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Science: A Closer Look

2011

Grade 4

Correlated with

**Illinois
Science State Goals
Late Elementary**

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STATE GOAL 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	
A. Know and apply the concepts, principles and processes of scientific inquiry.	
LATE ELEMENTARY	
11.A.2a Formulate questions on a specific science topic and choose the steps needed to answer the questions.	pp. 3, 21, 33, 45, 56-57, 59, 77, 89, 99, 106-107, 109, 129, 137, 149, 165, 175, 183, 203, 213, 225, 237, 244-245, 251, 263, 270-271, 273, 282-283, 285, 295, 313, 323, 335, 345, 352-353, 359, 369, 379, 393, 400-401, 411, 421, 431, 445, 457, 467, 472-473, 483, 493, 503, 513, 522-523, 529, 539, 551, 560-561, 563, 575, 572-573
11.A.2b Collect data for investigations using scientific process skills including observing, estimating and measuring.	pp. 7, 12, 13, 21, 30-31, 33, 39, 45, 53, 56-57, 59, 64, 77, 80, 89, 93, 99, 106, 109, 129, 143, 149, 151, 169, 175, 177, 186, 203, 207, 219, 225, 231, 237, 244, 251, 255, 263, 270, 282-283, 285, 289, 295, 299, 313, 317, 328, 335, 352, 359, 369, 379, 393, 397, 400-401, 411, 415, 421, 425, 428-429, 431, 435, 445, 457, 461, 467, 470, 473, 493, 498, 503, 507, 513, 522-523, 533, 539, 544, 551, 560, 563, 569, 575
11.A.2c Construct charts and visualizations to display data.	pp. 21, 30-31, 33, 45, 56-57, 59, 77, 86-87, 89, 109, 129, 134-135, 143, 165, 172-173, 175, 210-211, 213, 251, 260-261, 270-271, 282-283, 332-333, 345, 349, 376-377, 379, 393, 428-429, 431, 445, 464-465, 483, 490-491, 536
11.A.2d Use data to produce reasonable explanations.	pp. 13, 21, 57, 99, 107, 109, 131, 137, 175, 213, 219, 237, 263, 267, 273, 283, 285, 328, 345, 369, 376-377, 393, 411, 431, 435, 445, 461, 470, 473, 483, 493, 503, 513, 515, 523, 529, 573
11.A.2e Report and display the results of individual and group investigations.	pp. 3, 21, 27, 30-31, 33, 39, 45, 53, 56-57, 59, 64, 77, 80, 86-87, 89, 93, 99, 102, 106-107, 109, 116, 129, 131, 134-135, 137, 143, 149, 151, 165, 169, 172-173, 175, 177, 183, 186, 203, 207, 210-211, 213, 219, 225, 231, 237, 241, 244-245, 251, 255, 260-261, 263, 267, 270-271, 273, 277, 282-283, 285, 289, 295, 299, 313, 317, 323, 328, 332-333, 335, 339, 345, 349, 352-353, 359, 363, 369, 373, 376-377, 379, 384, 393, 397, 400-401, 411, 415, 421, 425, 428-429, 431, 435, 445, 449, 457, 461, 464-465, 467, 470, 472-473, 483, 487, 490-491, 493, 498, 503, 507, 513, 515, 522-523, 529, 533, 536-537, 539, 544, 551, 557, 560-561, 563, 569, 572-573, 575, 580

