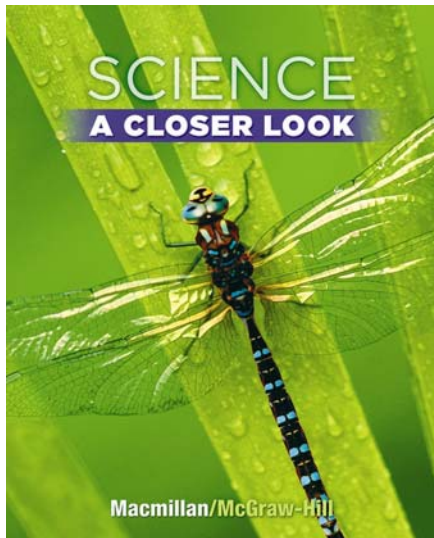




Macmillan/McGraw-Hill

Fifth Grade Science  
Grade Level  
Content Expectations



# SCIENCE

## A CLOSER LOOK

Grade 5  
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STANDARDS	PAGE REFERENCES
<p><b>SCIENCE PROCESSES</b> Inquiry Process</p>	
<p><i>K-7 Standard S.IP: Develop an understanding that scientific inquiry and reasoning involves observing, questioning, investigating, recording, and developing solutions to problems.</i></p>	
<p><b>S.IP.M.1 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.</b></p>	
<p><b>S.IP.05.11</b> Generate scientific questions based on observations, investigations, and research.</p>	<p><b>Student Edition:</b> 5 <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193, 322-323, 604-605, 634-635 <i>Explore</i> 47, 363 <b>Teacher Wraparound Edition:</b> EMI 5; OI 323</p>
<p><b>S.IP.05.12</b> Design and conduct scientific investigations.</p>	<p><b>Student Edition:</b> 6-7 <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193, 322-323, 604-605, 634-635 <i>Explore</i> 47, 363 <b>Teacher Wraparound Edition:</b> GI 363; OI 47</p>

STANDARDS	PAGE REFERENCES
<p><b>S.IP.05.13</b> Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens) appropriate to scientific investigations.</p>	<p><b>Student Edition:</b>  <i>Be a Scientist: Inquiry Investigation</i> 82-83, 192-193, 512-513, 603-604  <i>Explore</i> 21, 341, 379, 479  <i>Focus on Skills: Skill Builder</i> 30-31, 110-111, 248-249, 594-595</p> <p><b>Teacher Wraparound Edition:</b>            AE 379, 479; IW 14</p>
<p><b>S.IP.05.14</b> Use metric measurement devices in an investigation.</p>	<p><b>Student Edition:</b>  <i>Be a Scientist: Inquiry Investigation</i> 192-193, 322  <i>Explore</i> 47, 379, 479  <i>Focus on Skills: Skill Builder</i> 30-31, 248-249, 376-377, 594-595  <i>Quick Lab</i> 171, 631</p> <p><b>Teacher Wraparound Edition:</b>            AE 379, 479; IM 13</p>
<p><b>S.IP.05.15</b> Construct charts and graphs from data and observations.</p>	<p><b>Student Edition:</b>            9  <i>Be a Scientist: Inquiry Investigation</i> 82, 120-121, 192-193  <i>Focus on Skills: Skill Builder</i> 30-31, 428-429, 486-487, 594-595, 634-635  <i>Quick Lab</i> 631</p> <p><b>Teacher Wraparound Edition:</b>            DMI 9; IM 120, 594, 634</p>
<p><b>S.IP.05.16</b> Identify patterns in data.</p>	<p><b>Student Edition:</b>  <i>Be a Scientist: Inquiry Investigation</i> 82, 120-121, 192-193  <i>Focus on Skills: Skill Builder</i> 30-31, 428-429, 486-487, 594-595, 634-635  <i>Quick Lab</i> 631</p> <p><b>Teacher Wraparound Edition:</b>            DMI 9; IM 120, 594, 634</p>

