

**Pacing Guide
Science
Grade 6 – Advisory 1**

Timeframe	Broad Concepts/ Standard(s) and Power Standards/ Indicators	Resources	Instructional Strategies/Integration Opportunities	Short Cycle Assessments
First Advisory Week 1 5 Sessions	<p>6.1 Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations.</p> <p>6.1.1 Give examples of different ways scientists investigate natural phenomena, and identify processes all scientists use, such as collection of relevant evidence the use of reasoning, the development and testing of hypothesis, and the use and construction of theory to make sense of the evidence.</p> <p>6.1.6 Locate information in reference books, back issues of newspapers and magazines, CD-ROMS, and online databases.</p>	<p>Text: How to Be An Effective Teacher: The First Days of School by Harry K. Wong</p> <p>The Effective Teacher (Video Series) by Harry K. Wong</p> <p>The First Six Weeks of School, “Strategies for Teachers Series,” Denton and Kriete NEFC ISBN#978-1-892989-08-6</p> <p>Teaching Children to Care, “Classroom Management for Ethical and Academic Growth, K-8,” Charney NEFC ISBN #978-1-892989-08-6</p> <p>McDougal Littell: Earth Science, pp. R45-R51, Teacher Edition</p> <p>See materials lists for each experiment; listed in teacher edition; the items should be available in the science kit at your school.</p>	<p>Classroom Management:</p> <ul style="list-style-type: none"> • Model Rules and logical consequences • Model Procedures and Routines of the classroom; post rules • Guided discovery and choice • Preview equipment list and placement in the classroom • Demonstrate/model exemplar of note taking requirements and picture drawings to record observations (notebook care, headings, illustrations, etc.) • Model vocabulary strategies and graphic organizers (description wheel, four square, frame game, magnet word, and word triangle) • Model the scientific inquiry process in the cooperative learning culture. <p>Demonstrate modern technology used in scientific inquiry. Technology used in the classroom-computers, microscopes, scientific tools, etc.</p> <p>(Continue process for six weeks being sure to model and monitor as new activities are introduced.)</p>	<p>Students will model class rules and expectations in the classroom and elsewhere in the building. (ongoing)</p>

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<p>Week 2 5 sessions</p>	<p>6.3 Broad Concept: Astronomy and planetary exploration reveal the structure and scale of the solar system.</p> <p>6.3.10 Explain that gravity is a force of attraction that every mass in the universe exerts on every other mass, and everything on or anywhere near Earth is attracted toward and attracts Earth’s center by a gravitational force.</p> <p>6.4. Broad Concept: The transfer of energy through radiation and convection currents affects many phenomena on the Earth’s surface.</p> <p>6.4.1 Explain the meaning of radiation, convection, and conduction (three mechanisms by which heat is transferred to, through, and out of the Earth’s system).</p> <p>6.8.12 Explain how physical evidence, such as fossils and surface features of glaciations, supports detailed explanations of how Earth’s surface has evolved over geologic time.</p>	<p>Textbook McDougal Littell: Earth Science pp. xxix—xxxvii</p> <p>www.scilinks.org (explores the topic of technology usage)</p> <p>www.classzone.com (view simulations and uses of the text along with resource centers)</p> <p>Textbook: McDougal Littell: Earth Science xxxviii—xli</p> <p>Textbook: McDougal Littell: Earth Science xlii—xlili</p> <p>http://mjksciteachingideas.com/manage.html</p>	<p>Answer questions and discuss the Unifying Principles of Earth Science</p> <p>What is Earth science? Some items to explain include: Heat energy inside Earth and radiation from the sun provide energy for Earth’s processes.</p> <p>Physical forces, such as gravity, affect the movement of all matter on Earth and throughout the universe.</p> <p>Matter and energy move among Earth’s rocks and soil, atmosphere, waters, and living things.</p> <p>Earth has changed over time and continues to change.</p> <p>The Nature of Science Investigate and explain the scientific process through a brief experiment.</p> <p>Reading: 6.W-E.3. Write research reports that:</p> <ul style="list-style-type: none"> • Frame a key question about an issue or situation, • Group ideas and place them in logical order, and • Include facts and details that illuminate the main ideas. <p>Discuss the use of technology in science and demonstrate the features of the textbook.</p> <p>Informational Text: 6.IT-E.2 Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, glossary, index, and bibliography).</p> <p>6.IT—E.3. Identify and use organizational structures in text, including chronological order, comparison and contrast, cause and effect, logical order, and classification schemes.</p>	<p>Diagnostic test</p>

