



Macmillan/McGraw-Hill

Archdiocese of Newark
Science Curriculum Guidelines
Grade 4



SCIENCE

A CLOSER LOOK

Grade 4
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STANDARDS	PAGE REFERENCES
<p>Standard 5.2 (Science and Society) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.</p>	
<p><i>Cultural Contributions</i></p>	
<p>Describe how people from different cultures have made and continue to contribute to science and technology.</p>	<p>Student Edition: 4-11, 48, 381, 382-383, 434, 552 <i>Careers in Science</i> 122, 196, 306, 404, 476 <i>Reading in Science</i> 118-119, 222-223, 438-439, 586-587</p> <p>Teacher Wraparound Edition: EMI 387; SB 2, 114, 564</p>
<p><i>Historical Perspectives</i></p>	
<p>Hear, read, write and talk about scientists and inventors in historical context.</p>	<p>Student Edition: 34, 48, 381, 382, 396-397, 434 <i>Reading in Science</i> 390-391, 586-587</p> <p>Teacher Wraparound Edition: DI 381, 553; SB 34, 564</p>

STANDARDS	PAGE REFERENCES
<p>Standard 5.4 (Nature and Process of Technology) All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.</p>	
<p>Science and Technology</p>	
<p>Distinguish between natural phenomena and technological interventions to solve problems.</p>	<p>Student Edition: 216-219, 238-242, 278-280, 288-289 <i>Explore</i> 295, 483 <i>Quick Lab</i> 569, 580 <i>Reading in Science</i> 342-343 Teacher Wraparound Edition: AE 295; HA 280</p>
<p>Nature of Technology</p>	
<p>Demonstrate how measuring instruments are used to gather information in order to design things that work.</p>	<p>Student Edition: <i>Be a Scientist</i> 522- 523 <i>Explore</i> 295, 483 <i>Quick Lab</i> 93, 569, 580</p>
<p>Technological Design</p>	
<p>Choose materials most suitable to make simple mechanical constructions.</p>	<p>Student Edition: <i>Focus on Skills</i> 332 <i>Quick Lab</i> 93, 384, 569, 580</p>
<p>Use the design process to identify a problem, look for ideas, develop and share solutions.</p>	<p>The following pages can be incorporated to meet this standard. Student Edition: <i>Explore</i> 445, 539 <i>Quick Lab</i> 569, 580</p>
<p>Standard 5.5 (Characteristics of Life) All students will gain an understanding of structure, characteristics and basic needs of organisms and will investigate the diversity of Life.</p>	
<p>Matter, Energy, and Organization in Living Systems</p>	
<p>Contrast the needs of plants and those of animals.</p>	<p>Student Edition: 22-25, 35, 48-51 Teacher Wraparound Edition: DI 25; DMI 48; ELLS 24; UV 24</p>

STANDARDS	PAGE REFERENCES
Recognize that plants and animals are composed of different parts that perform different functions and work together for the well being of the organism.	Student Edition: 22, 24-27, 49-51, 100-104 <i>Explore</i> 21 <i>Human Body Systems</i> R14-R23 <i>Quick Lab</i> 27 Teacher Wraparound Edition: DI 27, 101, 103; DMI 26; TR42-TR43
Explain various processes of energy production e.g., cellular respiration and photosynthesis .	Student Edition: 23, 50-51, 152 Teacher Wraparound Edition: DI 51; ELLS 50; TR 46
Diversity and Biological Evolution	
Develop a simple classification scheme for grouping organisms e.g., genus species .	Student Edition: 34-37, 46-47 <i>Explore</i> 33 <i>Focus On Skills</i> 86-87 Teacher Wraparound Edition: DI 47; HA 40; SB 34; TR 40
Recognize that individuals vary within every species, including humans.	Student Edition: 115 <i>Quick Lab</i> 116 Teacher Wraparound Edition: TR41
Reproduction and Heredity	
Identify and illustrate different stages in the lives of various organisms.	Student Edition: 110-115 <i>Explore</i> 109 Teacher Wraparound Edition: DI 111, 113; ELLS 112; HA 116; TR41, TR43
Standard 5.6 (Physical Science - Chemistry) All students will gain an understanding of the structure and behavior of matter.	
Structure and Properties of Matter	
Observe and recognize that water, as an example of matter, can exist as a solid, liquid or gas, and can be transformed from one state to another by heating or cooling.	Student Edition: 324-327, 448-449 <i>Explore</i> 323 <i>Focus on Skills</i> 332-333 <i>Quick Lab</i> 328, 449 Teacher Wraparound Edition: DI 325, 449; DV 325; TR58