STANDARDS	PAGE REFERENCES
<b>Inquiry Analysis and Communication</b>	
<i>K-7 Standard S.IA: Develop an understanding that scientific inquiry and investigations require analysis and communication of findings, using appropriate technology.</i>	
<b>S.IA.M.1 Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.</b>	
<p><b>S.IA.05.11</b> Analyze information from data tables and graphs to answer scientific questions.</p>	<p><b>Student Edition:</b> 9 <i>Be a Scientist: Inquiry Investigation</i> 82, 120-121, 192-193 <i>Focus on Skills: Skill Builder</i> 30-31, 428-429, 486-487, 594-595, 634-635 <i>Quick Lab</i> 631</p> <p><b>Teacher Wraparound Edition:</b> DMI 9; IM 120, 594, 634</p>
<p><b>S.IA.05.12</b> Evaluate data, claims, and personal knowledge through collaborative science discourse.</p>	<p>The following pages references can be used to meet this standard.</p> <p><b>Student Edition:</b> 10-11 <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193 <i>Explore</i> 47, 61 <i>Focus on Skills: Skill Builder</i> 376-377, 486-487 <i>Reading in Science</i> 130-131 <i>Writing in Science</i> 258</p> <p><b>Teacher Wraparound Edition:</b> OI 47</p>
<p><b>S.IA.05.13</b> Communicate and defend findings of observations and investigations using evidence.</p>	<p>The following pages references can be used to meet this standard.</p> <p><b>Student Edition:</b> 10-11 <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193, 322-323 <i>Explore</i> 61 <i>Focus on Skills: Skill Builder</i> 376-377, 486-487</p> <p><b>Teacher Wraparound Edition:</b> DMI 9; IM 120</p>

STANDARDS	PAGE REFERENCES
<p><b>S.IA.05.14</b> Draw conclusions from sets of data from multiple trials of a scientific investigation.</p>	<p><b>Student Edition:</b> 10-11 <i>Be a Scientist: Inquiry Investigation</i> 82-83 <i>Explore</i> 571 <i>Focus on Skills: Skill Builder</i> 164-165, 376-377, 526-527, 594-595, 603-604</p> <p><b>Teacher Wraparound Edition:</b> IM 82, 594, 634</p>
<p><b>S.IA.05.15</b> Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.</p>	<p>The following pages references can be used to meet this standard.</p> <p><b>Student Edition:</b> <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193, 322-323 <i>Focus on Skills: Skill Builder</i> 164-165, 376-377 <i>Reading in Science</i> 130-131</p> <p><b>Teacher Wraparound Edition:</b> IW 164</p>
<p><b>Reflection and Social Implications</b></p>	
<p><i>K-7 Standard S.RS: Develop an understanding that claims and evidence for their scientific merit should be analyzed. Understand how scientists decide what constitutes scientific knowledge. Develop an understanding of the importance of reflection on scientific knowledge and its application to new situations to better understand the role of science in society and technology.</i></p>	
<p><b>S.RS.M.1 Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision-making and the application of science throughout history and within society.</b></p>	
<p><b>S.RS.05.11</b> Evaluate the strengths and weaknesses of claims, arguments, and data.</p>	<p><b>Student Edition:</b> <i>Be a Scientist: Inquiry Investigation</i> 82-83, 120-121, 192-193 <i>Focus on Skills: Skill Builder</i> 164-165, 376-377 <i>Reading in Science</i> 130-131 <i>Writing in Science</i> 258</p> <p><b>Teacher Wraparound Edition:</b> IW 164</p>
<p><b>S.RS.05.12</b> Describe limitations in personal and scientific knowledge.</p>	<p>The following page references can be used to meet this standard by presenting questions that cannot be answered by science.</p> <p><b>Student Edition:</b> 4-11</p> <p><b>Teacher Wraparound Edition:</b> EMI 5; SB 4</p>

