

Huntsville City Schools

2020 - 2021 Pacing Guide

7th 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&cocode=PS8&summary=2>)
- PBS Learning (<https://aptv.pbslearningmedia.org>)

Instructional Strategies:

ELLlevation: **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 7th 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
Ongoing through the year	Intro to Science	Science Vocabulary	<p><u>Vocabulary:</u> Note: These terms should be introduced to students at the beginning of the year and retaught on an ongoing basis through the year.</p> <p>science, scientific method, scientific, inquiry, observing, Inferring, predicting, classifying, evaluating, question, hypothesis, control, controlled experiment, variable, manipulated variable, responding variable, controlled experiment, data, conclusion, model, ethics, personal bias, cultural bias, experimental bias, objective, scientific theory, scientific law, data, graph, table, chart, metric system, SI, meter, kilometer, centimeter, millimeter, volume, liter, cubic, centimeter, milliliter, mass, weight, meniscus, density, gram, kilogram, milligram, controlled experiment, test tube, graduated cylinder, beaker, balance scale, stopwatch, microscope, estimate, safety symbol</p>

<p>1st 9-Weeks Overview</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>ALCOS Standards 1-3, & 5</p>	<p>Section 1.1: cell, microscope, cell theory, Hooke, Leeuwenhoek, Schleiden, Schwann, Virchow, organism, cell, unicellular, multicellular, metabolism, stimulus, response, development, asexual reproduction, sexual reproduction, spontaneous generation, controlled experiment, autotroph, heterotroph, homeostasis</p> <p>Section 1.2: cell wall, cell membrane, nucleus, organelle, ribosome, cytoplasm, mitochondria, endoplasmic reticulum, Golgi apparatus, vacuole, chloroplast, lysosome, multicellular, unicellular, tissue, organ, organ system classification, taxonomy, binomial nomenclature, genus, species, prokaryote, eukaryote, nucleus</p> <p>Section 1.3: bacteria, photosynthesis, cell, oxygen, cell membrane, ATP</p> <p>Section 1.4: evolution, branching tree diagram, shared derived characteristic, convergent evolution</p> <p>Section 1.5: element, compound, carbohydrate, lipid, protein, enzyme, nucleic acid, DNA, double helix</p> <p>Section 1.6: selectively permeable, passive transport, diffusion, osmosis, active transport, endocytosis, exocytosis</p>
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<p>7 Days</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>2. Gather and synthesize information to explain how prokaryotic and eukaryotic cells differ in structure and function, including the methods of asexual and sexual reproduction.</p>	<p>Online Text: Discovery Ed -Domains and Kingdoms Reading Link: https://hsv-k12.discoveryeducation.com/learn/player/9d55c8cc-35c5-417e-b424-acc67f42aa57</p> <p>Videos: Discovery Ed- Classification Hierarchy: https://hsv-k12.discoveryeducation.com/learn/player/09a6f1ca-f207-4ede-9bb6-0f187d799ce0 Amoeba Sisters Classification: https://youtu.be/DVouQRAKxYo</p> <p>Concepts to Review:</p> <ul style="list-style-type: none"> • What is Life • Classifying Life • Domains and Kingdoms • Evolution and Classification <p>TDW Strategies Using a Research Prompt (Research, Summarize, Restate) to research organism structures and progresses.</p> <p>Remediation: Be a Detective ELL Activity: Create a collage of different organisms and compare their characteristics. Make a list of their similarities and differences. ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/333</p> <p>Building with Bricks and Mortar: Create sentences using vocabulary cards ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/414</p> <p>Honors: Build a phylogenetic tree PBS Link: https://www.pbs.org/wgbh/nova/labs/about-evolution-lab/educator-guide/</p>
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<p>4 days</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>1. Engage in argument from evidence to support claims of the cell theory.</p>	<p>Online Textbook: Concept 1.1 Cell Theory Concepts to Review:</p> <ul style="list-style-type: none"> • Cell Theory <p>Videos: Cell theory Structure of a cell Biology Khan Academy https://youtu.be/zk3vlhz1b6k Functions of Cells Instructional Strategies https://app.ellevationeducation.com/Strategies/Collections/Details/338 Amoeba Sisters Introduction to Cells https://www.youtube.com/watch?v=8IlzKriO8kk&t=200s</p> <p>Activities: Discovery Ed Cell Theory 5E Model Lesson Plan</p> <p>ALEX Lesson Plan-The Cell Theory: An evidence-based argument- https://alex.state.al.us/lesson_view.php?id=35233</p> <p>Remediation: https://aptv.pbslearningmedia.org/resource/lsp07.sci.life.stru.cellDiagram/cell-explorer/ Through this online interactive from PBS LEARNING, students will engage in an exploration of the way that the way in which cells function is similar in all living organisms. After, students will need to write an 8-sentence paragraph response using the evidence from the article to support the existence of the cell theory.</p> <p>Advanced: https://aptv.pbslearningmedia.org/collection/cells/ Using the collection of resources above, students will create an argument to support the claims of cell theory. Students should review the information in the collection, collect evidence from their research, and organize that evidence into an oral argument to share in a collaborative small group.</p>
