

Huntsville City Schools

2020 - 2021 Pacing Guide

6th Grade Science

Important Notes:

- Alabama Course of Study objectives are given by number
- This curriculum map's standards are aligned to the Alabama Course of Study.
- Resources and Instructional Strategies are suggestions for the topic studied; teachers are not required to use all resources listed and can supplement their teaching with additional resources that support the Course of Study Standards.
- The number of days listed are approximate and are padded to allow a little extra time for review and tests
- The problems listed for each section are suggested types of problems. Teachers can still assign even, odd, or selected problems from each type of problem.
- To access ELL or Discovery Ed lessons, you must be logged in using your school email and password.

Online Resources:

- Khan Academy – Example videos and practice activities that may be of additional help to students: <https://www.khanacademy.org/>
- Shmoop – Teachers and students can use Shmoop to view videos and practice on various math topics searchable by Common Core State Standard: <https://www.shmoop.com/>
- Open Curriculum - activities from all over the internet sorted by standard: www.opencurriculum.org
- Discovery Education Techbook (link on Clever)
- Phet Colorado Simulations (www.phet.colorado.edu)
- AMSTI Online (www.amsti.org)
- Ellevation (link on Clever)
- Middle School Chemistry (www.middleschoolchemistry.com)
- ALEX (use for vocabulary for Word Wall) (<https://alex.state.al.us/standardAll.php?grade=8&subject=SC2015&ccode=PS8&summary=2>)
- PBS Learning (<https://aptv.pbslearningmedia.org>)

Instructional Strategies:

ELlevation: **Note:** Be sure to check the “Science Collection” for specific topic resources”

Build Background:

- * Brainstorm Walk
- * I Notice, I Wonder

Clarify Input:

- * “5 and 2”
- * Anchor Charts
- * Essential Questions
- * Guided Notes
- * “Teach! Teach!”
- * TPR

Fortify Output:

- * Find Your Match
- * Clock Buddies
- * Think, Write, Pair Share
- * Which Corner?

Foster Interactions:

- * “Don’t Mention it”
- * Find the Fib

Develop Academic Language:

- * 360 Words
- * Word Walls

Assess Language and Learning:

- * Wordless Books
- * Whiteboard Checkpoints
- * Differentiated Question Prompts

ARI/Instructional Strategies (Alabama Reading Initiative)

ARI represents the Alabama Reading Initiative. Below are ARI/Instructional strategies that can be easily adapted to work well with mathematics. Some of the strategies can be interchangeable between before, during, and after in lesson planning. There are many instructional strategies that can be used in the classroom and you are not limited to these alone. If you have other ARI/Instructional strategies that work well for you and your students, use them to assist with academic growth and development. Have fun experimenting with different strategies to reach all students and address the different learning styles.

Suggested time period	ARI/Instructional Strategy	Explanation/How to use the strategy
Before:	Admit Slip	<p>Purpose: 1) reflect on content of previous lesson or learned concept</p> <p>The admit-slip strategy requires students to write responses to questions you pose at the beginning of class. Admit slips help students reflect on what they have learned and express what or how they are thinking about the information. Admit slips easily incorporate writing into your content area classroom and require students to think critically.</p>
	KWL	<p>Purposes: 1) link prior knowledge to new information 2) generate questions to guide meaningful learning 3) create own meaning and learning from new text</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. On the whiteboard, on a handout, or on students' individual clean sheets, three columns should be drawn. 2. Label Column 1 K, Column 2 W, Column 3 L. 3. Before reading, viewing or listening, students fill in the Know column with words, terms, or phrases from their background or prior knowledge. If the students are drawing on a topic previously learned, then the K column may be topic related. But if the topic is something brand-new, and they don't know anything much about it, you should use the K column to have them recalling a similar, analogous, or broader idea. 4. Then have students generate questions about what they might learn or want to learn about the topic, which might follow a quick glance at the topic headings, pictures, problems and charts that are found in the text or on a handout provided. This helps set their purpose for the lesson or concept and focuses their attention on key ideas. 5. After the math lesson and reading, students should fill in their new knowledge gained from the content. They can also clear up misperceptions about the topic which might have shown up in the Know column before they learned anything about the topic. This is the stage of metacognition: Does the student fully understand?
	Think Pair Share	<p>Purposes: There are a variety of uses for this activity</p> <ol style="list-style-type: none"> 1) Think. The teacher provokes students' thinking with a problem, question, prompt or observation. The students should take a few moments just to THINK about the question and jot down their thoughts. 2) Pair with someone...Using designated partners, nearby neighbors, or a desk mate, students PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. 3) Share. After students talk in pairs for a few moments, the teacher calls for pairs to SHARE their thinking with the rest of the class. Sharing can be accomplished in a variety of ways: going around in round-robin fashion, calling on each pair, taking answers as they are called out (or as hands are raised), pairing with another pair. Often, the teacher or a designated helper will record these responses on the board or on the overhead.

