

Regents Biology Curriculum Map

Unit/ days	Essential Questions	NYS and Core Curriculum Standards http://www.p12.nysed.gov/ciai/mst/pub/living.pdf	Skills/Objectives	Activities	Labs
Characteristics of Living Things 2 Days	Day 1: What are characteristics of life? Day 2: What distinguishes a living and non-living thing?	NYS Standards: Standard 1: 1.1a Standard 4: 1.2a, 1.2b, 1.2e, 1.2f, 1.3a Common Core Standards: Reading 1, 2, 4 Writing 4	-Define “life” -Distinguish between a virus, prions, ribosomes, cells, bacteria. -Identify characteristics of life: life functions, homeostasis, metabolism synthesis, nutrition, respiration, transport, universal genetic code, etc .	- Develop a logical argument of “what is life?” and support with evidence after comparing living and non-living things (real flower vs. fake flower) -Describe what life is to a robot that comes to Earth. - <i>Is a Virus Living?</i> Article -Soil Samples from Mars activity: Students write hypotheses and test soil for signs of life -Magazine cut-out activity- Give each group a magazine cutout with a picture. Have them identify living and non-living things in the cutout and then write a paragraph backing up their argument -Characteristics of life key words activity	
Scientific Inquiry 10 days	Day 1: How can we observe the world around us and learn from our experiences? Day 2: What are characteristics of a valid	NYS Standards: Standard 1: 1.2a, 1.3a, 1.3b 2.1 2.3a, 2.3b, 2.3c	-Distinguish between observations and inferences -Identify a problem -Make predictions -create a hypothesis based on	-Observations of experiments activity -Improving experimental design on an experiment	

	<p>experiment? (controlled experiment vocabulary)</p> <p>Day 3: What is a controlled experiment? (practice problems)</p> <p>Day 4: How do we write a clear, concise and detailed procedure? (optional depending on unit structure)</p> <p>Day 5: How do scientists design controlled experiments? (have students design and possibly implement an experiment 1-3 days depending on experiment)</p> <p>Day 6: How do scientists record and interpret data? (measurement and graphing)</p>	<p>2.4 Standard 4:</p> <p>CC: Reading Writing</p>	<p>observations</p> <ul style="list-style-type: none"> -Distinguish between independent variable, dependent variable, controlled variables, experimental and control group -Write a procedure -Design and implement controlled experiments -Collect data -Take measurements of length, mass and volume -Perform metric conversions 	<ul style="list-style-type: none"> -Practice controlled experiment problems -Write-it do-it activity- writing a procedure for building a structure -Peanut butter and jelly procedure writing: Students write a procedure and teacher follows one student's procedure very literally and model how to make a PB&J, then students modify and update their procedure -Drawing: procedure writing Give a lead student a drawing. The student has to describe to the class how to do the drawing by speaking only, no hand gestures and no writing on the board -Brine shrimp investigation: Students test the best concentration to hatch brine shrimp 	
<p>Biochemistry/ Enzymes 10 days</p>	<p>Day 1: How do organic and inorganic compounds compare?</p> <p>Day 2: What are the four classes of organic molecules?</p> <p>Day 3: How are</p>	<p>NYS Standards: Standard 1: 1.1a Standard 4: 1.2a, 1.2b, 1.2e, 1.2f, 1.3a 5.1c</p>	<ul style="list-style-type: none"> -Compare organic and inorganic compounds -Distinguish in structure and functions between: carbohydrates, lipids, proteins and nucleic acids -Describe the role of enzymes in chemical reactions 	<ul style="list-style-type: none"> -Organic molecule food placemat: Students create a high school biology-level placemat detailing information about the 4 classes of macromolecules 	