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First Advisory 10 sessions	<p>6.2 Broad Concept: Although each of the human enterprises of science and technology has a character and history of its own, each is dependent on and reinforces the other.</p> <p>6.2.1 Explain that computers have become valuable in science because they speed up and extend people’s ability to collect, store, compile, and analyze data; prepare research reports; and share data and ideas with investigators all over the world.</p> <p>6.2.2 Explain that technology is essential to science for such purposes as measurement, data collection, graphing and storage, computation, communication and assessment of information, and access to outer space and other remote locations.</p> <p>6.1.9 Read a topographic map and a geologic map for evidence provided on the maps.</p>	<p>McDougal Littell: Earth Science, Chapter 1, Views of Earth Today, pp.8-39</p> <p>www.classzone.com -content review -math tutorial -misconception database -lab generator -visualization</p> <p>http://mjkscteachingideas.com/manage.html</p>	<p>Chapter 1.1 pp. 6-14 Note-taking Strategy: By using graphic organizers to sort out main ideas and make connections between supporting details, students become active readers with improved comprehension. (Four main part of Earth’s Systems include: atmosphere, hydrosphere, biosphere, & geosphere) Vocabulary Strategy: Draw a word triangle diagram for each new term. (p.8)</p> <p>Social Studies: 6.5.2. Categorize elements of the natural environment as belonging to one of the four components of Earth’s physical systems: atmosphere, lithosphere, biosphere, or hydrosphere.</p> <p>Chapter 1.2 pp. 15-23 Introduce students to the concept of maps as easy-to-use tools. Explain how to find exact locations. Explain why all maps distort Earth’s surface.</p> <p>Social Studies: 6.1. Students use maps, globes, atlases, and other technologies to acquire and process information about people, places and environments. 6.1.1. Demonstrate that, in attempting to represent the round Earth on flat paper, all maps distort. 6.1.2. Explain that maps contain spatial elements of point, line, area, and volume. 6.1.3. Locate cardinal directions, poles, equator, hemispheres, continents, oceans, major mountain ranges, and other major geographical features.</p> <p>Lab: Investigate map projections, How do you show the curved Earth on a flat surface? (p.20)</p> <p>Math: 6.NS0-C.14. Solve simple proportion problems</p>	<p>Chapter 1.1 Draw a diagram on the board of Earth’s systems and ask students to label the 4 main systems, composition of the 4 spheres, boundaries and names of the geosphere’s layers, composition or nature of each geosphere layer.</p> <p>Chapter 1.2, Quiz, p.4 Review questions, p.22</p> <p>Chapter 1.3 Quiz, p.5 Review Questions, p. 27</p> <p>Chapter 1.4 quiz, p.6 Review questions, p.34 Chapter 1 Review/Standardized test practice pp. 36-39</p>

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			<p>using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $a/b=c/d$.</p> <p>Chapter 1.3 pp. 24-29 Introduce the concept that contour lines connect points of equal elevation. Chapter Investigation: Investigate Topographic maps, students use what they've learned about 3-dimensional surface to make a terrain out of clay and produce a topographic map of the model. (pp.28-29)</p> <p>Chapter 1.4 pp. 30-35 Have students think about the wide range of information technology can provide about Earth's surface. Lab: Investigate satellite imaging, How do satellites send images to Earth? (p. 32)</p>	

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8 sessions	<p>6.7. Broad Concept: Rock materials are continuously recycled in the rock cycle.</p> <p>6.7.1 Recognize minerals are naturally occurring crystalline solids with definite chemical compositions, and identify common minerals using a key to their diagnostic properties.</p> <p>6.7.2 Examine and recognize most rocks are made of one or more minerals.</p>	<p>McDougal Littell: Earth Science, Chapter 2, Minerals, pp.40-71</p> <p>www.classzone.com -content review -visualization -three resource centers -math tutorial -test practice -reteach key concepts</p> <p>www.scilinks.org -identifying minerals -misconception database</p> <p>Lab generator CD-ROM</p> <p>Test generator CD-ROM</p> <p>PC microscope to examine grains of salt</p> <p>http://mjksiteachingideas.com/minerals.html -teaching mineral identification</p> <p>Field Trip: National Museum of Natural History, D.C.</p>	<p>Chapter 2-1 pp. 40-49 Minerals are the basic building blocks of Earth. Note-taking Strategy: Students use graphic organizers to show the main idea and the information that supports it. (p.42) Students identify and classify the characteristics of minerals and observe crystal shapes.</p> <p>Vocabulary Strategy: description wheel, place each new term on the wheel use spokes to write words that explain it.</p> <p>Lab: Investigate Crystal Shape, How do crystals differ in shape? (p. 46)</p> <p>Math: Change fractions to a percentage. 6.NSO-N.5. Identify and determine common equivalent fractions, mixed numbers, decimals, and percentages.</p> <p>Chapter 2.2 pp. 50-57 A mineral can vary in appearance but can be identified by its properties.</p> <p>Math: 6.G.1. Match three-dimensional objects and their two-dimensional representations (e.g., nets, projections, and perspective drawings). 6.G.3. Determine if two shapes are congruent by motions or series of motions (e.g., translations, rotations, and reflections); predict results of transformations on unmarked planes and draw the transformed figure (e.g., predict how tessellations transform under translation, reflection, and rotation.)</p> <p>Labs: Investigate Hardness of Minerals, How hard are some common minerals? (p.56) Chapter investigation--Mineral identification. Students will observe and perform tests on minerals and compare their observations to a mineral identification key. (p.59)</p> <p>Math: Students find the specific gravity of an unknown mineral. 6.NSO—C.8. Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers and with positive fractions,</p>	<p>Section 2.1 Quiz, p.23 Review questions, p. 48</p> <p>Section 2.2 Quiz, p.24 Review questions, p.57</p> <p>Section 2.3 Quiz, p.25 Review questions, p. 66 Chapter 2 Review/standardized test practice pp 68-71.</p>

