>Lab</i> 108-109 TWE: UA 100 US 100 DI 100 TP 100
14. relate waves to the transfer of energy. (example: earthquake waves, sound waves, water waves, and electromagnetic waves)	SE: 93, 454, 736 TWE: AC 93 D 454, 736 MA 736
15. explain the physical interactions of light and matter. (example: transmission, refraction, reflection, polarization)	SE: 719 <i>Integrate Life Science</i> 96 <i>National Geographic Society Visualizing</i> 222-223 TWE: AC 223 TF 223
16. explain basic principles of electricity and magnetism including static, current, circuits, magnetic fields, and electromagnetism.	SE: 130, 563, 720 <i>National Geographic Society Visualizing</i> 222-223 TWE: IM 130 VL 563

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17. describe characteristics of sound waves. (example: wave length, frequency, amplitude, intensity, loudness)	SE: 93, 725 <i>Lab 728</i>
SEVENTH GRADE LIFE SCIENCE STANDARDS	
1. relate types of cells to their specialized structure and function. (example: nerve cells, muscle cells)	SE: 285, 367, 378-379, 440, 450 <i>Science Online 367</i> <i>Figure 12 414</i> TWE: CC 285
2. demonstrate how structures and functions of cells, tissues, organs, and body systems relate to each other.	SE: 401-404, 413-415, 419-421, 434 <i>MiniLab 415</i> <i>Section Review 404 #1-4,6,7; 418 #1-5</i> TWE: MA 413 VL 415
3. compare and contrast plant and animal cells.	SE: 226-227 <i>Section Review 230 #3</i> <i>Lab 231</i> TWE: VL 227 DI 227 AS 231
4. recognize the need for organized classification systems in the study of plant and animal life.	SE: 218-220 <i>Section Review 220 #1-3, 5</i> TWE: TC 212 DI 219 AC 220
5. describe factors that determine species. (example: reproductive viability, physical characteristics, genetic code)	SE: 218, 334, 336-341 <i>Section Review 341 #1,2,4</i> TWE: LD 338 AS 341
6. compare and contrast sexual and asexual reproduction in plants and animals.	SE: 281-282, 284-285 <i>Section Review 282 #2, 289 #4</i> <i>Integrate Chemistry 285</i> TWE: IL 282
7. identify limiting factors that impact animal and plant populations.	SE: 541 <i>Section Review 543 #2</i> <i>Design Your Own Lab 550-551</i> TWE: QD 541 DI 541 CC 541 AC 541
8. identify population disturbances and various other factors that threaten or enhance species survival.	SE: 541-543 <i>MiniLab 542</i> <i>Section Review 543 #3,4,6</i> TWE: SJ 542 DI 542 AS 543

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9. describe processes by which matter and energy flow through an ecosystem.	SE: 544, 546-549 <i>National Geographic Society Visualizing</i> 545 <i>Integrate Chemistry</i> 547 TWE: IL 546 D 545 VL 545 AC 545
10. explain the effects of environmental changes on dynamic equilibrium in physical and biological systems.	SE: 255, 340-341, 704-705 <i>National Geographic Society Visualizing</i> 158-159 <i>Section Review</i> 705 #3 <i>Design Your Own Lab</i> 706-707 TWE: AS 705
11. explain different relationships among living organisms. (example: competition, symbiosis, producer/ consumer/ decomposer, predator/prey)	SE: 542-543 <i>Section Review</i> 543 #4,6 <i>Applying Science</i> 546 TWE: SJ 542 R 543 UA 543
12. investigate interactions among populations in a biological community. (example: relationships among producers, consumers, and decomposers in food chains and food webs)	SE: <i>Applying Science</i> 547 TWE: CD 547 QD 547 LD 546 IL 546
13. model cycles in ecosystems. (example: water, carbon dioxide/oxygen, nitrogen)	SE: <i>MiniLab</i> 548 TWE: CU 167
SEVENTH GRADE EARTH/SPACE SCIENCE STANDARDS	
1. investigate the origin and evolution of the atmosphere.	SE: 90 TWE: D 165 AS 166 CU 166 IES 110 AC 346
2. describe how the interrelationship of geologic processes, biologic processes, and human activity affects the atmosphere.	SE: 164-166 <i>Lab</i> 167 <i>Section Review</i> 166 #2-4,7 <i>Science Online</i> 165 <i>Science and History</i> 170 TWE: AS 166, 167
3. describe the effects of pollution on watersheds, river systems, and oceans.	SE: 568-569, 573-574 <i>MiniLab</i> 569 TWE: AC 573 VL 574 SJ 574