	<p>carbohydrates important to living things? Day 4: How are lipids important to living things? Day 5: How are nucleic acids important to living things? Day 6: How are proteins important to living things? Day 7: What is the role of enzymes in chemical reactions? Day 8: What factors affect the rate of enzymatic reactions? (temperature, pH) Day 9: What factors affect the rate of enzymatic reactions? (substrate and enzyme concentration)</p>	<p>CC: Reading 1, 2, 4 Writing 4</p>	<p>-Draw graphs illustrating how temperature, pH, enzyme and substrate concentration affect the rate of reaction</p>	<p>-Create your own lock-n-key model drawing or model</p> <p>-Enzyme flipbook that illustrates either a synthesis or digestion reaction</p> <p>-Toothpickase- Students use their hands to model toothpickase, an enzyme that breaks down toothpicks.</p> <p>-Enzyme advertisement (ex. Examase helps you do better on exams)</p>	
<p>Cell/Cell Transport Unit 10 Days</p>	<p>Day 1: What scientific contributions lead to the development of the cell theory? Day 2: How are cells organized in living things? Day 3/4: What are the functions of the major cell structures and organelles? Day 5: What is the structure and function of the cell membrane? Day 6: How do molecules move across the cell membrane? (passive diffusion)</p>	<p>NYS Standards: 1.2a, 1.2c, 1.2f, 1.2g, 1.2i 1.3a, 1.4a, 5.1b,</p> <p>CC: Reading 1, 4, 5, 7 Writing 1a, 1c, 2a, 2b, 6, 8, 9</p>	<p>-Cite evidence for the development of the cell theory from reading passages. -Construct a timeline that documents scientists' contributions that lead to the development of the cell theory. -Identify the structure and function of the nucleus, mitochondria, chloroplasts, ribosomes, golgi, endoplasmic reticulum, cell membrane, cell wall, lysosome, cytoskeleton. -Create an analogy of the cell compared to a tourist attraction, cell city, or an analogy of an</p>	<p>-Cell Theory Timeline</p> <p>-The Power of 10 Activity: students categorize structures from smallest to largest in order to determine size relationships in living things</p> <p>-Project: Cell Organelle - Project- choice of 4 projects: Cell as a City Analogy, Organelle Wanted Poster, Cell Travel Brochure or a Cell/Organelle Facebook page</p> <p>-Carrot and raisin osmosis:</p>	<p>Onion and Elodea State Lab: Diffusion Through a Membrane</p>

	<p>Day 7: How does salt water affect a cell? (osmosis)</p> <p>Day 8: How do molecules move against their concentration gradient?</p>		<p>organelle to a “wanted” individual</p> <p>-Distinguish which direction water diffuses when cells are placed in hypertonic, hypotonic and isotonic solutions.</p>	<p>students determine and describe relative concentration of tissues and solutions of carrots and raisins soaked in plain and salt water.</p>	
<p>Cell Energetics 5 days</p>	<p>Day 1: How is ATP used to drive cellular processes?</p> <p>Day 2: How does cellular respiration make ATP for a cell?</p> <p>Day 3: How do cells create ATP when no oxygen is present?</p> <p>Day 4: How do plants convert sunlight into glucose during photosynthesis?</p>	<p>NYS Standards: Standard 4 Key Idea 1 5.1a, 5.1b, 5.1d, 5.1e, 5.1f, 5.1g</p> <p>CC: Reading 2, 4, 5, 6, 7 Writing 4,10</p>	<p>-Explain how ATP is used to drive cellular processes</p> <p>-List the products and the reactants of cellular respiration</p> <p>-Explain how the cell converts glucose into ATP</p> <p>-Explain how ATP is created when oxygen is not present during fermentation</p> <p>-Compare and contrast aerobic respiration and fermentation</p> <p>-List the products and reactants of photosynthesis</p> <p>-Explain how plants convert sunlight into glucose</p>	<p>-ATP poem: Provide students a list of terms that must be included in the poem</p> <p>-Derive the equation for photosynthesis by determining the conclusions of past experiments</p> <p>-Photosynthesis or Cellular Respiration Play: Students write and present the play</p> <p>-Cellular Respiration Lab: Students measure the rate of cellular respiration before and after exercise using bromothymol blue</p>	

