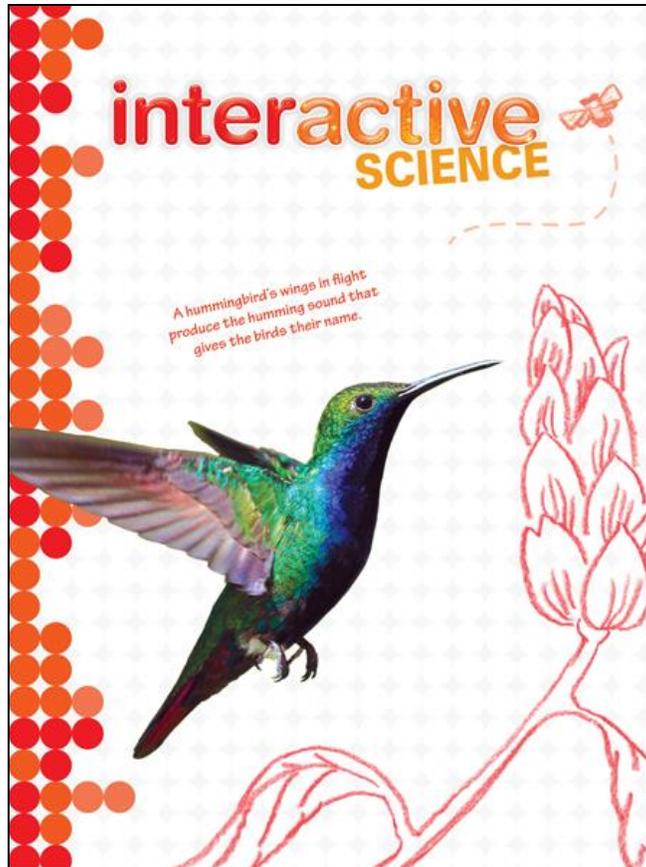


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To the
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Science, Grade 4**

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2015 Alabama Course of Study Science	Interactive Science Grade 4, ©2016
Energy	
1. Use evidence to explain the relationship of the speed of an object to the energy of that object.	SE/TE: 14, 62-63 TE only: 15 (Differentiated Instruction), 111a
2. Plan and carry out investigations that explain transference of energy from place to place by sound, light, heat, and electric currents.	SE/TE: 2, 4-6, 106-109 TE only: 111b
a. Provide evidence that heat can be produced in many ways (e.g., rubbing hands together, burning leaves) and can move from one object to another by conduction.	SE/TE: 28-33, 95, 194
b. Demonstrate that different objects can absorb, reflect, and/or conduct energy.	SE/TE: 28, 34-36, 82-85, 194
c. Demonstrate that electric circuits require a complete loop through which an electric current can pass.	SE/TE: 80, 86-91, 92, 96-97 TE only: 90 (in Science Notebook), 97a-97d
3. Investigate to determine changes in energy resulting from increases or decreases in speed that occur when objects collide.	SE/TE: 58-59, 110 TE only: 111c
4. Design, construct, and test a device that changes energy from one form to another (e.g., electric circuits converting electrical energy into motion, light, or sound energy; a passive solar heater converting light energy into heat energy).*	SE/TE: 91-92, 96-97, 194 TE only: 97a-97d, 111d

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5. Compile information to describe how the use of energy derived from natural renewable and nonrenewable resources affects the environment (e.g., constructing dams to harness energy from water, a renewable resource, while causing a loss of animal habitats; burning of fossil fuels, a nonrenewable resource, while causing an increase in air pollution; installing solar panels to harness energy from the sun, a renewable resource, while requiring specialized materials that necessitate mining).	SE/TE: 195-199, 211 TE only: 196 (21 st Century Learning), 198 (Science Notebook), 229d
6. Develop a model of waves to describe patterns in terms of amplitude and wavelength, and including that waves can cause objects to move.	SE/TE: 17-21 TE only: 18 (Content Refresher), 111e
7. Develop and use models to show multiple solutions in which patterns are used to transfer information (e.g., using a grid of 1s and 0s representing black and white to send information about a picture, using drums to send coded information through sound waves, using Morse code to send a message).*	SE/TE: 19 TE only: 111f
8. Construct a model to explain that an object can be seen when light reflected from its surface enters the eyes.	SE/TE: 26-27 TE only: 1G-1H (On-Level Reader Support), 111g
From Molecules to Organisms: Structures and Processes	
9. Examine evidence to support an argument that the internal and external structures of plants (e.g., thorns, leaves, stems, roots, colored petals, xylem, phloem) and animals (e.g., heart, stomach, lung, brain, skin) function to support survival, growth, behavior, and reproduction.	SE/TE: 122 (#5), 124-125, 129-135, 138-141, 142, 143-147 TE only: 112C (What Do Leaves and Stems Do?), 112D (Getting to the Root of Plants), 229a

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10. Obtain and communicate information explaining that humans have systems that interact with one another for digestion, respiration, circulation, excretion, movement, control, coordination, and protection from disease.	SE only: xxii-xxxiii TE only: xlvi-xlvii
11. Investigate different ways animals receive information through the senses, process that information, and respond to it in different ways (e.g., skunks lifting tails and spraying an odor when threatened, dogs moving ears when reacting to sound, snakes coiling or striking when sensing vibrations).	SE/TE: 154-159, 225 (Write a Biography), 226 (Research Animal Instincts) TE only: 158 (Science/Writing), 229b
Earth's Systems	
12. Construct explanations by citing evidence found in patterns of rock formations and fossils in rock layers that Earth changes over time through both slow and rapid processes (e.g., rock layers containing shell fossils appearing above rock layers containing plant fossils and no shells indicating a change from land to water over time, a canyon with different rock layers in the walls and a river in the bottom indicating that over time a river cut through the rock).	SE/TE: 201-205, 206-210, 255-259, 261-264 TE only: 209 (Science/Writing), 229c, 295d
13. Plan and carry out investigations to examine properties of soils and soil types (e.g., color, texture, capacity to retain water, ability to support growth of plants).	SE/TE: 178-181, 234-236
14. Explore information to support the claim that landforms are the result of a combination of constructive forces, including crustal deformation, volcanic eruptions, and sediment deposition as well as a result of destructive forces, including erosion and weathering.	SE/TE: 254-259, 261-264 TE only: 257 (Science Notebook)

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<p>15. Analyze and interpret data (e.g., angle of slope in downhill movement of water, volume of water flow, cycles of freezing and thawing of water, cycles of heating and cooling of water, speed of wind, relative rate of soil deposition, amount of vegetation) to determine effects of weathering and rate of erosion by water, ice, wind, and vegetation using one single form of weathering or erosion at a time.</p>	<p>SE/TE: 254-259, 278-279, 290-293</p> <p>TE only: 258 (Science Notebook), 279a-279d, 295a</p>
<p>16. Describe patterns of Earth’s features on land and in the ocean using data from maps (e.g., topographic maps of Earth’s land and ocean floor; maps of locations of mountains, continental boundaries, volcanoes, and earthquakes).</p>	<p>SE/TE: The online “Topographic Map” activity for Chapter 6, Lesson 3, meets this standard. Supporting content describing Earth’s features and examples of where these occur can be found on pgs. 261-265.</p> <p>TE only: 295b</p>
<p>17. Formulate and evaluate solutions to limit the effects of natural Earth processes on humans (e.g., designing earthquake, tornado, or hurricane-resistant buildings; improving monitoring of volcanic activity).*</p>	<p>SE/TE: 234-237</p> <p>TE only: 295c</p>