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<p>10 days</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>3. Construct an explanation of the function (e.g., mitochondria releasing energy during cellular respiration) of specific cell structures (i.e., nucleus, cell membrane, cell wall, ribosomes, mitochondria, chloroplasts, and vacuoles) for maintaining a stable environment</p>	<p>Online Textbook: Concept 1.2 Structure of Life</p> <p>Concepts to Review:</p> <ul style="list-style-type: none"> • Cell Organelles • Comparing Prokaryotic and Eukaryotic Cells • Comparing Plant and Animal Cells <p>Videos: Amoeba Sisters Introduction to Cells https://www.youtube.com/watch?v=8IlzKri08kk&t=200s Amoeba Sisters Prokaryotic vs. Eukaryotic Cells https://www.youtube.com/watch?v=8IlzKri08kk&t=200s</p> <p>Activities: Cell Structure Interactive: https://aptv.pbslearningmedia.org/resource/39ad5b1c-d00d-4702-9f19-c70dfd646f0e/cell-structure/</p> <p>Functions of Cells Instructional Strategies https://app.ellevationeducation.com/Strategies/Collections/Details/338</p> <p>Discovery Ed-</p> <ul style="list-style-type: none"> • Here a Cell, There a cell, • Inside-Outside Cell: Students draw pictures of an animal and plant cell and compare structures. <p>ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/421</p> <p>Remediation: Science Spot Cell Organelle Chart: https://sciencespot.net/Media/CellsOrganellesWkst.pdf</p> <p>Honors: Cell Model-Students will build a 3-D model of a cell. Compare plant and animal cells lab Biology Corner Link: https://www.biologycorner.com/worksheets/comparing_plant_animal.html</p>
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<p>4 days</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>3. Construct an explanation of the function (e.g., mitochondria releasing energy during cellular respiration) of specific cell structures (i.e., nucleus, cell membrane, cell wall, ribosomes, mitochondria, chloroplasts, and vacuoles) for maintaining a stable environment.</p>	<p>Online Textbook: Discovery Ed-Getting to Know Diffusion and Osmosis: https://hsv-k12.discoveryeducation.com/learn/player/2a6c3a4e-7f33-4dce-a639-a19059305beb</p> <p>Reading Selection: Create a Reader Response or Research Opportunity https://app.discoveryeducation.com/learn/player/653077d5-399d-47a2-825f-c0e6ec9387ed</p> <p>Concept to Review:</p> <ul style="list-style-type: none"> • Chemical Compounds in Cells • Cell and its Environment-Osmosis/Diffusion/Active & Passive Transport <p>Videos: Discovery Ed-Osmosis and Diffusion https://hsv-k12.discoveryeducation.com/learn/player/4b74575c-1139-4661-99eb-cedf671ec3c5</p> <p>Model Lesson for Osmosis https://app.discoveryeducation.com/learn/videos/caa142ce-9048-4bdb-b147-bc43d8e6131f/</p> <p>Osmosis Experiment Image Constructed Response: https://app.discoveryeducation.com/learn/player/b6f13009-9fdd-4351-9b85-cd6c7c4747eb</p> <p>Hands on Activity: Egg Osmosis https://app.discoveryeducation.com/learn/player/580ea41a-869d-45a4-b889-5ea5b19296c7</p> <p>Remediation: http://www.biology4kids.com/files/cell2_main.html</p> <p>Student will use the Gold Nugget Technique to Skim and Scan the above additional reading selection. They will choose 5 golden nuggets. After they have selected their 5 Golden Nuggets on Cell Function, they will be placed in groups of 4-6. Students will compare their choice and create a visual illustration of the groups Gold Nuggets to share with the class.</p> <p>Advanced: Justify/Defend</p> <p>Writing Prompt for Image: https://app.discoveryeducation.com/learn/player/2825f7cf-5a93-41cc-b278-febe46209ca9</p> <p>In an 8-sentence paragraph, using your previous learning about Osmosis justify how the image proves that Osmosis has taken place in the experiment.</p>
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<p>5 days</p>	<p>From Molecule to Organisms: Structures and Processes</p>	<p>5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.</p> <p>a. Obtain, evaluate, and communicate information about how food is broken down through chemical reactions to create new molecules that support growth and/or release energy as it moves through an organism.</p> <p>b. Generate a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.</p>	<p>Online Textbook: Concept 1.5-Photosynthesis Concept 1.3- Cellular Respiration</p> <p>Concepts to Review:</p> <ul style="list-style-type: none"> • Photosynthesis • Cellular Respiration <p>Videos: Discovery Ed -Introducing Cellular Respiration: https://hsv-k12.discoveryeducation.com/learn/player/c86c8908-ad61-412b-821b-e5b60ad780c4 Amoeba Sisters Photosynthesis https://youtu.be/uixA8ZXx0KU</p> <p>Activity: Discovery Ed Cellular Respiration Exploration Activity Link: https://hsv-k12.discoveryeducation.com/learn/player/ab6576be-2296-4518-b684-52b619b495cc</p> <p>Bioman Biology Photosynthesis and Cellular Respiration: http://www.biomanbio.com/GamesandLabs/PhotoRespgames/photoresp.html</p> <p>TDW Strategies: Write a paragraph describing how food is broken down through chemical reactions to create new molecules to support growth and energy as it moves through an organism.</p> <p>Remediation: Anchor Chart ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/437</p> <p>Honors: Discovery Ed Interactive: Seasons in the Cell https://hsv-k12.discoveryeducation.com/learn/player/c522d170-3b8a-416c-917e-9030cb1c84b4</p>
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6 days	From Molecule to Organisms: Structures and Processes	2. Gather and synthesize information to explain how prokaryotic and eukaryotic cells differ in structure and function, including the methods of asexual and sexual reproduction.	<p>Online Textbook: Discovery Ed Reading Passage- Getting to Know Cell Cycle and Mitosis</p> <p>Concepts to Review:</p> <ul style="list-style-type: none"> • Cell Division <p>Videos: Amoeba Sisters Mitosis https://www.youtube.com/watch?v=f-lpGfEaHI Amoeba Sisters The Cell Cycle https://www.youtube.com/watch?v=QVCjdNxJreE</p> <p>Activity: Cell Cycle Flipbook</p> <p><i>TDW Strategies:</i> Save the Last Word for Me: students read text and creates cards that evoke a reaction for them. Students then discuss their selections (similar to Socratic Seminar)</p> <p>Remediation: Cornell Notetaking: ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/406</p> <p>Honors: Write a one-page essay explaining “What would happen if humans did not go through cell division?”. Cite evidence.</p>
4 days	From Molecule to Organisms: Structures and Processes	Review	Review COS # 1, 2, 3, 5