	Quick Write	<p>Purposes: 1) introduce a concept and connect this concept with prior knowledge or experiences and 2) allow students to discuss and learn from each other</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Introduce a single word, phrase, problem, or question to the class. 2. Students copy the concept on index cards or sheet of paper. 3. Students are given two to five minutes to write whatever comes to their minds relative to the concept. They may write freely using single words, phrases, sentences, etc. 4. After time is called, students may volunteer to share their thoughts on the subject.
	Turn and Talk/ Table Talk	<p>Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the whiteboard or project overhead. 2. Each student has two minutes to read the question or statement, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.
	Bell Ringer/Bell Work/Warm Up	<p>Bell ringers are questions or tasks posted before students enter the classroom. They are to be completed before class starts, or, as the name suggests, as the bell rings. Bell ringers provide benefits to both the student and the teacher in all classroom settings ranging from elementary to high school. Bell ringers help to encourage promptness, organization, responsibility, spark prior knowledge, reinforce concepts, promote student engagement and so much more.</p>
During:	Think Pair Share	<p>Purposes: There are a variety of uses for this activity 1) Think. The teacher provokes students' thinking with a problem, question, prompt, or observation. The students should take a few moments just to THINK about the question and jot down their thoughts. 2) Pair with someone...Using designated partners, nearby neighbors, or a desk mate, students PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. 3) Share. After students talk in pairs for a few moments, the teacher calls for pairs to SHARE their thinking with the rest of the class. Sharing can be accomplished in a variety of ways: going around in round-robin fashion, calling on each pair, taking answers as they are called out (or as hands are raised), pairing with another pair. Often, the teacher or a designated helper will record these responses on the board or on the overhead.</p>

	Turn and Talk/ Table Talk	<p>Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the chalkboard. 2. Each student has two minutes to read the topic, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.
	Jot Notes	<p>Jot Notes are basically lesson notes the students jot down before, during and after the lesson (in some cases) ...The notes can be given in a variety of formats or structures...Example: chart format, graphic organizer, table format, guided notes, foldables, etc....</p>
	Quadrant Cards / Frayer Model	<p>Purposes: 1) motivate students to engage in vocabulary study and expand vocabulary 2) Reinforce concepts etc.....</p> <p>Procedure:</p> <p>Divide a sheet of paper into four parts Adapt to meet your students' needs.... whether you want to emphasize on vocabulary, connecting concepts, or organizing steps or procedures for graphing or solving etc....</p>
	Venn Diagram	<p>Purpose: compare concepts</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Draw two circles overlapping. Each circle represents a concept. 2. Unique characteristics of the two ideas being compared are recorded in the outer of the two overlapping circles. Common characteristics are recorded where the circles overlap. 3. Teacher should model the strategy first.

	Charts/Foldables	<p>Purposes: 1) engage with concept/lesson/text 2) construct graphic organizer/chart/foldable 3) self-monitor comprehension</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Create a Jot Chart, project on the whiteboard or produce a print copy for each student. The chart/matrix should be structured as follows. You can also use foldables to accomplish these tasks. <ul style="list-style-type: none"> o Main ideas/items for description or analysis are listed across the top of the chart. o Question/characteristics of the main concepts are listed down the left side of the chart. 2. Discuss the purpose of the chart with students before the assignment. Give an example of a completed chart to help clarify its functions. 3. Have students complete the chart or foldable as you go through the lesson or assign tasks to groups etc...As the teacher, you decide and adapt this to meet the needs of your students and what you want to accomplish from the task. 4. Discuss the students' findings and compile the results into a group chart. Stress the relationships between the data in the chart.
	Partner Learning	<p>Purpose: 1) To engage students in the content and spark meaningful discussions 2) To encourage collaboration and improve knowledge among students 3) Promote socialization and boost self-esteem 4) Reinforce concepts taught through open questioning and answer sessions</p> <p>Procedure: The students are paired up and given a task to complete together; open discussions, sharing of ideas, writing, final product presentation, etc....</p>
	Concept Map	<p>Purpose: activate and organize knowledge about a specific topic</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Select the main idea or topic of discussion; write it on a chart, overhead, or whiteboard; and put a circle around it. 2. Have students brainstorm subtopics; knowledge related to the topic. Use lines to connect to the main topic. 3. Have students brainstorm specific vocabulary, ideas, mathematical knowledge related to each subtopic. Record these ideas beneath each subtopic. Add new knowledge to the concept map as learning progresses.
	Graphic Organizer	<p>Purposes: 1) provide a visual model of the structure of lesson and 2) provide a format for organizing information and concepts</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Introduce the graphic organizer to the students. Demonstrate how it works by noting key concepts and ideas on the organizer. 2. Have groups of students practice using the graphic organizer with ideas from independently read mathematical text and/or mathematical information presented during lessons. Students can share their ideas with the class. 3. Choose an organizer that matches what you want to accomplish with your students for the topic or lesson.