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B. Know and apply the concepts, principles and processes of technological design.	
LATE ELEMENTARY	
11.B.2a Identify a design problem and propose possible solutions.	pp. 106-107, 210-211, 335, 483, 503
11.B.2b Develop a plan, design and procedure to address the problem identifying constraints (e.g., time, materials, technology).	pp. 89, 102, 335, 483, 493, 503, 525
11.B.2c Build a prototype of the design using available tools and materials.	pp. 102, 210-211, 483, 503, 522-523
11.B.2d Test the prototype using suitable instruments, techniques and quantitative measurements to record data.	pp. 89, 106-107, 210-211, 483, 493, 503, 522-523
11.B.2e Assess test results and the effectiveness of the design using given criteria and noting possible sources of error.	pp. 106-107, 490-491, 522-523
11.B.2f Report test design, test process and test results.	pp. 89, 102, 106-107, 210-211, 335, 483, 490-491, 493, 503, 522-523, 525
STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	
A. Know and apply concepts that explain how living things function, adapt and change.	
LATE ELEMENTARY	
12.A.2a Describe simple life cycles of plants and animals and the similarities and differences in their offspring.	pp. 47, 52, 53, 58, 59, 62, 63, 64, 65, 66, 67, 68, 69, 72, 94, 108, 109, 110, 111, 112, 113, 114, 115, 117, 118-119, 120, 158, TR41, TR43
12.A.2b Categorize features as either inherited or learned (e.g., flower color or eye color is inherited; language is learned).	pp. 66, 67, 69, 114, 116, 117, 478-479, TR46
B. Know and apply concepts that describe how living things interact with each other and with their environment.	
LATE ELEMENTARY	
12.B.2a Describe relationships among various organisms in their environments (e.g., predator/prey, parasite/host, food chains and food webs).	pp. 44, 54, 124-125, 131, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 164, 198-199, TR45

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12.B.2b Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).	pp. 17, 27, 45, 46, 47, 49, 50, 51, 52, 53, 55, 56-57, 60, 61, 62, 63, 70, 71, 72, 82, 83, 84, 85, 88, 89, 90, 91, 92, 93, 95, 98, 100, 101, 102, 103, 104, 105, 106-107, 110, 120, 121, 124-125, 164, 165, 166, 167, 168, 169, 171, 172-173, 174, 178, 179, 194, 195, 528, 529, R14, R15, R16, R17, R18, R19, R20, R21, R22, TR40, TR41, TR42, TR43
C. Know and apply concepts that describe properties of matter and energy and the interactions between them.	
LATE ELEMENTARY	
12.C.2a Describe and compare types of energy including light, heat, sound, electrical and mechanical.	pp. 398, 504, 505, 506, 507, 508, 509, 510-511, 530, 540, 541, 552, 553, 564, 565, 566, 567, 568, 569, 571, 580, 581, 582, 583, 584, 585, 586-587, 588, 589
12.C.2b Describe and explain the properties of solids, liquids and gases.	pp. 322, 323, 324, 325, 331, 410, 411, 412, 414, 415, 417, 418, 419, 423, 427, 428-429, 446, 447, 448, 449, 452, 453, 464, 465, 534, 535, TR56, TR58
D. Know and apply concepts that describe force and motion and the principles that explain them.	
LATE ELEMENTARY	
12.D.2a Explain constant, variable and periodic motions.	pp. 482, 483, 484, 485, 486, 487, 488, 489, 490-491, 496, 497, 498, 499, 503, 524, 525, TR60
12.D.2b Demonstrate and explain ways that forces cause actions and reactions (e.g., magnets attracting and repelling; objects falling, rolling and bouncing).	pp. 480, 482, 484, 486, 487, 488, 489, 490-491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 503, 504, 505, 524, 525, TR60
E. Know and apply concepts that describe the features and processes of the Earth and its resources.	
LATE ELEMENTARY	
12.E.2a Identify and explain natural cycles of the Earth's land, water and atmospheric systems (e.g., rock cycle, water cycle, weather patterns)	pp. 256, 257, 259, 322-327, 331, 336, 337, 338, 339, 340, 341, 342-343, 346-351, 354, 355
12.E.2b Describe and explain short-term and long-term interactions of the Earth's components (e.g., earthquakes, types of erosion).	pp. 3-11, 184, 197, 198-199, 202, 204, 206, 210-211, 213, 214, 215, 216, 217, 218, 220, 221, 224, 225, 226, 227, 228, 229, 230, 231, 233, 234, 235, 236, 237, 238, 242, 243, 244-245, 246, 247, TR48, TR49
12.E.2c Identify and classify recyclable materials.	pp. 300, 301, 302-303, 416, 417