STANDARDS	PAGE REFERENCES
Compare and contrast the way different materials respond to similar conditions.	Student Edition: 413, 425, 446-447, 450-451 Teacher Wraparound Edition: DI 413; TR58
Chemical Reactions	
Combine two or more materials and show that the new material may have properties that are different from the original materials.	Student Edition: 450-451, 468-469 <i>Be a Scientist</i> 472-473 <i>Explore</i> 467 <i>Reading in Science</i> 454-455 Teacher Wraparound Edition: ELLS 454; EMI 451; SB 450; TR59; UV 469
Standard 5.7 (Physical Science – Physics) All students will gain an understanding of natural laws as they apply to motion, forces and energy transformations.	
Motion and Forces	
Investigate how force can change the speed , position, direction, and motion of a moving object.	Student Edition: 486-488, 494-498, 504 <i>Explore</i> 493, 503 <i>Focus on Skills</i> 490-491 <i>Quick Lab</i> 487, 498 <i>Writing in Science</i> 500 Teacher Wraparound Edition: AE 493; DMI 486; ELLS 486; SB 494
Observe and explain friction as a force that can retard motion.	Student Edition: 487, 498 <i>Math in Science</i> 501 <i>Quick Lab</i> 487, 498 <i>Writing in Science</i> 500 Teacher Wraparound Edition: DI 487; ELLS 486; HA 498
Examine forces that are invisible and act at a distance e.g., magnetism, gravity, static electricity and buoyancy .	Student Edition: 413, 488, 564-565 <i>Be a Scientist</i> 572-573 <i>Explore</i> 493 Teacher Wraparound Edition: AE 493; DMI 488

STANDARDS	PAGE REFERENCES
Energy Transformation	
Describe light as the visible part of the spectrum .	Student Edition: 552 <i>Explore</i> 551 Teacher Wraparound Edition: DMI 552; TR62-TR63
Describe how light behaves when it strikes different objects.	Student Edition: 554, 556-558 <i>Be a Scientist</i> 560-561 <i>Quick Lab</i> 557 Teacher Wraparound Edition: DI 557; HA 558; WU 550
Use devices that show how electricity is transformed to produce heat, light, sound and magnetic effects.	Student Edition: 566-569, 580-584 <i>Be a Scientist</i> 572-573 <i>Explore</i> 563, 575 <i>Quick Lab</i> 569, 580 Teacher Wraparound Edition: DI 580; ELLS 566
Produce sound by vibrating objects.	Student Edition: 540 <i>Explore</i> 539 Teacher Wraparound Edition: AE 539
Produce loud/soft volumes and high/low pitch .	Student Edition: 544-545 <i>Quick Lab</i> 544 Teacher Wraparound Edition: HA 546
Investigate how sound travels differently through different objects, mediums .	Student Edition: 542-543, 546 <i>Math in Science</i> 549 <i>Writing in Science</i> 548