2nd 9 – weeks (October 26 – December 22)
 38 instructional days; 19 A-Days and 19 B-Days

Time Period	Unit Topic	Standards	Resources
<p>2nd 9-Weeks Overview</p>	<p>Heredity: Inheritance and Variation of Traits</p>	<p>ALCOS: #12-14 Building Academic Language</p>	<p>Section 2.1 and 2.5: heredity, trait, genetics, fertilization, purebred, gene, allele, dominant allele, recessive allele, hybrid, Mendel, probability, Punnett square, phenotype, genotype, homozygous, heterozygous, incomplete dominance, codominance, multiple alleles, polygenic Inheritance</p> <p>Section 1.5: meiosis, chromosome, sister chromatids, replication, gametes, diploid number, haploid number, interphase, prophase, metaphase, anaphase, telophase, cytokinesis</p> <p>Section 2.1, 2.2, 2.5, 2.6: nitrogen bases, DNA Replication, Watson, Crick, mutation, cancer, tumor, chemotherapy, selective breeding, inbreeding, hybridization, clone, genetic engineering, gene therapy</p>

<p>20 days</p>	<p>Heredity: Inheritance and Variation of Traits</p>	<p>12. Construct and use models (e.g., monohybrid crosses using Punnett squares, diagrams, simulations) to explain that genetic variations between parent and offspring (e.g., different alleles, mutations) occur as a result of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information</p>	<p>Online Textbook: Concept 2.1 Concept 2.5</p> <p>Topics to Review:</p> <ul style="list-style-type: none"> • What is Heredity • Probability and Heredity Chapter • Patterns of Inheritance Chapter • Chromosomes and Inheritance <p>Videos: Mendel's Pea Plants https://www.youtube.com/watch?v=Mehz7tCxjSE</p> <p>Amoeba Sisters Monohybrids and the Punnett Square Guinea Pigs https://www.youtube.com/watch?v=i-0rSv6oxSY</p> <p>Activities: Hudson Alpha Genetics Kit - Strawberry DNA Spongebob Genetics SpongeBob Genetics</p> <p><u>Genetics Online Scavenger Hunt</u></p> <p>PhET Lab Simulation: Gene Expression</p> <p><i>TDW Strategies: Six Word Story:</i> https://hsv-k12.discoveryeducation.com/learn/player/d8ddced1-9474-4621-af0c-b1dd13b08c72</p> <p>Honors: LTF: "Gene Interactions" Lab: Going Bananas DNA</p> <p>Remediation: Students create a think, pair, share in a collaborative group after reviewing model of a DNA strand.</p>
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<p>8 days</p>	<p>Heredity: Inheritance and Variation of Traits</p>	<p>12. Construct and use models (e.g., monohybrid crosses using Punnett squares, diagrams, simulations) to explain that genetic variations between parent and offspring (e.g., different alleles, mutations) occur as a result of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information</p>	<p>Online Textbook: Discovery Ed Concept 1.4</p> <p>Concept to Review: Meiosis</p> <p>Videos: Amoeba Sisters Meiosis https://www.youtube.com/watch?v=VzDMG7ke69g</p> <p>Activities: Meiosis Flip Book - Science Spot Link: https://sciencespot.net/Media/meiosispg1.pdf</p> <p>Bioman Biology Meiosis: http://www.biomanbio.com/GamesandLabs/Genegames/genetics.html</p> <p><i>TDW Strategies:</i> Create a Punnett Square that shows how you developed the traits for eye color. In an 8-sentence paragraph, justify the connection between parent, offspring, and genetic variations.</p> <p>Remediation: Biology Corner Meiosis Review: https://www.biologycorner.com/2019/02/23/meiosis-worksheet/</p> <p>Honors: DNA Model Project: Students build a 3-D model of DNA</p>