STANDARDS	PAGE REFERENCES
<p><b>S.RS.05.13</b> Identify the need for evidence in making scientific decisions.</p>	<p>The following page references can be used to meet this standard.</p> <p><b>Student Edition:</b> 10-11 <i>Reading in Science</i> 130-131, 294-295</p>
<p><b>S.RS.05.15</b> Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.</p>	<p><b>Student Edition:</b> <i>Be a Scientist: Inquiry Investigation</i> 192-193 <i>Explore</i> 47, 141, 167, 251, 393 <i>Focus On Skills: Skill Builder</i> 248-249 <i>Quick Lab</i> 117, 243, 425, 435</p> <p><b>Teacher Wraparound Edition:</b> AE 123; WU 122</p>
<p><b>S.RS.05.16</b> Design solutions to problems using technology.</p>	<p>The following page references can be used to meet this standard.</p> <p><b>Student Edition:</b> <i>Be a Scientist: Inquiry Investigation</i> 513, 648-649, 686-687 <i>Explore</i> 325, 571, 607 <i>Focus on Skills: Skill Builder</i> 376-377, 486-487 <i>Quick Check</i> 452 <i>Quick Lab</i> 611, 681 <i>Reading in Science</i> 295</p> <p><b>Teacher Wraparound Edition:</b> IR 295, 455; IW 690</p>
<p><b>S.RS.05.17</b> Describe the effect humans and other organisms have on the balance in the natural world.</p>	<p><b>Student Edition:</b> 197, 292, 319, 320, 336, 344-350 <i>Literature</i> 475 <i>Quick Check</i> 197, 292 <i>Reading in Science</i> 130-131, 294-295 <i>Writing Link</i> 351</p> <p><b>Teacher Wraparound Edition:</b> DIF 475; DMI 196; UV 345</p>

STANDARDS	PAGE REFERENCES
<p><b>S.RS.05.19</b> Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.</p>	<p><b>Student Edition:</b>            4-11, 126-127, 252, 442-443, 586  <i>Explore 3</i>  <i>Reading in Science</i> 176-177, 500-501, 560-561, 580-581  <i>Social Studies Link</i> 43  <i>Writing Link</i> 129, 467</p> <p><b>Teacher Wraparound Edition:</b>            CE 446; DIF 125, 443; FA 11; SB 4, 22, 34, 490; TR40</p>
<p><b>PHYSICAL SCIENCE</b>  <b>Forces and Motion</b></p>	
<p><i>K-7 Standard P.FM: Develop an understanding that the position and/or motion of an object is relative to a point of reference. Understand forces affect the motion and speed of an object and that the net force on an object is the total of all of the forces acting on it. Understand the Earth pulls down on objects with a force called gravity. Develop an understanding that some forces are in direct contact with objects, while other forces are not in direct contact with objects.</i></p>	
<p><b>P.FM.M.2 Force Interactions- Some forces between objects act when the objects are in direct contact (touching), such as friction and air resistance, or when they are not in direct contact (not touching), such as magnetic force, electrical force, and gravitational force.</b></p>	
<p><b>P.FM.05.21</b> Distinguish between contact forces and non-contact forces.</p>	<p><b>Student Edition:</b>            584, 586-587  <i>Read a Diagram</i> 587</p>
<p><b>P.FM.05.22</b> Demonstrate contact and non-contact forces to change the motion of an object.</p>	<p><b>Student Edition:</b>            586-587  <i>Read a Diagram</i> 587</p> <p><b>Teacher Wraparound Edition:</b>            DIF 587</p>
<p><b>P.FM.M.3 Force- Forces have a magnitude and direction. Forces can be added. The net force on an object is the sum of all of the forces acting on the object. The speed and/or direction of motion of an object changes when a non-zero net force is applied to it. A balanced force on an object does not change the motion of the object (the object either remains at rest or continues to move at a constant speed in a straight line).</b></p>	
<p><b>P.FM.05.31</b> Describe what happens when two forces act on an object in the same or opposing directions.</p>	<p><b>Student Edition:</b>            584-585  <i>Quick Check</i> 585</p> <p><b>Teacher Wraparound Edition:</b>            DIF 585</p>