	Jigsaw	<p>Purposes: 1) engage with mathematical concept or text 2) self-monitor comprehension 3) integrate new information with prior knowledge 4) respond to mathematical concept or text through discussion</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Divide class into 4-6 member groups; each member becomes an expert on a different topic/concept assigned by teacher. 2. Members of the teams with the same topic meet in an expert group with a variety of resource materials and texts available to explore their topic. 3. The students prepare how they will teach the information to others. 4. Everyone returns to their jigsaw (home) teams to teach what they learned to the other members. It may be helpful to supply each student with a graphic organizer for note taking purposes. 5. Team members listen and take notes as their classmate teaches them
After:	Cooperative Learning/ Partner Learning/Practice	<p>Cooperative learning is the process of breaking a classroom of students into small groups so they can discover a new concept together and help each other learn. Each group is given a task or assignment to complete. Often a record keeper and team leader are assigned to keep everyone on task. Collaboration and discussion are expected with a final assignment or project completed and submitted. Open discussions between the teacher and/or students can occur during class as well.</p>
	Stations/ Carousels etc....	<p>Purposes: This strategy can fit almost any purpose developed.</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Teacher determines what topics/lessons will be placed on chart paper. 2. Chart paper is placed on walls around the room. 3. Teacher places students into groups of three- four. 4. Students begin at a designated chart. 5. They read the question or phrase, discuss with group, and respond directly on the chart or assigned task sheet. 6. After an allotted amount of time, students rotate to next chart. 7. Students read next question and records new response or discussion points. 8. Continue until each group has responded to each prompt. 9. Teacher shares information from charts and conversations heard while responding. <p>** This strategy can be modified by having the chart “carousel” to groups, rather than groups moving to chart.</p>

	Exit slip	<p>Purpose: 1) reflect on content of lesson</p> <p>The exit-slip strategy requires students to write responses to questions you pose at the end of class. Exit slips help students reflect on what they have learned and express what or how they are thinking about the new information. Exit slips easily incorporate writing into your content area classroom and require students to think critically.</p> <p>There are three categories of exit slips (Fisher & Frey, 2004):</p> <ul style="list-style-type: none"> • Prompts that document learning, <ul style="list-style-type: none"> o Ex. Write one thing you learned today. o Ex. Discuss how today's lesson could be used in the real world. • Prompts that emphasize the process of learning, <ul style="list-style-type: none"> o Ex. I didn't understand... o Ex. Write one question you have about today's lesson. • Prompts to evaluate the effectiveness of instruction <ul style="list-style-type: none"> o Ex. Did you enjoy working in small groups today?
	Turn and Talk/Table Talk	<p>Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading</p> <p>Procedure:</p> <ol style="list-style-type: none"> 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the whiteboard or project overhead. 2. Each student has two minutes to read the question or statement, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.

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	Hands on Activity/ Graphs, charts, diagrams, etc.	Hand on activities are simply activities which students physically in some way connect with their learning...writing, drawing, graphing, demonstration through movement, use of manipulatives etc.... Hands-on activities are especially important in the classroom because it allows students to engage in kinesthetic learning. Educational studies have shown that kinesthetic learning, where a student performs some type of physical activity rather than just listening to a lecture, is the most popular type of learning with students - doing or working on something before, during, and/or after the lesson, helps them to gain a better understanding of the material. It allows students to experiment with trial and error, learn from their mistakes, and understand the potential gaps between theory and practice. It also encourages students to collaborate with their peers and share information from different perspectives.
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Formatting:

- Honors or advanced material is highlighted in blue. Example: **Advanced: Page 145 #75-86**
- Remediation is highlighted in yellow. Example: **Remediation: Small group on fractions**

The Textbook for this course is:

Discovery Ed Online Textbook

Huntsville City Schools 2020 - 2021 Pacing Guide 6th Grade Science

First Semester

1st 9 – weeks (August 17 – October 23)