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<p>8 Days</p>	<p>Heredity: Inheritance and Variation of Traits</p>	<p>13. Construct an explanation from evidence to describe how genetic mutations result in harmful, beneficial, or neutral effects to the structure and function of an organism.</p>	<p>Online Textbook: Discovery Ed Concept-1.6</p> <p>Topics to Review:</p> <ul style="list-style-type: none"> • Frameshift Mutations • Deletion Mutations • Substitution Mutations • Insertion Mutations • Genetic Disorders <p>Videos: Amoeba Sisters Mutations https://www.youtube.com/watch?v=GieZ3pk9YVo</p> <p>Mutation Animation: https://hsv-k12.discoveryeducation.com/learn/player/4029a1e3-3db3-41cf-9106-0067aff8a500</p> <p>Activities: Mutations - Amoeba Sisters: http://www.amoebasisters.com/handouts.html</p> <p>Going Bananas for DNA Lab Link: https://www.scienceinschool.org/content/go-bananas-biochemistry</p> <p>Strawberry DNA Link: https://www.stevespanglerscience.com/lab/experiments/strawberry-dna/</p> <p><i>TDW Strategies:</i> Write a short fictional story (1 page) about an animal character who becomes a superhero after with a mutation. Site 5 non fictional facts about mutations in your story.</p> <p>Remediation: Create a Venn diagram comparing different types of mutations.</p> <p>Honors: Alien Encounters: C:\Users\whitney.steele\Documents\Alien Encounters (1).doc</p>
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3 Days	Heredity: Inheritance and Variation of Traits	14. Gather and synthesize information regarding the impact of technologies (e.g., hand pollination, selective breeding, genetic engineering, genetic modification, gene therapy) on the inheritance and/or appearance of desired traits in organisms.	<p>Online Textbook: Discovery Ed Concept 2.3</p> <p>Topics to Review:</p> <ul style="list-style-type: none"> • Advances in genetics • Genetic Engineering <p>Activities: Hudson Alpha Genetics Kit Hudson Alpha Genetics Kit Link: http://learn.genetics.utah.edu/content/genetherapy/</p> <p>Writing Prompt: How can genetic engineering create new varieties of corn? https://hsv-k12.discoveryeducation.com/learn/player/7801bea1-b33b-42d2-b753-880dcc5a0565</p> <p><i>TDW Strategies: Six Word Story:</i> https://hsv-k12.discoveryeducation.com/learn/player/d8ddced1-9474-4621-af0c-b1dd13b08c72</p> <p>Remediation: Cornell Notetaking</p> <p>Honors: Genetically Engineering Athletes https://www.cpalms.org/Public/PreviewResourceLesson/Preview/72595</p>
3 Days	Heredity: Inheritance and Variation Of Traits	ALCOS: 12-14	Review all course of study standards.

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
Review Vocabulary terms at beginning of unit.	Vocabulary	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Vocabulary: ALEX Unpacked Standards - Teacher Vocabulary https://alex.state.al.us/standardAll.php?grade=7&subject=SC2015&cocode=LSC7&summary=2</p>
3 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Intro to Human Body Systems Reading Passage: https://hsv-k12.discoveryeducation.com/learn/player/115c0b2d-c24e-4c11-b434-333bf6c1f43c Concepts to Review:</p> <ul style="list-style-type: none"> • Body Organization • Types of tissues • Organs <p>Activities: Introduction to the Human Body Rock-n-Learn Video with practice reading graphs and standardized test simulation https://www.youtube.com/watch?v=AHQGNb0zBgg&pbjreload=101 Human Body Quest Research Project https://sciencespot.net/Media/hlththumbdyquest.pdf https://app.discoveryeducation.com/learn/player/e68976f8-aaf3-4ed5-bbe3-941ad4e7f4cf</p>