STANDARDS	PAGE REFERENCES
<p>Standard 5.8 (Earth Science) All students will gain an understanding of the structure, dynamics, and geophysical systems of the earth.</p>	
<p><i>Earth's Properties and Materials</i></p>	
<p>Recognize how fossils provide evidence and help to interpret the nature of the environment of plants and animals that lived long ago.</p>	<p>Student Edition: 255, 274-277 <i>Be a Scientist</i> 282-283 <i>Explore</i> 273 <i>Quick Lab</i> 277</p> <p>Teacher Wraparound Edition: AE 273; DI 277; DV 275; SB 274; TR51</p>
<p><i>Atmosphere and Water</i></p>	
<p>Observe that rain, snow and other forms of precipitation come from clouds, but that not all clouds produce precipitation.</p>	<p>Student Edition: 325, 326, 328-330 <i>Quick Lab</i> 328</p> <p>Teacher Wraparound Edition: DI 326, 329; UV 329</p>
<p>Recognize that clouds and fog are made of tiny droplets of water and possibly tiny particles of ice.</p>	<p>Student Edition: 325, 329, 330</p>
<p><i>Processes that Shape the Earth</i></p>	
<p>Recognize that some changes of the Earth's surface are due to slow processes such as erosion and weathering, and some changes are due to rapid changes such as landslides, volcanic eruptions and earthquakes.</p>	<p>Student Edition: 216, 220, 226-231 <i>Explore</i> 225 <i>Math in Science</i> 235 <i>Quick Lab</i> 231 <i>Reading in Science</i> 222-223 <i>Writing in Science</i> 234</p> <p>Teacher Wraparound Edition: DI 227; ELLS 217, 228; FA 221; SB 204, 227; TR48-TR49</p>
<p><i>How We Study the Earth</i></p>	
<p>Use maps to locate and identify physical features on the Earth.</p>	<p>Student Edition: 138-139, 205, 287 <i>Organizing Data</i> R10</p> <p>Teacher Wraparound Edition: AE 203; DI 139; RM 205; SB R10; TR18-19</p>

STANDARDS	PAGE REFERENCES
<p>Standard 5.9 (Astronomy and Space Science) All students will gain an understanding of the origin, evolution, and structure of the universe.</p>	
<p>Earth, Moon and Sun Systems</p>	
<p>Know that the Earth's relative position to the Sun accounts for the seasons.</p>	<p>Student Edition: 362-364 <i>Quick Lab</i> 363</p> <p>Teacher Wraparound Edition: DMI 362; ELLS 363; HA 364; TR54</p>
<p>Recognize that as the Moon revolves around the Earth, the Sun's light produces different phases of the Moon.</p>	<p>Student Edition: 372-373 <i>Focus On Skills</i> 376-377</p> <p>Teacher Wraparound Edition: DI 372; DMI 372; EMI 373; IW 376; TR54</p>
<p>Solar System</p>	
<p>Recognize that some planets have satellites or moons and that Earth has one Moon.</p>	<p>Student Edition: 370-374, 380, 385-387</p> <p>Teacher Wraparound Edition: AE 379</p>
<p>Stars</p>	
<p>Identify various stars and describe them according to brightness, size and color.</p>	<p>Student Edition: 394 <i>Be a Scientist</i> 401 <i>Explore</i> 393</p> <p>Teacher Wraparound Edition: AE 393; TR55</p>
<p>Identify various constellations and the stars they contain e.g., North Star, Big Dipper, etc.</p>	<p>Student Edition: 396-397 <i>Be a Scientist</i> 400-401 <i>Quick Lab</i> 397</p> <p>Teacher Wraparound Edition: DI 396; ELLS 396; IW 400; WU 392</p>
<p>Galaxies and Universe</p>	
<p>Observe and record short- and long-term changes in the night sky.</p>	<p>The following pages can be incorporated to meet this standard.</p> <p>Student Edition: 396-397</p>

STANDARDS	PAGE REFERENCES
<p>Standard 5.10 (Environmental Studies) All students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.</p>	
<p><i>Natural Systems and Interactions</i></p>	
<p>Differentiate between natural resources that are renewable and non-renewable.</p>	<p>Student Edition: 278-280 Teacher Wraparound Edition: DV 279, 280</p>
<p><i>Human Interactions and Impact</i></p>	
<p>Analyze how meeting human requirements affects various ecosystems.</p>	<p>Student Edition: 186-187, 232 <i>Reading in Science</i> 146-147 Teacher Wraparound Edition: DI 187; DMI 232; ES 186; HA 232</p>
<p>Evaluate the impact of personal activities on the local environment.</p>	<p>Student Edition: 186-187, 232 <i>Math in Science</i> 293 <i>Reading in Science</i> 146-147 <i>Writing in Science</i> 292-293 Teacher Wraparound Edition: DI 187; ES 186; HA 570</p>