44 instructional days; 22 A-Days and 22 B-Days

Time Period	Unit Topic	Standards	Resources
August 5-days	<p><u>Scientific Processes:</u> <u>Scientific Method, Graphing, ect.</u></p> <ul style="list-style-type: none"> • Explain how scientists use the scientific methods • Describe the types of models used and which is best for certain topics • Identify vocabulary terms related to the scientific method • Describe how scientific investigations often lead to new investigations • Steps used in the scientific method • Read diagrams, maps, tables, graphs related to ways geologists learn about the Earth's interior • Explore the greenhouse effect 	<p><u>ALCOS 14</u> Analyze and interpret data (e.g., tables, graphs, maps of global and regional temperatures; atmospheric levels of gases such as carbon dioxide and methane; rates of human activities) to describe how various human activities (e.g., use of fossil fuels, creation of urban heat islands, agricultural practices) and natural processes (e.g., solar radiation, greenhouse effect, volcanic activity) may cause changes in local and global temperatures over time.</p>	<p>Textbook Scientific method Quizlet https://www.usatestprep.com/al/alabama-elementary-school-online-review/. https://www.flocabulary.com/unit/scientific-method/</p> <p>Remediation:</p> <ul style="list-style-type: none"> • Use small groups or stations to let students work in teams based on similar needs. • Chunk skills into small tasks that can be done over time • Use peer tutors to explain concepts in different words. <p>Writing Remediation:</p> <ul style="list-style-type: none"> • Present the task as a process • Teach each step in the process • Provide feedback for each step <p>Honors: Develop a PowerPoint presentation that include explaining how to design and conduct an experiment that uses sound scientific principles</p>

<p>September 20 days</p>	<p><u>Plate Tectonics</u></p> <ul style="list-style-type: none"> • Identify the theory of plate tectonics and plate boundaries • How Geologists learn about Earth's interior • Natural catastrophic events • Creation of faults, landforms, and earthquakes • Locations of Earthquakes • How seismic waves travel through Earth • Identify features of Earth's crust, mantle, and core • Discuss Alfred Wegener's hypothesis and idea of continental drift • Types of plates • Discuss the rock cycle, seafloor spreading • Destructive forces destroy and wear away landmasses through processes like erosion and weathering • Forces that wear down, or destroy, landmasses • Use of Concept map to show how information that address the identify what is a mineral, how are minerals identified, how minerals form, how geologists classify rocks and what is the rock cycle • Identify the process of erosion and weathering (sediment & deposition) 	<p><u>ALCOS 4</u> Construct explanations from geologic evidence (e.g., change or extinction of particular living organisms; field evidence or representations, including models of geologic cross-sections; sedimentary layering) to identify patterns of Earth's major historical events (e.g., formation of mountain chains and ocean basins, significant volcanic eruptions, fossilization, folding, faulting, igneous intrusion, erosion).</p> <p><u>ALCOS 5</u> Use evidence to explain how different geologic processes shape Earth's history over widely varying scales of space and time (e.g., chemical and physical erosion; tectonic plate processes; volcanic eruptions; meteor impacts; regional geographical features, including Alabama fault lines, Rickwood Caverns, and Wetumpka</p> <p><u>ALCOS 10</u> Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth's resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes (e.g., past volcanic and hydrothermal activity, burial of organic sediments, active weathering of rock).</p>	<p>AMSTI Discovery Unit 2 Pearson Ch. 1,3,4,5 Plate Tectonics https://my.nsta.org/ebook/108371/plate-tectonics-student-edition</p> <p><u>Remediation:</u></p> <ul style="list-style-type: none"> • Use small groups or stations to let students work in teams based on similar needs. • Chunk skills into small tasks that can be done over time • Use peer tutors to explain concepts in different words. <p><u>Writing Remediation:</u></p> <ul style="list-style-type: none"> • Present the task as a process • Teach each step in the process • Provide feedback for each step <ul style="list-style-type: none"> • Honors: Develop a PowerPoint presentation that include information related to • The flow of Earth's internal, geologic processes
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<p>October 14 days</p>	<p><u>Plate Tectonics</u></p> <ul style="list-style-type: none"> • Discover ways geologists learn about Earth's interior • Features of Earth's interior: crust, mantle, and core • How rocks are classified • Types of rocks • Identify plate motion by names • Identify how gravity, runoff and the material it contains flow causing plate movement • Identify the types of terrain or landscape that is found along mid-ocean ridges... • Identify what is the causes of magnetic field • Identify the magnetic poles • Where are the strongest fields of the magnetic field 	<p><u>ALCOS 6</u> Provide evidence from data of the distribution of fossils and rocks, continental shapes, and seafloor structures to explain past plate motions.</p> <p><u>ALCOS 9</u> Use models to explain how the flow of Earth's internal energy drives a cycling of matter between Earth's surface and deep interior causing plate movements (e.g., mid-ocean ridges, ocean trenches, volcanoes, earthquakes, mountains, rift valleys, volcanic islands).</p> <p><u>ALCOS 11</u> Develop and use models of Earth's interior composition to illustrate the resulting magnetic field (e.g., magnetic poles) and to explain its measurable effects (e.g., protection from cosmic radiation).</p>	<p>AMSTI Discovery Unit 2 Pearson Ch. 1,3,4,5</p> <p>https://d28rz98at9flks.cloudfront.net/90021/Tectonic_Plates_Jigsaw_Puzzle_instructions.pdf</p> <p>https://phet.colorado.edu/en/simulation/legacy/plate-tectonics</p> <p>https://oceanexplorer.noaa.gov/explorations/10sanandreas/background/edu/media/puzzle56.pdf</p> <p>https://serc.carleton.edu/urban/activity_ideas/22369.html</p> <p>http://www.softschools.com/quizzes/science/</p> <p>https://www.youtube.com/watch?v=bCs5WQpcU5k</p> <p>https://www.bing.com/videos/search?q=plate+tectonics+animation&go=Search&qs=ds&form=QBVR</p> <p>https://sites.google.com/site/earthscienceinmaine/stress-in-earth-s-crust</p> <p>https://www.mathworksheets4kids.com/ordered-pairs/plotting-points-positive1.pdf</p> <p>Plate Tectonics https://my.nsta.org/ebook/108371/plate-tectonics-student-edition</p> <p>Plate Tectonic: https://phet.colorado.edu/en/simulation/legacy/plate-tectonics</p>
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2nd 9 – weeks (October 26 – December 22)
38 instructional days; 19 A-Days and 19 B-Days