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			<p>mixed numbers, decimals, and percentages. 6.NSO—C.14. Solve simple proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $a/b=c/d$.</p> <p>Chapter 2.3 pp.60-67 Introduce the concept that minerals have many everyday uses. Students identify ways minerals are used in industry and art. Explain how minerals form. Explain how minerals are mined. Draw conclusions, from an experiment, about the benefits and costs of mining. Lab: Investigate mining, What are the benefits and costs of mining ores? (p. 65)</p> <p>Math: Discuss which shapes would reflect light to the viewer's eye. 6.G.1. Match three-dimensional objects and their two-dimensional representations (e.g., nets, projections, and perspective drawings).</p> <p>Field Trip: Students travel to the Hall of Geology, Gems, and Minerals: The National Gem and Mineral Collection is one of the most significant collections of its kind in the world.</p>	

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11 sessions	<p>6.7 Broad Concept: Rock materials are continuously recycled in the rock cycle.</p> <p>6.7.3 Describe how igneous rocks are formed when older rocks are melted and then re-crystallized. Understand they may be cooled deep in the Earth or at or near the surface as part of volcanic systems.</p> <p>6.7.4 Explain how metamorphic rocks are formed when older rocks are heated (short melting) and/or subjected to increased pressure.</p> <p>6.7.5 Describe how sedimentary rocks are formed when older rocks are subjected to weathering into sediments, and those sediments are eroded, transported, deposited, then compacted and cemented.</p>	<p>McDougal Littell: Earth Science, Chapter 3, Rocks, pp. 72-107</p> <p>www.classzone.com -Explore how rocks form and change. -content review -math tutorial: Estimating Area</p> <p>www.scilinks.org -the rock cycle</p> <p>http://mjksciteachingideas.com/rocks.html -teaching how pressure and heat creates metamorphic rock using crayon/wax experiments</p>	<p>Chapter 3.1 pp.74-81 Students identify three types of rocks, explain how one type of rock can change into another, and design a system for classifying rocks in an experiment.</p> <p>Note-taking Strategy: Use the main idea web to take notes about important terms and details that relate to the main idea.</p> <p>Vocabulary strategies: Students visualize the fact that a single word can have several meanings. Draw a magnet word diagram for each new vocabulary term. Around the “magnet” write words and ideas related to the term. (p. 74)</p> <p>Lab: Investigate Classification of Rocks, Explore how rocks differ from minerals using a hand held lens to look at rock and mineral samples. Record the observations and classify rocks according to their characteristics. (p.77)</p> <p>Math: 6.NSO-E.18. Estimate results of computations with whole numbers and with positive fractions, mixed numbers, decimals, and percentages. Determine reasonableness of estimates.</p> <p>Reading: Informational Text 6.IT—E.3. Identify and use organizational structures in text, including chronological order, comparison and contrast, cause and effect, logical order, and classification schemes. Use a graphic organizer to demonstrate the cycle of rocks. (p.79)</p> <p>Chapter 3.2, pp. 82-88 Students use igneous rock samples to understand how two rocks made of the same minerals can look very different. Lab: Investigate Crystal Size, analyze how cooling time affects crystal size? (p. 85)</p> <p>Math: 6.NSO—E.18. Estimate results of computations with whole</p>	<p>Section 3.1 Quiz, p.42 Review questions, p. 80</p> <p>Section 3.2 Quiz, p. 43 Review questions, p. 87 Have students illustrate and explain the process and characteristics for intrusive igneous rock and extrusive igneous rock.</p> <p>Section 3.3 quiz p. 44 Review questions, p. 95</p>