<p>Body Systems</p>	<p>DIGESTION: Day 1: How are nutrients utilized by the body? Day 2: How do the structures of the digestive system aid in digestions? Day 3: What are malfunctions of the digestive system and how can they be treated?</p> <p>CIRCULATION: Day 4: What is the anatomy of the heart? Day 5: How does blood circulate? Day 6: How can you keep your heart healthy?</p> <p>RESPIRATION: Day 7: What are the mechanisms of breathing? Day 8 (optional): How does the diaphragm aid in breathing? (breathing activities) Day 9: What are malfunctions of the respiratory system and how can they be treated?</p> <p>EXCRETION: Day 10: How do the kidneys eliminate waste? Day 11: What are malfunctions of the kidney and how can they be</p>	<p>NYS Standards: Standard 4 Key Idea 1 1.2a, 1.2b, 1.2c, 1.2d, 1.2h, 1.2j 2.2a 5.1c, 5.1f 5.2a, 5.2b, 5.2c, 5.2d, 5.2e, 5.2f, 5.2g, 5.2h, 5.2i, 5.2j 5.3a, 5.3b</p> <p>Common Core Standards: Reading: 9 Writing: 2d, 9</p>	<p>DIGESTION: -Identify main macromolecules and distinguish their monomers -Identify the function of each nutrient (link glucose to respiration) -Compare and contrast the old and new food pyramid -Identify and diagram structures of the digestive system (mouth, esophagus, stomach, small intestine, large intestine) -Explain the role of enzymes in digestion (amylase, pepsin, lipase, bile) -Describe how the digestive system maintains homeostasis -Describe malfunctions of the digestive system and how to restore homeostasis</p> <p>CIRCULATION: -identify the structures of the circulatory system including the components of blood and the major structures of the heart (atria, ventricles, septum, semilunar valves) -Trace the path of blood through the system and pulmonary circuits - Describe how the circulatory system maintains homeostasis -Describe malfunctions of the circulatory system and how to restore homeostasis</p> <p>RESPIRATION:</p>	<p>DIGESTION: -Food journal -Analyze food labels -Digestion story- Choose your favorite meal and discuss where/how each part is digested</p> <p>CIRCULATION: -Have students identify heart structures on a model prior to dissection of sheet heart -Have students write a narrative from a particular place in the circulatory system (each start in a different place). As they read aloud, other students have to guess their starting point.</p> <p>RESPIRATION: -Students measure tidal volume and maximum lung capacity using balloons -Create or use bell jars to model breathing</p> <p>EXCRETION: -Article- students research kidney malfunctions and report on how treat them Immune System:</p> <p>NERVOUS/ENDOCRINE: -From textbook reading, create a chart comparing and contrasting nervous and</p>	<p>Nutrient Lab</p> <p>Enzymatic Breakdown of Hydrogen Peroxide</p> <p>Frog Dissection</p> <p>Sheep Heart Dissection</p>
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	<p>treated?</p> <p>NERVOUS/ENDROCRINE: Day 12: What are characteristics of the systems that regulate cellular communication? Day 13: What is the structure of a neuron and how does it facilitate transmission of a signal? Day 14: How is glucose regulated in the body? Day 15: How do feedback systems maintain homeostasis? Day 16: How do the nervous and endocrine systems work together to regulate the body?</p> <p>SKELETAL/MUSCLAR SYSTEM: Day 17: How do the skeletal and muscular systems work together to create movement?</p> <p>IMMUNE: Day 18: What causes disease? Day 19: How are infectious diseases spread? Day 20: What are the first two lines of defense against pathogens? (non-specific defenses)</p>		<p>-Identify and describe the functions of the structures of the respiratory system (trachea, bronchi, bronchioles, alveoli (diffusion)).