Time Period	Unit Topic	Standards	Resources
November 20 days	<p>Weather</p> <ul style="list-style-type: none"> Identify pathways by which chemical element such as carbon or compound like water, moves through Earth's biosphere, atmosphere, hydrosphere and lithosphere Identify some of the major biogeochemical cycles Air Masses and fronts Identify types of weather instruments and their usage during different types of weather conditions 	<p><u>ALCOS 7</u> Use models to construct explanations of the various biogeochemical cycles of Earth (e.g., water, carbon, nitrogen) and the flow of energy that drives these processes.</p> <p><u>ALCOS 12</u> Integrate qualitative scientific and technical information (e.g., weather maps; diagrams; other visualizations, including radar and computer simulations) to support the claim that motions and complex interactions of air masses result in changes in weather conditions. a. Use various instruments (e.g., thermometers, barometers, anemometers, wet bulbs) to monitor local weather and examine weather patterns to predict various weather events, especially the impact of severe weather (e.g., fronts, hurricanes, tornados, blizzards, ice storms, droughts).</p>	<p>AMSTI Discovery Unit 3 Pearson Ch. 12, 13</p> <p>https://phet.colorado.edu/en/simulation/legacy/greenhouse</p> <p>https://www.mathworksheets4kids.com/ordered-pairs/plotting-points-positive1.pdf</p> <p>https://www.mathworksheets4kids.com/ordered-pairs/length1.pdf</p> <p>Oceans effect on weather and climate https://my.nsta.org/ebook/108370/oceans-effect-on-weather-and-climate-student-edition</p> <p>Green House: https://phet.colorado.edu/en/simulation/legacy/greenhouse</p> <p>The Water Cycle Lesson Plan: https://aptv.pbslearningmedia.org/resource/kqedcl11sciesswaterplanet/water-planet-how-the-water-cycle-works/</p> <p>The Carbon Cycle Interactive: https://aptv.pbslearningmedia.org/resource/pcep14.sci.ess.co2cycle/carbon-dioxide-carbon-cycle/</p> <p>The Nitrogen Cycle Interactive: https://aptv.pbslearningmedia.org/resource/lsp07.sci.life.eco.nitrogen/the-nitrogen-cycle/</p> <p>Tornado Damage Assessment: https://aptv.pbslearningmedia.org/resource/ess05.sci.ess.watcyc.tornado/rate-tornado-damage/</p>

How Hurricanes Form:

<https://aptv.pbslearningmedia.org/resource/ess05.sci.ess.watcyc.hurrlife/how-hurricanes-form/>

Remediation:

- Use small groups or stations to let students work in teams based on similar needs.
- Chunk skills into small tasks that can be done over time
- Use peer tutors to explain concepts in different words.