3 days	From Molecules to Organisms: Structures and Processes	ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function	Reading: Discovery Ed Online Textbook: Unit 3 Human Body Systems: Click on Model Lesson for help with 5E lesson planning and a variety of resources including text, video, hands-on activities, science skills, and differentiation to accommodate students below grade level in reading or ELL students. Concepts to Review: System Interactions Homeostasis Activities: Animation that explains homeostasis and its disruptors in humans https://app.discoveryeducation.com/learn/videos/754909fc-b5b4-435d-bb26-756746b77790/ Amoeba Sisters Handout Resource Link for Homeostasis: https://www.amoebasisters.com/handouts.html
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<p>4 days</p>	<p>From Molecules to Organisms: Structures and Processes</p>	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.11 Concepts to Review: Skeletal System Characteristics of Bones Joints Activities: Dem Bones Activity Organ Systems Structure and Function Graphic Organizer Human Body Research Project Virtual Frog Dissection Human Anatomy Diagram to Label Immunity and Disease Simulation – CDC Zombie Webquest Video: Amoeba Sisters Human Function Systems Overview How the Body Works Discovery Ed: Biologically Speaking: Systems of the Human Body Reading and Writing Discovery Ed Reading Passages A Reason to Cry Over Spilled Milk Writing Prompt: Calcium is one of the minerals regulated by bones. Why is calcium so important to the body? AMSTI Kit: Exploring Body Systems Remediation: Studying Human Body Systems Instructional Strategies Human Body Flipbook Studying Human Body Systems Advanced: Virtual Hip Replacement Virtual Knee Replacement Modeling Kidney Filtration</p>
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4 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.8 Muscular System Concepts to Review: Voluntary vs Involuntary Muscles Types of muscle tissue Activities The Muscle Song https://www.youtube.com/watch?v=hY2fa6Q98-k How Your Muscle System Works Ted-ED https://www.youtube.com/watch?v=VVL-8zr2hk4 Mighty Muscles Digital Interactive Exploration https://hsv-k12.discoveryeducation.com/learn/player/cf1c0bcc-ef47-4e7a-9418-bfc36871b9bc Remediation: Create a poster or Z-diagram illustrating three types of muscle. Include where the muscle is found, what it looks like, and whether it is voluntary or involuntary. Honors: Chicken Wing dissection: Video Tutorial https://elearning.org/resources/life-science-chicken-wing-dissection Effect of fatigue on muscles lab: access free lab on teachers pay teachers by setting up free account.</p>
4 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.3 Digestive System Concepts to Review:</p> <ul style="list-style-type: none"> • Digestive System Organs • Mechanical vs Chemical digestion • Digestive System Organ functions <p>Activities: Food Into Fuel Video Follow Your Food Digital Interactive Exploration Break it Down Hands-on Lab (Digestion)</p>

4 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.2 Circulatory System Concepts to Review:</p> <ul style="list-style-type: none"> • Components of the Circulatory System • Types of Circulation • List the parts of the Circulatory System and describe their functions. <p>Activities: Circulatory System Pre-made Lesson Plan with Interactives, Text, and Video https://aptv.pbslearningmedia.org/resource/tdc02.sci.life.stru.lp_circula/the-circulatory-system/ Exercise and Heart Rate Lab (Circulatory System) https://app.discoveryeducation.com/learn/player/E74F7680-6652-4304-B11E-B2C135D55D7C?utm_medium=coreplayer&utm_source=E74F7680-6652-4304-B11E-B2C135D55D7C&utm_campaign=hublinks</p>
4 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.10 Respiratory System Concepts to Review:</p> <ul style="list-style-type: none"> • Parts of the Respiratory System • Respiration <p>Activities: Discovery Techbook Model Lesson https://hsv-k12.discoveryeducation.com/learn/techbook/units/5b0ec540-abcc-40b9-bcb3-986c65407a63/concepts/7cd098b2-f2e4-43a0-9c5e-308c2b6b13f5/lesson/assignments Hands- On Lab Modeling the Lungs (Respiratory System) https://app.discoveryeducation.com/learn/player/f2a88eaf-f134-4d6b-9988-281097ece991?utm_medium=coreplayer&utm_source=f2a88eaf-f134-4d6b-9988-281097ece991&utm_campaign=hublinks</p>