</p> <p>EXCRETION: -Identify the structures and functions of the kidney -Explain how metabolic by-prodcuts (CO2, urea, excess salts) are removed via lungs, kidney and skin. -Explain basic function of nephron (glomerulus, Bowman’s capsule, loop of Henle). -Describe malfunctions of the excretory system and how to restore homeostasis</p> <p>NERVOUS/ENDROCRINE: -Compare and contrast the nervous and endocrine in terms of type of signals, mechanism, and response -Explain how chemical signals allow cellular communication -Explain how glucose is regulated in the body</p> <p>SKELETAL/MUSCLAR SYSTEM: -Describe the function of the skeletal and muscular systems -Explain how the skeletal and muscular system work together to create movement</p>	<p>endocrine system -Nerve ending activity with toothpicks -Synthesize own example of a reflex arc, diagramming and explaining the pathway in the body from stimulus to response -Diagram a feedback system (negative or positive)</p> <p>SKELETAL/MUSCLAR SYSTEM: -Name that bone activity</p> <p>IMMUNE: -Balloon Activity: antigen-antibody immune system vocab intro -Phenolphthalein disease transmission -Inflammatory response cartoon -Playbill: write a play program and give each immune cell a bio -Tech as the immune system analogy -Vaccine letter to CDC</p>	
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	<p>Day 21: How does the immune system respond to an infection? (overview of key terms in adaptive immunity).</p> <p>Day 22: How does the immune system respond to infections of the blood? (humoral immunity)</p> <p>Day 17: How does the immune system respond to cells infected by pathogens? (cell-mediated immunity)</p> <p>Day 18: How do vaccines promote immunity?</p> <p>Day 19: How can the immune system be compromised? (autoimmune diseases, cancer, allergies, HIV/AIDS)</p>		<p>IMMUNE:</p> <ul style="list-style-type: none"> -Identify different types of pathogens -Describe how diseases are transmitted -Explain how inflammation protects the body from pathogens -Discuss the role of antigens, white blood cells and antibodies in an immune response -Distinguish between the mechanisms of humoral and cell-mediated immunity -Describe the mechanism of vaccines -Explain how autoimmune diseases, cancer, HIV/AIDS and allergies affect immune function 		
<p>Reproduction/ Mitosis/Meiosis 20 days</p>	<p>Day 1: How do cells reproduce? (mitosis)</p> <p>Day 2: What are different methods of asexual reproduction?</p> <p>Day 3: How are males adapted for reproduction?</p> <p>Day 4: How are females adapted for reproduction?</p> <p>Day 5: How do hormones coordinate activities of the menstrual cycle?</p> <p>Day 6: How does meiosis</p>	<p>Standard 4: 2.1d, 2.1e 3.1b, 3.1c 4.1a, 4.1b, 4.1c, 4.1d, 4.1e, 4.1f, 4.1g, 4.1h</p> <p>Common Core Standards: Reading 3, 4, 5 Writing 2, 3, 10</p>	<ul style="list-style-type: none"> -Explain the steps in cell division -Compare number of chromosomes in parent and daughter cells -Distinguish between budding, binary fission, fragmentation, and regeneration -Compare sexual and asexual reproduction in terms of number of parent, genetic composition -Draw and label the structures of the male reproductive system -Explain the functions of each 	<p>Mitosis: Students arrange microscope images of the phases of mitosis in the correct sequence</p> <p>Mitosis Socks: Students use socks (chromosomes) and yarn (membranes, spindle fibers) to model mitosis.</p> <p>Draw, label and color the front and side views of the</p>	

	<p>create haploid gametes? Day 7: How is variation produced in egg and sperm? (crossing over and independent assortment) Day 8: What distinguishes spermatogenesis and oogenesis? Day 9: How do fertilization and development occur in humans? (overview) Day 10: How do humans grow and develop in the uterus? (stages of development) Day 11: What is the role of the placenta and hormones placenta during pregnancy? Day 12: What factors can negatively impact human development? Day 13: What STDs can cause the reproduction system to malfunction? Part 1 Day 14: What STDs can cause the reproduction system to malfunction? Part 1</p>		<p>major structure in the male reproductive system -Explain the functions of each major structure in the female reproductive system -Explain how hormones regulate ovulation, the thickness of the lining of the uterus and pregnancy -Describe how haploid gametes are made from diploid cells -Explain how crossing over and independent assortment play a role in causing genetic variation in the gametes that result from meiosis -Sequence the steps of egg and sperm production, to their release and fertilization. -Sequence the stages of development. (zygote, blastula, etc.) -Explain negative and positive feedback systems that help regulate the pregnancy and birth -Create a list of factors that negatively impact human development -Explain how mutations in the DNA or chromosomes of gametes can be passed on to offspring -Describe symptoms of STDs</p>	<p>male and female reproductive systems</p> <p>Menstrual Cycle Play: Students are assigned roles of hormones, glands and organs that participate in the menstrual cycle. They act out the feedback mechanisms that occur.