Writing Remediation:

- Present the task as a process
- Teach each step in the process
- Provide feedback for each step
 - Honors: Develop a PowerPoint presentation that include information related to:
 - How various weather instruments are used to monitor weather, examine weather patterns used to predict weather events

<p>December 18 days</p>	<p><i>Climate</i></p> <ul style="list-style-type: none"> • Identify the differences between weather and climate • Analyze the effects climate has on human life • Identify the affect global warming has on climate • Identify the climate cycles • Identify the types of wetlands and their effectiveness to planet Earth 	<p><u>ALCOS 15</u> Analyze evidence (e.g., databases on human populations, rates of consumption of food and other natural resources) to explain how changes in human population, per capita consumption of natural resources, and other human activities (e.g., land use, resource development, water and air pollution, urbanization) affect Earth’s systems.</p> <p><u>ALCOS 16</u> Implement scientific principles to design processes for monitoring and minimizing human impact on the environment (e.g., water usage, including withdrawal of water from streams and aquifers or construction of dams and levees; land usage, including urban development, agriculture, or removal of wetlands; pollution of air, water, and land).</p>	<p>AMSTI Discovery Unit 3 Pearson Ch. 12, 13 https://phet.colorado.edu/en/simulation/legacy/greenhouse https://www.mathworksheets4kids.com/ordered-pairs/plotting-points-positive1.pdf https://www.mathworksheets4kids.com/ordered-pairs/length1.pdf Oceans effect on weather and climate https://my.nsta.org/ebook/108370/oceans-effect-on-weather-and-climate-student-edition Ecosystems https://my.nsta.org/ebook/104813/flow-of-matter-and-energy-in-ecosystems-student-edition Green House: https://phet.colorado.edu/en/simulation/legacy/greenhouse Remediation: <ul style="list-style-type: none"> • Use small groups or stations to let students work in teams based on similar needs. • Chunk skills into small tasks that can be done over time • Use peer tutors to explain concepts in different words. Writing Remediation: <ul style="list-style-type: none"> • Present the task as a process • Teach each step in the process • Provide feedback for each step Honors: Develop a PowerPoint presentation that include information related to: Identifying what climate is, identify factors that determine climate, types of climate zones of the world as well as the human impact on the environment including conditions resulting in the greenhouse effect</p>
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Second Semester

3rd 9 – weeks (January 4 – March 12)

48 instructional days; 24 A-Days and 24 B-Days

Time Period	Unit Topic	Standards	Resources
<p>January 15 days</p>	<p><i>Earth</i></p> <ul style="list-style-type: none"> • <i>Investigate heat transfer within the process that form rock</i> • <i>Identify the process of solidification-crystallize</i> • <i>Identify the three major fossil fuels</i> • <i>What does it mean for fossil fuel to be non-renewable?</i> • <i>Identify the past and current geologic process which are the results of uneven distribution of the Earth's mineral, energy, and groundwater (volcanic activity and sedimentary processes)</i> 	<p><u>ALCOS 8</u> Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials (e.g., processes of crystallization, heating and cooling, weathering, deformation, and sedimentation).</p> <p><u>ALCOS 10</u> Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth's resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes (e.g., past volcanic and hydrothermal activity, burial of organic sediments, active weathering of rock).</p> <p><u>ALCOS 13</u> Use models (e.g., diagrams, maps, globes, digital representations) to explain how the rotation of Earth and unequal heating of its surface create patterns of atmospheric and oceanic circulation that determine regional climates. a. Use experiments to investigate how energy from the sun is distributed between Earth's surface and its atmosphere by convection and radiation (e.g., warmer water in a pan rising as cooler water sinks, warming one's hands by a campfire).</p>	<p>AMSTI Discovery Unit 6 Pearson Ch. 14 https://www.nasa.gov/audience/foreducators/topnav/materials/A-Z_Pubs.html#P https://www.nasa.gov/stem/foreducators https://phet.colorado.edu/en/simulation/gravity-and-orbits https://phet.colorado.edu/en/simulation/gravity-force-lab https://svs.gsfc.nasa.gov/4711 https://www.iss.k12.nc.us/cms/lib4/NC01000579/Centricity/Domain/2016/science%20notebook%20reflection.pdf https://www.youtube.com/channel/UCXSb1jfnA8BaZaHOqY2ArPQ Earth's Changing Surfaces https://my.nsta.org/ebook/104809/earths-changing-surfaces-student-edition Volcanic Life Cycles https://aptv.pbslearningmedia.org/resource/nvkhof-sci-volcanicisland/volcanic-island-life-cycle-kilauea-hawaii-on-fire/ Track active Volcanic Activity https://volcano.si.edu/reports_weekly.cfm</p>

Modeling and Measuring Volcanic Eruptions

<https://naturalhistory.si.edu/education/teaching-resources/earth-science/modeling-and-measuring-volcanic-eruptions>

Remediation:

- Use small groups or stations to let students work in teams based on similar needs.
- Chunk skills into small tasks that can be done over time
- Use peer tutors to explain concepts in different words.