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4. analyze how freshwater resources are influenced by geologic processes and by human activities.	SE: 573-574 <i>National Geographic Society Visualizing</i> 158-159 <i>Section Review 576 #1,2,4</i> TWE: SJ 574 IL 574 QD 573 AC 158
5. compare and contrast characteristics of the sun, planets, their moons, comets, meteors, and asteroids.	SE: 190, 192 <i>National Geographic Society Visualizing</i> 191 <i>Section Review 201 #2,4,5</i> TWE: AC 191 SJ 196 CC 196 VL 196
6. describe the role of gravity in the solar system.	SE: 179, 696 <i>Science Online</i> 697 TWE: CC 696 FF 696 TF 179, 696
7. compare masses within the solar system using composition, size, and orbital motion.	SE: <i>Applying Science</i> 197 TWE: CC 196 AC 197 D 196, 204 IL 198 QD 200
SEVENTH GRADE SCIENCE, TECHNOLOGY, ENVIRONMENT, AND SOCIETY STANDARDS	
1. discuss science issues. (example: cloning, aging, farming, mining, timber)	SE: <i>Science and Society</i> 708 TWE: D 140, 165, 204, 356 ITI 204 DE 140
2. investigate how science helps drive research and provides knowledge for better understanding.	SE: 6-8, 221 <i>Science and History</i> 50 <i>National Geographic Society Visualizing</i> 222-223 TWE: IL 16 CB 50, 223 D 50 CC 696
3. describe how cultural backgrounds and beliefs of different groups can affect scientific thinking.	SE: <i>Integrate Environment</i> 322 TWE: HS 140 ITI 426 CD 322, 536, 698
4. describe how society and need can affect the direction taken by science.	SE: <i>Science and Society</i> 204 <i>Science and History</i> 238, 356, 392 TWE: HS 356 CB 356

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5. describe scientific advancements that have had an impact on the environment.	SE: 563-566 <i>Section Review</i> 566 #2-5 <i>Science Online</i> 580 <i>Integrate Career</i> 534 <i>National Geographic Society Visualizing</i> 567 TWE: DI 567
6. explain the importance of public access to scientific discoveries.	SE: 18 <i>Section Review</i> 18 #3,5 <i>Science and History</i> 238 TWE: D 18 HS 238 CB 326
7. analyze health recommendations concerning nutrition and drugs.	SE: 405-410 <i>Integrate Earth Science</i> 382 <i>Science Online</i> 406 TWE: DI 406, 407 SJ 407 CD 408 VL 408
8. determine the risks associated with natural and biological hazards.	SE: 381-382, 384-388 <i>Section Review</i> 388 #1,4,7 <i>Science Online</i> 130 <i>Lab</i> 389 TWE: SJ 130 AC 131 AS 389
9. describe the possible consequences of various alternative decisions for technological-related issues.	SE: <i>Section Review</i> 323 #5 <i>Integrate Environment</i> 322 <i>Integrate Social Studies</i> 563 TWE: D 563 SJ 564
10. design a solution or product for a problem or a need considering constraints. (example: cost, time, materials, environmental/societal trade-off)	SE: <i>Science and Society</i> 204 <i>Oops! Accidents in Science</i> 460, 524 TWE: ITI 204 IN 460

Codes Used for TWE Pages

AC	Activity
AIL	Alternative Inquiry Lab
AS	Assessment
CB	Content Background
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
D	Discussion
DE	Debate
DI	Differentiated Instruction
EA	Error Analysis
FF	Fun Fact
HS	Historical Significance
IES	Integrate Earth Science
IL	Inquiry Lab
IM	Identifying Misconceptions
IN	Invent
ITI	Investigate the Issue
LD	Lab Demonstration
MA	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TC	Theme Connection
TF	Teacher FYI
TP	Tie to Prior Knowledge
UA	Use an Analogy
US	Using Science Words
VL	Visual Learning