</p> <p>Show <i>Life's Greatest Miracle</i></p> <p>Sour Straw Meiosis: Students use sour straws to model crossing over and independent assortment to make 4 unique gametes</p> <p>Development Mini-Story Book: Students write a story about their creation by describing the processes that transform them from a single-celled zygote to a complex, multicellular human. Negative Impacts on Fetal Development Letter: Students read information about how factors such as alcohol and diet affect fetal development then write a letter to a relative who is pregnant describing how to take care of themselves when they are pregnant.</p>	
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Mendelian Genetics/Molecular Genetic 12 days (only 2-3 days on Mendel)	Day 1: What did Mendel learn from his experiment with peas? Day 2: How can the genotypes and phenotypes of offspring be predicted using Punnett Squares? Day 3: How is hereditary information stored and transmitted to the next generation? (genes, chromosome, DNA relationship) Day 4: What is the structure and function of DNA? Day 5: How is DNA replicated? Day 6: How does DNA direct the building of proteins in a cells? (transcription) Day 7: How does DNA direct the building of proteins in a cell? (translation) Day 8: How does differentiation lead to different types of cells? (can discuss epigenetics in relation to gene expression) Day 9: How are mutations formed? Day 10: How do mutations affect organisms?	Standard 4: 2.1a, 2.1b, 2.1c , 2.1d, 2.1e, 2.1g, 2.1h, 2.1i, 2.1j, 2.1k 3.1b, 3.1d Common Core Standards: Reading 1, 2, 3, 4, 5, 7 Writing 7	-Explain the significance of Mendel’s work -Define genotype, phenotype, dominant, recessive, and allele -Calculate probabilities of genotypes and phenotypes using monohybrid, dihybrid, blood type, incomplete dominance and codominance crosses -Create a model or drawing that shows the relationship between genes, chromosomes, and DNA -Describe the structure and function of DNA -Sequence the steps in DNA replication -Explain the role of DNA in transcription -Explain the role of messenger RNA in translation -Define differentiation and explain how genes are regulated -Explain how cells that have the same DNA can have different structures and functions -Discuss the role of epigenetics in gene expression -List mutagens -Describe how mutations affect/or may not affect an organism -Describe causes and symptoms of genetic disorders	-Punnett Square practice: monohybrid and dihybrid crosses, blood type, incomplete dominance, codominance, sex-linked (if time permits) Drawing and explanation that illustrates relationship between genes, chromosomes and DNA DNA Model: Students use pipe cleaners and hair beads to create a model of DNA. Students receive one strand of DNA and synthesize the complementary strand. Students create a key and describe the structure of DNA in terms of shape, base-pairing and type of bonds. Replication Foldable: Students write the sequence of bases on the outside of a folded piece of paper. They unzip the DNA (unfold it) and write the complementary strand of the newly synthesized DNA. Students label the 3’ and 5’ ends of each strand and label	Mendelian Genetics Lab