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F. Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.	
LATE ELEMENTARY	
12.F.2a Identify and explain natural cycles and patterns in the solar system (e.g., order of the planets; moon phases; seasons as related to Earth's tilt, one's latitude, and where Earth is in its yearly orbit around the sun).	pp. 358, 359, 360, 361, 362, 363, 364, 365, 372, 373, 374, 375, 376-377, 402, 403, TR54, TR55
12.F.2b Explain the apparent motion of the sun and stars.	pp. 360, 361, 364, 365, 396, 397, 399
12.F.2c Identify easily recognizable star patterns (e.g., the Big Dipper, constellations).	pp. 392, 396, 397, 399, 400-401, 403
STATE GOAL 13: Understand the relationships among science, technology and society in historical and contemporary contexts.	
A. Know and apply the accepted practices of science.	
LATE ELEMENTARY	
13.A.2a Demonstrate ways to avoid injury when conducting science activities (e.g., wearing goggles, fire extinguisher use).	pp. 14, 134, 151, 172, 175, 313, 352, 379, 397, 467, 470, 472, 529, 539, 569, 580
13.A.2b Explain why similar investigations may not produce similar results.	pp. 3, 21, 33, 45, 56-57, 59, 77, 89, 99, 106-107, 109, 129, 137, 149, 165, 175, 183, 203, 213, 225, 237, 244-245, 251, 263, 270-271, 273, 282-283, 285, 295, 313, 323, 335, 345, 352-353, 359, 369, 379, 393, 400-401, 411, 421, 431, 445, 457, 467, 472-473, 483, 493, 503, 513, 522-523, 529, 539, 551, 560-561, 563, 575, 572-573
13.A.2c Explain why keeping accurate and detailed records is important.	pp. 30-31, 56-57, 86-87, 106-107, 134-135, 172-173, 210-211, 244-245, 260-261, 270-271, 282-283, 332-333, 352-353, 376-377, 400-401, 428-429, 464-465, 472-473, 490-491, 522-523, 536-537, 560-561, 572-573
B. Know and apply concepts that describe the interaction between science, technology and society.	
LATE ELEMENTARY	
13.B.2a Explain how technology is used in science for a variety of purposes (e.g., sample collection, storage and treatment; measurement; data collection, storage and retrieval; communication of information).	pp. 28, 218, 219, 276, 318, 319, 342-343, 381, 382, 383, 390-391, 392, 397, 531, R2, R3, R4, R5, R6, R7, R8, R9

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13.B.2b Describe the effects on society of scientific and technological innovations (e.g., antibiotics, steam engine, digital computer).	pp. 43, 54, 218, 219, 280, 342-343, 489, 500, 501, 506, 507, 508, 510-511, 513, 584, 585, 586-587
13.B.2c Identify and explain ways that science and technology influence the lives and careers of people.	pp. 118-119, 122, 196, 222-223, 306, 404, 438-439, 476, 590
13.B.2d Compare the relative effectiveness of reducing, reusing and recycling in actual situations.	pp. 134, 186, 187, 280, 281, 291, 292, 293, 297, 298, 299, 300, 301, 302-303, 304, 305, 416, 417, 507, 510-511
13.B.2e Identify and explain ways that technology changes ecosystems (e.g., dams, highways, buildings, communication networks, power plants).	pp. 186, 187, 190, 232, 278, 279, 281, 288, 289, 290, 291, 294, 295, 296, 297, 301, 304, 416, 510-511
13.B.2f Analyze how specific personal and societal choices that humans make affect local, regional and global ecosystems (e.g., lawn and garden care, mass transit).	pp. 186, 187, 191, 232, 238, 244, 278, 279, 280, 281, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302-303, 304, 305, 416, 510-511