Writing Remediation:

- Present the task as a process
- Teach each step in the process
- Provide feedback for each step

Honors: Develop a PowerPoint presentation that include information related to: Earth's formation, structure, atmosphere, oceans and continents formed

<p>February 15 days</p>	<p>Sun - Earth –Moon <u>SUN:</u></p> <ul style="list-style-type: none"> Identify tools used to study the sun Study the function of the sun Layers of the sun’s atmosphere Identify eclipse Study the structure of the sun <p><u>EARTH:</u></p> <ul style="list-style-type: none"> How the solar wind affect life on Earth determine what object is at the center of a geocentric system <p><u>MOON:</u></p> <ul style="list-style-type: none"> Identify moon phases Identify Earth’s only natural satellite Develop meaning of a meteor shower 	<p><u>ALCOS 1</u> Create and manipulate models (e.g., physical, graphical, conceptual) to explain the occurrences of day/night cycles, length of year, seasons, tides, eclipses, and lunar phases based on patterns of the observed motions of celestial bodies.</p> <p><u>ALCOS 13</u> Use models (e.g., diagrams, maps, globes, digital representations) to explain how the rotation of Earth and unequal heating of its surface create patterns of atmospheric and oceanic circulation that determine regional climates. a. Use experiments to investigate how energy from the sun is distributed between Earth’s surface and its atmosphere by convection and radiation (e.g., warmer water in a pan rising as cooler water sinks, warming one’s hands by a campfire).</p>	<p>AMSTI Discovery Unit 6 Pearson Ch. 14 https://www.nasa.gov/audience/foreducators/topnav/materials/A-Z_Pubs.html#P https://www.nasa.gov/stem/foreducators https://phet.colorado.edu/en/simulation/gravity-and-orbits https://phet.colorado.edu/en/simulation/gravity-force-lab https://phet.colorado.edu/en/simulation/gravity-and-orbits https://phet.colorado.edu/en/simulation/legacy/my-solar-system https://simplelivingcreativelearning.com/phases-moon-flip-book/ http://www.softschools.com/facts/space/moon_phases_facts/423/ https://www.teachjunkie.com/sciences/21-super-activities-teaching-moon-phases/ Sun and Moon https://my.nsta.org/ebook/104808/earth-sun-and-moon-student-edition Coral Reefs https://my.nsta.org/ebook/104807/coral-reef-ecosystems-student-edition Lunar Landing: https://phet.colorado.edu/en/simulation/legacy/lunar-lander</p>
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Remediation:

- Use small groups or stations to let students work in teams based on similar needs.
- Chunk skills into small tasks that can be done over time
- Use peer tutors to explain concepts in different words.

Writing Remediation:

- Present the task as a process
- Teach each step in the process
- Provide feedback for each step

Honors: Develop a PowerPoint presentation that include information related to:

- **Earth's** formation, structure, atmosphere, oceans and continents formed
- **Moon**: Causes of the phases of the moon, the characteristic of the Earth's moon
- **Sun**: The structure of the sun, features that can be seen on the sun

<p>March 13 days</p>	<p>Planetary System</p> <ul style="list-style-type: none"> • What is our planetary system called? • What is a planetary system? • Explain the role of gravity as it affects the motion of celestial bodies • Identify celestial bodies • Characteristics of stars • How are stars classified • Identify what the H-R Diagram is and how it is used by astronomers • Lifetime of a star • What is a black hole? • What is Kepler Law • How many solar systems are in our galaxy 	<p><u>ALCOS 2</u> Construct models and use simulations (e.g., diagrams of the relationship between Earth and manmade satellites, rocket launch, International Space Station, elliptical orbits, black holes, life cycles of stars, orbital periods of objects within the solar system, astronomical units and light years) to explain the role of gravity in affecting the motions of celestial bodies (e.g., planets, moons, comets, asteroids, meteors) within galaxies and the solar system.</p> <p><u>ALCOS 3</u> Develop and use models to determine scale properties of objects in the solar system (e.g., scale model representing sizes and distances of the sun, Earth, moon system based on a one-meter diameter sun).</p>	<p>Discovery Unit 7 Pearson Ch. 15, 16 Amsti https://www.softschools.com/facts/space/moon_phases_facts/423/ https://www.youtube.com/watch?v=f4ZHdzl6ZWg https://thesciencepenguin.com/2014/09/7-ideas-to-teach-students-about-moon-phases.html Solar System: https://phet.colorado.edu/en/simulation/legacy/my-solar-system https://aptv.pbslearningmedia.org/collection/mss/ <i>Mission: Solar System</i> is a transmedia project between NASA and WGBH's <i>Design Squad Nation</i>, celebrating NASA's Year of the Solar System. Tour the Solar System: https://aptv.pbslearningmedia.org/resource/buac18-68-sci-ess-toursolarsystem/tour-the-solar-system/ Sun Lab Interactive: https://aptv.pbslearningmedia.org/resource/nvsl.sci.int.sun/sun-lab-interactive/ Solar System https://my.nsta.org/ebook/104820/solar-system-student-edition</p>
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			<p>Remediation:</p> <ul style="list-style-type: none">• Use small groups or stations to let students work in teams based on similar needs.• Chunk skills into small tasks that can be done over time• Use peer tutors to explain concepts in different words. <p>Writing Remediation:</p> <ul style="list-style-type: none">• Present the task as a process• Teach each step in the process• Provide feedback for each step <p>Honors: Develop a PowerPoint presentation that include information related to: Planetary Motion –rotation, orbit, revolution. Include a scale model representing sizes and distances of the sun, Earth, moon system based on a one-meter diameter sun</p>
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4th 9 – weeks (March 15 – May 28)
 46 instructional days; 23 A-Days and 23 B-Days
 +4 Exam Days