STANDARDS	PAGE REFERENCES
<p><b>P.FM.05.32</b> Describe how constant motion is the result of balanced (zero net) forces.</p>	<p><b>Student Edition:</b> 588, 589</p> <p><b>Teacher Wraparound Edition:</b> DMI 588; FA 593</p>
<p><b>P.FM.05.33</b> Describe how changes in the motion of objects are caused by a non-zero net (unbalanced) force.</p>	<p><b>Student Edition:</b> 588-589</p> <p><i>Focus on Skills: Skill Builder</i> 594-595</p> <p><i>Lesson Review</i> 593 (#5)</p> <p><i>Quick Lab</i> 589</p> <p><b>Teacher Wraparound Edition:</b> FA 593</p>
<p><b>P.FM.05.34</b> Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.</p>	<p><b>Student Edition:</b> 590-591</p> <p><i>Quick Check</i> 591</p> <p><b>Teacher Wraparound Edition:</b> DMI 590; EMI 590; FA 593</p>
<p><b>P.FM.M.4 Speed- Motion can be described by a change in position relative to a point of reference. The motion of an object can be described by its speed and the direction it is moving. The position and speed of an object can be measured and graphed as a function of time.</b></p>	
<p><b>P.FM.05.41</b> Explain the motion of an object relative to its point of reference.</p>	<p><b>Student Edition:</b> 572-573</p> <p><i>Quick Check</i> 573</p> <p><i>Read a Diagram</i> 572</p> <p><b>Teacher Wraparound Edition:</b> APK 570; DIF 573</p>
<p><b>P.FM.05.42</b> Describe the motion of an object in terms of distance, time and direction, as the object moves, and in relationship to other objects.</p>	<p><b>Student Edition:</b> 572-577</p> <p><i>Explore</i> 571</p> <p><i>Read a Diagram</i> 572, 575</p> <p><b>Teacher Wraparound Edition:</b> DIF 573</p>
<p><b>P.FM.05.43</b> Illustrate how motion can be measured and represented on a graph.</p>	<p><b>Student Edition:</b> <i>Quick Lab</i> 575</p>

STANDARDS	PAGE REFERENCES
<b>LIFE SCIENCE</b>	
<b>Organization of Living</b>	
<p><i>K-7 Standard L.OL: Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.</i></p>	
<p><b>L.OL.M.4 Animal Systems- Multicellular organisms may have specialized systems that perform functions which serve the needs of the organism.</b></p>	
<p><b>L.OL.05.41</b> Identify the general purpose of selected animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive).</p>	<p><b>Student Edition:</b> 74-80 <i>Be a Scientist: Inquiry Investigation</i> 82-83 <i>Explore: Inquiry Activity</i> 73 <i>Quick Lab</i> 77 <i>Science Handbook</i> R10-R20 <b>Teacher Wraparound Edition:</b> APK 72; DMI 74, 76, 78; FA 81</p>
<p><b>L.OL.05.42</b> Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive) work together to perform selected activities.</p>	<p><b>Student Edition:</b> 74-75, 77, 78-79, 80 <i>Explore</i> 73 <i>Quick Check</i> 75, 79 <b>Teacher Wraparound Edition:</b> AE 73; DIF 75; DMI 78; FA 81; SB 77</p>
<b>Heredity</b>	
<p><i>K-7 Standard L.HE: Develop an understanding that all life forms must reproduce to survive. Understand that characteristics of mature plants and animals may be inherited or acquired and that only inherited traits are passed on to their young. Understand that inherited traits can be influenced by changes in the environment and by genetics.</i></p>	
<p><b>L.HE.M.1 Inherited and Acquired Traits – The characteristics of organisms are influenced by heredity and environment. For some characteristics, inheritance is more important; for other characteristics, interactions with the environment are more important.</b></p>	
<p><b>L.HE.05.11</b> Explain that the traits of an individual are influenced by both the environment and the genetics of the individual.</p>	<p><b>Student Edition:</b> 124-127 <i>Explore: Inquiry Activity</i> 123 <i>Quick Lab</i> 127 <b>Teacher Wraparound Edition:</b> DMI 124; WU 122</p>