3 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.1 Nervous System Concepts to Review:</p> <ul style="list-style-type: none"> • Parts of a neuron • Compare somatic vs autonomic nervous system • Nervous System functions <p>Activities: The Brain and Your Nervous System Interactive Virtual Exploration of the Brain https://app.discoveryeducation.com/learn/player/b2cf4e69-4ab2-47db-90a9-6ce0e2f373ef PhET Lab Simulation: Neurons https://phet.colorado.edu/en/simulation/neuron Hands On – Minds On Lab Reflex, Reaction, and Sensation (Nervous System) https://hsv-k12.discoveryeducation.com/learn/player/10fbd041-65b1-4577-b976-87284ba14324</p>
2 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.4 Endocrine System Concepts to Review</p> <ul style="list-style-type: none"> • Functions of the Endocrine System • Identify glands and describe their functions • Hormone Imbalances <p>Activities: Endocrine Eddie – Create a Map of the Human Endocrine System and Predict the Effects of a “Disappearing” Gland https://gtm-media.discoveryeducation.com/videos/DSC/data/HOAs/HOA_EndocrineEddie_SIS.pdf The 5 “New Types” of Diabetes Article https://www.livescience.com/61917-diabetes-five-types.html</p>

<p>2 days</p>	<p>From Molecules to Organisms: Structures and Processes</p>	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.5 Excretory System Concepts to Review:</p> <ul style="list-style-type: none"> • Function of Excretory System <p>Activities: Food and Drink Digital Interactive Exploration https://hsv-k12.discoveryeducation.com/learn/player/22922912-2916-42cd-966b-2a2ec5af1842 Video and Design: A History of the Dialysis Machine Be a biomedical engineer– design 2 ways to improve the process of dialysis. Use information from the video and your own research to help you https://hsv-k12.discoveryeducation.com/learn/videos/103df535-4988-4228-892f-f6e8e8d6e60f/</p>
<p>4 days</p>	<p>From Molecules to Organisms: Structures and Processes</p>	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading Strategies: Concept 3.6 Immune System Concepts to Review: Functions of Immune System Cells of the Immune System</p> <p>Activities: Amoeba Sisters Immune System Video https://www.youtube.com/watch?v=fSEFXl2XQpc How Covid-19 May Be Exploiting our “First Responder” Cells – Think-Pair-Share Read the article and Think-Pair-Share with an elbow partner. https://www.livescience.com/coronavirus-immune-interferon-response.html How the Coronavirus Attacks Your Lungs – Video and Vocabulary Activity https://aptv.pbslearningmedia.org/resource/coronavirus-attacks-your-lungs/kqed-deep-look/support-materials/ Hands on Lab – Let the Germs Begin https://askabiologist.asu.edu/sites/default/files/assets/activities/Germs/germs-activity.pdf</p>

2 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.7 Integumentary System Concepts to Review:</p> <ul style="list-style-type: none"> • Functions of the skin • Layers of skin • Skin protection <p>Activities: Popcorn Read and White Board Collaborate Students take turns reading from the passage. Then, gather in small groups to collaborate on the most important function of the integumentary system. The scribe then records their answers on the whiteboard. https://app.discoveryeducation.com/learn/player/f5f7c8e8-23e5-4459-bef0-356d3309fbfd Forensic Science Project: Integumentary Evidence Make a list of each piece of evidence analyzed by the forensic scientist. Explain the integumentary system function of each piece of evidence. If a piece of evidence does not serve a function, explain why not. https://app.discoveryeducation.com/learn/techbook/units/5b0ec540-abcc-40b9-bcb3-986c65407a63/concepts/4a6fee56-5fba-41ee-bf14-a43e1dced9e5/tabs/054d49d8-d8f5-4203-b276-19e25b56cc5f/pages/7708dbff-1276-4e69-973a-9999a9676435?assetGuid=7e09b157-0911-41c3-9273-1214247531cf&language_code_override=eng&reading_level_override=10#cit-7e09b157-0911-41c3-9273-1214247531cf</p>
2 days	From Molecules to Organisms: Structures and Processes	<p>ALCOS Standard 4: Construct models and representations of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific function</p>	<p>Reading: Concept 3.9 Reproductive System Activities: Discovery Techbook Model Lesson https://hsv-k12.discoveryeducation.com/learn/techbook/units/5b0ec540-abcc-40b9-bcb3-986c65407a63/concepts/576b0301-ca24-4d1d-8eb9-6db5d549864b/lesson/assignments</p>

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
5 days	Ecosystems: Interactions, Energy, & Dynamics	5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter. a. Obtain, evaluate, and communicate information about how food is broken down through chemical reactions to create new molecules that support growth and/or release energy as it moves through an organism. b. Generate a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.	<p>Vocabulary: ALEX Unpacked Teacher Vocabulary</p> <p>Concepts to be Covered: Living Things in The Environment Populations Abiotic vs biotic factors</p> <p>Abiotic vs. Biotic factors Discovery Ed Board Builder Biotic and Abiotic Factors: Photosynthesis 5E Lesson Strand Photosynthesis and Cellular Respiration Compared Discovery Ed Hands-on Activity: Photosynthesis</p> <p>Populations Population Animation</p> <p>TDW Strategies: Construct an explanation to predict patterns in ecosystems using evidence of past trends</p> <p>Remediation: Biodiversity Instructional Strategies- Discovery Ed: Biotic and Abiotic Factors Interactive Text (For Struggling Readers) Compare the Diversity of Life in Different Habitats:</p> <p>Advanced: Interdependence of Life e-book and Evaluation Quiz Project: Modeling the connection between cellular respiration and photosynthesis (Engineering and Design) Solar Cells Engineering</p>