Time Period	Unit Topic	Standards	Resources
<p style="text-align: center;">April 15 days</p>	<p style="text-align: center;">Rock Cycle & Weathering Identifying Physical and chemical changes through investigations and research</p>	<p><u>ALCOS 8</u> Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth’s materials (e.g., processes of crystallization, heating and cooling, weathering, deformation, and sedimentation)</p> <p><u>ALCOS 10</u> Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth’s resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes (e.g., past volcanic and hydrothermal activity, burial of organic sediments, active weathering of rock).</p>	<p>AMSTI Discovery Unit 7 Pearson Ch. 15, 16</p> <p>https://www.bing.com/images/search?q=phases+of+the+moon+fact+sheet&FORM=HDRS_C2</p> <p>https://simplelivingcreativelearning.com/phases-moon-flip-book/</p> <p>http://www.softschools.com/facts/space/moon_phases_facts/423/</p> <p>https://www.youtube.com/watch?v=f4ZHdzl6ZWg</p> <p>https://thesciencepenguin.com/2014/09/7-ideas-to-teach-students-about-moon-phases.html</p> <p>Satellite Motion Interactive: https://aptv.pbslearningmedia.org/resource/arct15-sci-satellitemotion/satellite-motion/</p> <p>Discovery unit 3 & 4 Rocks https://my.nsta.org/ebook/105203/rocks-student-edition</p> <p>Rock Cycle: https://aptv.pbslearningmedia.org/resource/2528a979-2df8-4437-87d9-0300dd6b3784/2528a979-2df8-4437-87d9-0300dd6b3784/</p> <p>Rock Star: https://aptv.pbslearningmedia.org/resource/reach-with-stem-rock-star/rock-star/</p>

			<p>Rock Cycle Lab: https://app.discoveryeducation.com/learn/player/36dec5f7-a61b-42f3-a49b-ed18afad5e58</p> <p>Rockin Rock Cycle: https://app.discoveryeducation.com/learn/player/1e66610f-98dd-43a0-a189-569b94771651</p> <p>Remediation:</p> <ul style="list-style-type: none"> • Use small groups or stations to let students work in teams based on similar needs. • Chunk skills into small tasks that can be done over time • Use peer tutors to explain concepts in different words. <p>Writing Remediation:</p> <ul style="list-style-type: none"> • Present the task as a process • Teach each step in the process • Provide feedback for each step <p>Honors: Develop a PowerPoint presentation that include information related to:</p> <ul style="list-style-type: none"> • Planetary Motion –rotation, orbit, revolution. Include a scale model representing sizes and distances of the sun, Earth, moon system based on a one-meter diameter sun • Rock Cycle & Weathering: - processes that shape Earth’s features-how each type of rock change into another type
<p>May 14 days</p>	<p>ACAP TESTING PREPARATION</p> <p>REVIEW WRITING SKILLS</p>	<p>ACAP TESTING PREPARATION</p> <p>REVIEW WRITING SKILLS</p>	<p style="text-align: center;">ACAP RESOURCES PREPARATION REVIEW WRITING SKILLS</p> <p>Remediation:</p> <ul style="list-style-type: none"> • Use small groups or stations to let students work in teams based on similar needs. • Chunk skills into small tasks that can be done over time • Use peer tutors to explain concepts in different words. <p>Writing Remediation:</p> <ul style="list-style-type: none"> • Present the task as a process • Teach each step in the process • Provide feedback for each step