STANDARDS	PAGE REFERENCES
<p><b>L.HE.05.12</b> Distinguish between inherited and acquired traits.</p>	<p><b>Student Edition:</b> 124-125</p> <p><b>Teacher Wraparound Edition:</b> DIF 125; ELL 124; UV 125</p>
<p><b>Evolution</b></p>	
<p><i><b>K-7 Standard L.EV:</b> Develop an understanding that plants and animals have observable parts and characteristics that help them survive and flourish in their environments. Understand that fossils provide evidence that life forms have changed over time and were influenced by changes in environmental conditions. Understand that life forms either change (evolve) over time or risk extinction due to environmental changes and describe how scientists identify the relatedness of various organisms based on similarities in anatomical features.</i></p>	
<p><b>L.EV.M.1 Species Adaptation and Survival- Species with certain traits are more likely than others to survive and have offspring in particular environments. When an environment changes, the advantage or disadvantage of the species’ characteristics can change. Extinction of a species occurs when the environment changes and the characteristics of a species are insufficient to allow survival.</b></p>	
<p><b>L.EV.05.11</b> Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.</p>	<p><b>Student Edition:</b> 169, 172</p> <p><i>Explore: Inquiry Activity 167</i></p> <p><i>Quick Check 169</i></p> <p><b>Teacher Wraparound Edition:</b> AE 167; DIF 169; DMI 172; EMI 169; GI 167; OI 167; UV 169</p>
<p><b>L.EV.05.12</b> Describe the physical characteristics (traits) of organisms that help them survive in their environment.</p>	<p><b>Student Edition:</b> 168, 170-171, 172, 174</p> <p><i>Art Link 175</i></p> <p><i>Quick Check 169, 171</i></p> <p><i>Quick Lab 171</i></p> <p><i>Reading in Science 176-177</i></p> <p><i>Writing in Science 58</i></p> <p><i>Writing Link 175</i></p> <p><b>Teacher Wraparound Edition:</b> DMI 172; EMI 169; UV 169, 170; WU 166</p>
<p><b>L.EV.05.13</b> Describe how fossils provide evidence about how living things and environmental conditions have changed.</p>	<p><b>Student Edition:</b> 326</p> <p><i>Writing in Science 338</i></p> <p><b>Teacher Wraparound Edition:</b> TR45</p>

STANDARDS	PAGE REFERENCES
<p><b>L.EV.05.14</b> Analyze the relationship of environmental change and catastrophic events (for example: volcanic eruption, floods, asteroid impacts, tsunami) to species extinction.</p>	<p><b>Student Edition:</b> 198</p> <p><b>Teacher Wraparound Edition:</b> DMI 198; SB 170; TR45</p>
<p><b>L.EV.M.2 Relationships Among Organisms- Similarities among organisms are found in anatomical features, which can be used to infer the degree of relatedness among organisms. In classifying organisms, biologists consider details of internal and external structures to be more important than behavior or general appearance.</b></p>	
<p><b>L.EV.05.21</b> Relate degree of similarity in anatomical features to the classification of contemporary organisms.</p>	<p><b>Student Edition:</b> 34-35 <i>Explore</i> 33, 61 <i>Fact</i> 35 <i>Read a Chart</i> 35</p> <p><b>Teacher Wraparound Edition:</b> AM 35; LW 32</p>
<p><b>EARTH SCIENCE</b> <b>Earth Systems</b></p> <p><i>K-7 Standard E.ES: Develop an understanding of the warming of the Earth by the sun as the major source of energy for phenomenon on Earth and how the sun's warming relates to weather, climate, seasons, and the water cycle. Understand how human interaction and use of natural resources affects the environment.</i></p> <p><b>E.ES.M.6 Seasons- Seasons result from annual variations in the intensity of sunlight and length of day due to the tilt of the axis of the Earth relative to the plane of its yearly orbit around the sun.</b></p>	
<p><b>E.ES.05.61</b> Demonstrate using a model, seasons as the result of variations in the intensity of sunlight caused by the tilt of the Earth on its axis, and revolution around the sun.</p>	<p><b>Student Edition:</b> 424-425 <i>Quick Check</i> 425 <i>Quick Lab</i> 424 <i>Read a Diagram</i> 424</p> <p><b>Teacher Wraparound Edition:</b> DMI 424</p>
<p><b>E.ES.05.62</b> Explain how the revolution of the Earth around the sun defines a year.</p>	<p><b>Student Edition:</b> 424 <i>Focus on Skills: Skill Builder</i> 428-429 <i>Lesson Review</i> 427 (#6)</p>