2 days		6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.	<p>Concepts to be reviewed</p> <p>Ecosystem Organization Factors Limiting Population Growth Primary and Secondary Succession Pioneer Species</p> <p>Primary and Secondary Succession Succession Interactive https://biomanbio.com/HTML5GamesandLabs/EcoGames/succession_interactive.html</p>
4 days		7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations	<p>Factors Limiting population Growth Hopping ahead of climate change https://alex.state.al.us/cr2.php?std_id=57492 Urban ecosystems: https://alex.state.al.us/crview.php?resid=1320&resid=1320&restype=CR</p> <p>Concepts to be covered for COS #8 & 10</p> <p>Symbiotic Relationships Predator vs prey Organism adaptation Wildlife Conservation Waste Management</p>
5 days		8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms (e.g. competition, predation, mutualism, commensalism, parasitism)	<p>Consumers, Producers, and Decomposers in a Pond Card Sort https://sciencespot.net/Media/pondfoodwebinfo.pdf Discovery Ed: What's Eating You? Interactive Digital Exploration https://tools.discoveryeducation.com/assignment/viewAssignment.cfm?guidAssetId=7efbc168-a7e9-444f-befa-ff065cf1f996&blnPopup=1&strEditCopy=Copy&blnPlayer=1 Frayer Model – Compare different types of symbiosis by making Frayer models for commensalism, mutualism, and parasitism https://www.pdfFiller.com/jsfiller-desk15/?projectId=478087713#4bbefe5be06d7b252f61c83ed424dd3e Role of Decomposers: Worms at Work! Interactive Media https://aptv.pbslearningmedia.org/resource/reach-with-stem-worms-at-work/worms-at-work/Recycling/Waste-Management Eco-Action Collage – Waste Paper to New Paper https://orion.discoveryeducation.com/published/wb23TfmvYMT2w5Yom/view</p>
		9. Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g. using scientific, economic, and social considerations regarding purifying water, recycling nutrients, preventing soil erosion)	

4 days		<p>10. Use evidence and scientific reasoning to explain how characteristic behaviors (e.g. building nests to protect young from cold, herding to protect young from predators, attracting mates for breeding by producing special sounds and displaying colorful plumage, transferring pollen or seeds to create conditions for seed germination and growth) and specialized plant structures (e.g. flower brightness, nectar, and odor attracting birds that transfer pollen; hard outer shells on seeds providing protection prior to germination) affect the probability of successful reproduction of both animals and plants.</p>	<p>Video Segment – Plastic Waste and Ocean Pollution https://hsv-k12.discoveryeducation.com/learn/videos/c6f9f91b-be62-4961-9c8e-c4f3936bded9/ Hands-On Activity – What a Waste! https://hsv-k12.discoveryeducation.com/learn/player/6d605836-69ca-472d-8004-27d83687e180</p> <p>Adaptations 5E Lesson Plan - videos, text, interactives https://hsv-k12.discoveryeducation.com/learn/techbook/units/3afa2867-5c93-4836-9521-47ead2ed95b1/concepts/4237086c-9d21-42d3-acd8-751640b62e63/lesson/assignments</p>
3 days		<p>11. Analyze and interpret data to predict how environmental conditions (e.g. weather, availability of nutrients, location) and genetic factors (e.g. selective breeding of cattle or crops) influence the growth of organisms (e.g. drought decreasing plant growth, adequate supply of nutrients for maintaining normal plant growth,</p>	<p>Wildlife Management STEM in Action Interactive Text https://hsv-k12.discoveryeducation.com/learn/techbook/units/2d17fe2c-67ce-4ea9-b1d2-b5c4b4106ba8/concepts/968fc1d0-9b4a-4526-800c-8227164e90d0/tabs/054d49d8-d8f5-4203-b276-19e25b56cc5f/pages/3e410cce-71c3-477e-8184-9de3284ce7ba?assetGuid=b38238c7-09c7-456a-af00-d3d741186735&language_code_override=eng&reading_level_override=10#cit--b38238c7-09c7-456a-af00-d3d741186735</p> <p>Selective Breeding Video- Why Are There So Many Kinds of Dogs? https://hsv-k12.discoveryeducation.com/learn/videos/cbe44c71-45fc-4fb4-ba00-bf7b7666ef9d/</p> <p>Life Cycle of Flowering Plants: Pollination video https://hsv-k12.discoveryeducation.com/learn/videos/15ed2764-cb4b-4bfa-8498-8c0c320ba2aa/</p> <p>Global Warming Animation https://hsv-k12.discoveryeducation.com/learn/videos/c8911c45-3761-4b88-96cb-6ba8e8eb8539/</p>