	(intro/general link to evolution) Day 11: How do genetic disorders affect humans?			<p>the template and new strands. In the center of the paper, students write out the steps in DNA replication.</p> <p>Amino Acid Bingo: Students fill out a bingo grid with amino acids. The teacher calls out the a codon. Students must use the amino acid chart to find the correct corresponding amino acid on their grid.</p> <p>Protein Synthesis Model: Each group is given a template strand of DNA to work with and instructions for how to model transcription and translation. Students describe the processes.</p> <p>Students read and respond to an article on epigenetics</p> <p>Students determine chromosomal mutations from karyotypes and write about genetic disorders</p>	
Biotechnology 7-9 Days	Day 1: How are genes cloned? (introduction: restriction enzymes, plasmids, recombinant DNA) Day 2: How do scientists use genetic engineering to	NYS Standards: Standard 1: 1.1c Standard 4 2.2a, 2.2b, 2.2c, 2.2d, 2.2e 4.1b	-Write a procedure for the genetic engineering of insulin -Model gene splicing -Compare and contrast natural and artificial breeding -Describe how genes are cloned -Write a procedure for separating	-Paper plasmid activity: students model how recombinant plasmids are formed using paper -Diagram how genes are cloned: Students select a	Biodiversity Lab

	<p>produce organisms with desirable characteristics? (application of gene splicing: bacteria/insulin example)</p> <p>Day 3: How do scientists use selective breeding to produce organisms with desirable characteristics?</p> <p>Day 4: How are organisms cloned?</p> <p>Day 5: How is gel electrophoresis used to create a DNA fingerprint?</p> <p>Day 6: What are safety and ethical issues associated with genetic engineering and cloning?</p> <p>Day 7: How does paper chromatography separate mixtures?</p>	<p>Common Core Standards: Reading: 2, 4, 5, 6, 8, 9 Writing: 1, 4, 8, 9</p>	<p>fragments of DNA</p> <ul style="list-style-type: none"> -Explain applications of gel electrophoresis -Describe the process of gene therapy -Defend whether or not you support gene therapy -Debate ethical issues related to genetic engineering -explain the role of genetic engineering in medicine, agriculture, the environment, crime, etc. 	<p>person or animal they want to clone and draw and describe how to do this</p> <ul style="list-style-type: none"> -Reading on animal cloning followed by a discussion on bioethics -Who stole the Queen's cheese? Or other paper electrophoresis activity. -Write a persuasive essay on your views of gene therapy- back up with evidence -Classroom debate on genetic engineering -Ink or plant chromatography to describe relationships among "organisms" 	
<p>Evolution 5-7 days</p>	<p>Day 1: What is the Earth's history?</p> <p>Day 2: What evidence supports the theory of evolution?</p> <p>Day 3: How does natural selection influence evolution?</p> <p>Day 4: How is industrial</p>	<p>NYS Standards: Standard 4 Key Idea 2.2a, 2.2b 3.1a, 3.1e, 3.1f, 3.1g, 3.1h, 3.1i, 3.1j, 3.1k, 3.1l 4.1a</p>	<ul style="list-style-type: none"> -Create a timeline of Earth's history -Define evolution -identify evidence for evolution -explain the mechanism of natural selection -explain how industrial melanism occurs -Depict evolutionary relationships 	<ul style="list-style-type: none"> -Create a timeline of important events in the Earth's history -Create a creature with adaptations specific to a particular environment -Homologous vs. analogous 	<p>Biodiversity</p> <p>Beaks of Finches</p> <p>DNA Hybridization</p>

	<p>melanism a model for natural selection?</p> <p>Day 5: How are evolutionary relationships depicted in a cladogram?</p> <p>Day 6: How do organisms develop resistance to chemicals? (pesticide, antibiotic resistance, etc.)</p> <p>Day 6: How does selective breeding influence evolution?</p> <p>Day 7: What happens to organisms that are no longer adapted to their environment? (extinction)</p>	<p>Common Core Standards: Reading: 2, 3, 4, 5, 6, 7 Writing: 4, 5</p>	<p>in a cladogram</p> <p>-Explain how organisms develop resistance to pesticide and/or herbicides</p> <p>-Compare selective breeding to natural selection</p>	<p>structures comparison</p> <p>-Peppered Moth activity: Students model natural selection using industrial melanism in moths as an example</p> <p>-Case study of the coelocanth</p>	