STANDARDS	PAGE REFERENCES
<b>Earth in Space and Time</b>	
<p><i><b>K-7 Standard E.ST:</b> Develop an understanding that the sun is the central and largest body in the solar system and that Earth and other objects in the sky move in a regular and predictable motion around the sun. Understand that those motions explain the day, year, moon phases, eclipses and the appearance of motion of objects across the sky. Understand that gravity is the force that keeps the planets in orbit around the sun and governs motion in the solar system. Develop an understanding that fossils and layers of Earth provide evidence of the history of Earth's life forms, changes over long periods of time, and theories regarding Earth's history and continental drift.</i></p>	
<p><b>E.ST.M.1 Solar System- The sun is the central and largest body in our solar system. Earth is the third planet from the sun in a system that includes other planets and their moons, as well as smaller objects, such as asteroids and comets.</b></p>	
<p><b>E.ST.05.11</b> Design a model that describes the position and relationship of the planets and other objects (comets and asteroids) to the sun.</p>	<p><b>Student Edition:</b> Explore 441 <b>Teacher Wraparound Edition:</b> ELL 454; WU 441</p>
<p><b>E.ST.M.2 Solar System Motion- Gravity is the force that keeps most objects in the solar system in regular and predictable motion.</b></p>	
<p><b>E.ST.05.21</b> Describe the motion of planets and moons in terms of rotation on axis and orbits due to gravity.</p>	<p><b>Student Edition:</b> 422-423, 426 Explore 421 Focus on Skills: Skill Builder 428-429 Quick Check 423 <b>Teacher Wraparound Edition:</b> DMI 422; WU 420</p>
<p><b>E.ST.05.22</b> Explain moon phases as they relate to the position of the moon in its orbit around the Earth, resulting in the amount of observable reflected light.</p>	<p><b>Student Edition:</b> 432-433 Explore 431 Look and Wonder 430 Quick Check 433 <b>Teacher Wraparound Edition:</b> DMI 432; LW 430</p>
<p><b>E.ST.05.23</b> Recognize that nighttime objects (stars and constellations) and the sun appear to move because the Earth rotates on its axis and orbits the sun.</p>	<p><b>Student Edition:</b> 426 Quick Check 426 <b>Teacher Wraparound Edition:</b> DMI 426; FA 427</p>

STANDARDS	PAGE REFERENCES
<p><b>E.ST.05.24</b> Explain lunar and solar eclipses based on the relative positions of the Earth, moon, and sun, and the orbit of the moon.</p>	<p><b>Student Edition:</b>            434-435  <i>Quick Lab</i> 435  <i>Read a Diagram</i> 434</p> <p><b>Teacher Wraparound Edition:</b>            DMI 434; ELL 434; FA 437</p>
<p><b>E.ST.05.25</b> Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.</p>	<p><b>Student Edition:</b>            224, 436  <i>Quick Check</i> 436  <i>Read a Diagram</i> 436</p> <p><b>Teacher Wraparound Edition:</b>            DMI 436; FA 437</p>