5 days		<p>identical plant seeds growing at different rates in different weather conditions, fish growing larger in large ponds than in small ponds)</p>	<p>Remediation: Biodiversity Instructional Strategies- https://app.ellevationeducation.com/Strategies/Collections/Details/338 Discovery Ed: Biotic and Abiotic Factors Interactive Text (For Struggling Readers) https://app.discoveryeducation.com/learn/techbook/units/f8b0240e-a0f3-49a5-81e7-d1019d3ec115/concepts/622b4656-7e59-4e34-8920-94716e33ddbc/tabs/759da9a7-2edf-4cde-9515-7081ca990764/pages/20e37668-897f-4cf0-be8a-5d4d6eb7a0dc?assetGuid=4025ce60-2010-4efd-a75b-8896c3a210d2&language_code_override=eng&reading_level_override=11#cit--4025ce60-2010-4efd-a75b-8896c3a210d2 Compare the Diversity of Life in Different Habitats: https://app.ellevationeducation.com/Strategies/Collections/Details/304</p> <p>Advanced: Interdependence of Life e-book and Evaluation Quiz https://my.nsta.org/ebook/104816/interdependence-of-life-student-edition/1 Project: Modeling the connection between cellular respiration and photosynthesis (Engineering and Design) https://hsv-k12.discoveryeducation.com/learn/techbook/units/3391ad2d-bceb-45dc-a68b-8fd21ab33671/concepts/139951f4-15e3-4094-88d9-cd1605c5ae52/tabs/054d49d8-d8f5-4203-b276-19e25b56cc5f/pages/0612185e-2000-43d8-88c3-4a8eb60807fb?assetGuid=ab50d290-2a0c-43c0-a9ef-2860547ec79c&language_code_override=eng&reading_level_override=10#cit-ab50d290-2a0c-43c0-a9ef-2860547ec79c Solar Cells Engineering https://app.discoveryeducation.com/learn/videos/e27347fc-2ece-43cd-bc42-674facab8f7e/</p>
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<p>3 days</p>	<p>Ecosystems: Interactions, Energy and Dynamics</p>	<p>18. Construct an explanation from evidence that natural selection acting over generations may lead to the predominance of certain traits that support successful survival and reproduction of a population.</p>	<p>Online Text: Chapter 4.4 Additional Reading Content: Getting to Know Darwin and Natural Selection https://hsv-k12.discoveryeducation.com/learn/player/b95c1121-dc8d-4a4d-9bfe-39ab074147d4</p> <p>Activities:</p> <p>Lab Activities: Toothpick Birds http://be011.k12.sd.us/Lists/7th%20Science%20Calendar/Attachments/159/Toothpick%20Birds.pdf Bean Bunny Evolution https://stemeducation.nd.edu/images/Bean_Bunny_Evolution.pdf Evidence of Evolution Lab: http://www.polk.k12.ga.us/userfiles/682/Classes/1442/Evidence%20</p> <p>Remediation: Natural Selection Cornell Notes: ELL Link: https://app.ellevationeducation.com/Strategies/Activity/Details/406</p> <p>Honors: Phet Lab Simulation: Natural Selection</p>
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<p>10 days</p>	<p>Ecosystems: Interactions, Energy and Dynamics</p>	<p>15. Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record and the chronological order of fossil appearance in rock layers.</p> <p>16. Construct an explanation based on evidence (e.g., cladogram, phylogenetic tree) for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, including living fossils (e.g., alligator, horseshoe crab, nautilus, coelacanth).</p> <p>17. Obtain and evaluate pictorial data to compare patterns in the embryological development across multiple species to identify relationships not evident in the adult anatomy.</p>	<p>Online Text: Online Textbook: <i>Discovery Education Unit 4 Evolution</i> Concept 4.1 Evidence of Evolution Concept 4.2 Change over Time and the Fossil Record Concept 4.3 Adaptations</p> <p>Activities: Evidence of Evolution Lab: http://www.polk.k12.ga.us/userfiles/682/Classes/1442/Evidence%20of%20Evolution%20Lab.pdf</p> <p>Nova Labs: Fossils: Rocking the Earth http://www.pbs.org/wgbh/nova/labs/lab/evolution/2/1/</p> <p>Remediation: Writing using Text Types: ELL Lesson Link: https://app.ellevationeducation.com/Strategies/Activity/Details/2316</p> <p>Honors: https://app.discoveryeducation.com/learn/player/6d51352d-b1c7-46d1-8ee6-85300fe88c32 Create a children's story book for a child in 4th grade explaining the diversity in each ecosystem. Illustrate at least 1 image for each ecosystem.</p>
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