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			<p>numbers and with positive fractions, mixed numbers, decimals, and percentages. Determine reasonableness of estimates.</p> <p>Chapter 3.3, pp. 89-95 Students identify the kinds of materials that make up sedimentary rocks. Describe the three groups of sedimentary rocks. Explain how sedimentary rocks record past conditions. Experiment to model how sedimentary rocks form in layers. Lab: Explore particle layers, observe what happens as rock particles settle in water. (p. 94)</p> <p>Math: Resurfacing Earth, estimate the area covered by all the lava flows shown on the map, p. 88. 6.M.3. Develop strategies to find the area and perimeter of complex shapes (e.g. subdividing them into basic shapes such as quadrilaterals, triangles, circles). Lab: Investigate Rock Layers, make a model to show how sedimentary rocks form in layers. (p. 94)</p> <p>Chapter 3.4, pp. 96-101 Use a visual to show that heat and pressure change rocks in a process that is called metamorphism. Lab: Investigate Metamorphic Changes, model how pressure and temperature can change a solid. (p. 98) Chapter Investigation: Rock Classification, students will learn how to classify rocks as igneous, sedimentary, or metamorphic using a classification key. (pp. 102-103)</p>	<p>Section 3.4, quiz, p.45 Review questions, p.101 Chapter 3 Review/standardized test practice, pp. 104-107.</p>

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Advisory 1 8 sessions	<p>EARTH AND LIFE HISTORY 6.9. Evidence from rocks allows us to understand the evolution of life on Earth.</p> <p>6.9.1 Explain how the earth's surface is built up and broken down by natural processes, including deposition of sediments, rock formation, erosion and weathering.</p> <p>6.9.3 Explain that although weathered rock is the basic component of soil, the composition and texture of soil and its fertility and resistance to erosion are greatly influenced by plant roots and debris, bacteria, fungi, worms, insects, and other organisms.</p> <p>6.7.5 Describe how sedimentary rocks are formed when older rocks are subjected to weathering into sediments and those sediments are eroded, transported, deposited, then compacted and cemented.</p>	<p>Earth Science, McDougal Littell, Chapter 4, WEATHERING AND SOIL FORMATION, pp.112-141</p> <p>Transparency Book, pp. T26-T32 Unit Resource Book, pp. 226-248 CLASSZONE.COM Review content, pp.114, 138 Math tutorial: Surface Area of Rectangular Prisms, p.121 Resource centers: Weathering, p.116 Soil, p. 129 SCILINKS.ORG Code: MDL016 Soil Conservation http://www.geo.ua.edu/intro03/Eros.html</p> <p>http://www.usoe.k12.ut.us/curr/science/core/8/thgrd/sciber8/geology/html/SOIL.HTM http://www.caseytrees.org</p>	<p>INQUIRY-BASED ACTIVITIES (p. 113) 1. <i>Ice Power</i>(10 min). Introduce students to one of the natural forces that can break up rocks. 2. <i>Getting the Dirt on Soil</i> (10 min). Students observe and think what affects how easily water moves through soil.</p> <p>EXPLORE 1. <i>Mechanical Weatherin</i> (p. 115). Introduce students to the forces that break down rocks. 2. <i>Soil Composition</i> (p.122). Students recognize similarities and differences among soils.</p> <p>INVESTIGATE 1. <i>Chemical Weatherin</i>, (p. 118). Students identify variables in an experiment about rust formation. 2. <i>Soil Conservation</i> (p. 137). Students will make a model to understand the amount of fertile soil on Earth.</p> <p>VOCABULARY STRATEGIES Description wheel, Magnet Word, Word Triangle, (pp. R50-R51) of the Earth Science textbook</p> <p>TEACHER DEMONSTRATION on how some minerals dissolve in slightly acidic water. (McDougal Littell's teacher's edition, p. 119)</p> <p>COMMUNITY OUTREACH-- Casey Trees' Community Tree Planting Program. Contact caseytrees.org for registration. 1. Students are oriented on how to plant a tree. 2. Students plant their own trees in their community.</p>	<p>Ongoing Assessments of the chapter.</p> <p>Check Your Reading, pp. 116, 119</p> <p>Reading Visuals, pp. 117, 119</p> <p>KWL</p> <p>Entry and Exit Slips</p> <p>Vocabulary and Content Review</p> <p>Quiz</p>

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			<p>Internet Activities</p> <ol style="list-style-type: none"> 1. Soil Formation (p.113) 2. Website Presentation <p>Math:</p> <p>Rock Weathering. Students find the area of a rectangular prism. (pp. 121, R43)</p> <p>6.M.8 Know and use the formulas for volume and surface areas of cubes and rectangular prisms, given the lengths of their sides.</p> <p>Social Studies:</p> <p>Teach from visuals (p. 119)</p> <p>Compare and contrast the ancient stone monument that was moved from a desert in Egypt to New York City in 1881 (How and Why has it changed?), and the world soil types. (p.125)</p> <p>6.5.7 Give examples, in terms of places where they occur, of the physical processes that shape the Earth's surface.</p>	