<p>Ecology/Human Impact 14 days</p>	<p>Day 1: What are the levels of organization in an ecosystem? (also cover biotic vs. abiotic factors in the ecosystem)</p> <p>Day 2: What nutritional relationships exist in an ecosystem?</p> <p>Day 3: How does energy flow through the ecosystem? (food webs)</p> <p>Day 4: How is the amount of energy in an ecosystem represented? (energy pyramids)</p> <p>Day 5: How do ecosystems change over time? (succession)</p> <p>Day 6: How do materials cycle through ecosystems?</p>	<p>NYS Standards: Standard 4 Key Idea 6 6.1a, 6.1b, 6.1c, 6.1d, 6.1e, 6.1f, 6.1g 6.2a, 6.2b 6.3a, 6.3b, 6.3c 7.1a, 7.1b, 7.1c 7.2a, 7.2b, 7.2c 7.3a, 7.3b</p> <p>Common Core Standards: Reading: 2, 3, 4, 8 Writing: 2, 4, 5, 8, 9, 10</p>	<p>-Distinguish between biotic and abiotic factors</p> <p>-Sequence the level of organization in an ecosystem</p> <p>-Distinguish between a carnivore, herbivore, omnivore, decomposer, etc.</p> <p>-Describe how energy moves through organisms in a food web</p> <p>-Create a model of an energy pyramid using the organisms in a food web</p> <p>-Create a model for succession</p> <p>-Explain and diagram how water and carbon are cycled through the ecosystem</p> <p>-Distinguish between renewable and non-renewable resources</p> <p>-Graph human population growth</p> <p>-Discuss balance in a food</p>	<p>-Level of Organization Index Cards: Students receive a stack of index cards. Each index card has a picture displaying an individual, population, community, or ecosystem. Students must classify their cards and support their choice with evidence.</p> <p>-Finding Nemo Food Web: Students research and classify the nutritional modes of the animals (characters) in Finding Nemo then create a food web based on this information.</p> <p>-Energy pyramid: Students create an energy pyramid</p>	

	<p>Day 7: What are renewable and non-renewable resources?</p> <p>Day 8: How has human population growth affected the Earth's resources? (overview of HI and biodiversity)</p> <p>Day 9: Why is it important to preserve the biodiversity of species and their habitats? (include invasive species)</p> <p>Day 10: How have humans changed the physical landscape? (deforestation)</p> <p>Day 11: How have humans contributed to global warming and ozone depletion?</p> <p>Day 12: How have humans impacted water? (runoff, fertilizers, acid rain)</p> <p>Day 13: How can we reverse the damage that has been done? (proposal for change, social and economic effects, trade-offs)</p>		<p>web/ecosystem using invasive species as one example</p> <ul style="list-style-type: none"> -Distinguish between the greenhouse effect and global warming -Explain how CFCs contributed to ozone depletion -Explain how runoff, fertilizers and acid rain affect the ecosystem -Write a proposal for how humans can change the way we obtain energy 	<p>using construction paper and color photocopies of organisms. Provide students with a food web of a terrestrial or aquatic ecosystem. From the food web, students should infer which level each organism is on in the energy pyramid and then create the pyramid.</p> <p>Succession: Have students research an environmental disturbance then draw at least four stages of succession. Under each stage, students should explain what is occurring, indicating how the flora and fauna change with each stage.</p> <p>Graph human population growth</p> <p>Global Warming Activity: Students will have two of the same containers with the same amount of soil and a thermometer. One container should be covered with cellophane to represent the thickened greenhouse gasses. Students put heat lamps on the container for 15 minutes and record and compare temperature changes between the two setups.</p>	
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				<p>Write a proposal for how to solve one environmental problem (water pollution, global warming, ozone depletion, etc.). Include any technologies that may alleviate the problem. Assess the risk, costs, benefits and trade-offs of your proposed solution.</p>	
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