Title __Life Science__

Unit:	**Nature of Science: Scientific Explanations**
Big Ideas:	Science can provide answers to the world around you.
Unit Essential Questions:	How can science provide answers to your questions about the world around you?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Scientific Inquiry	3.1.7A9	Science Observation Inference Hypothesis Prediction Technology Scientific Theory Scientific Law Critical Thinking	What is Scientific Inquiry? What are the results of scientific investigations? How can a scientist prevent bias in a scientific investigation?	formulating scientific questions to solve a scientific problem considering accuracy of research methods collect preliminary observations, both qualitative and quantitative.	Brown Bag Activity Mystery Plant	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Scientific tools and measurement	3.1.7A9	Description Explanation International System of Units Accuracy Precision Significant digits	What is the difference between accuracy and precision? Why should you use significant digits? What are some tools used by life scientists?	Discover the importance of accurately designing an experiment. • Formulate a hypothesis using prior knowledge. • Identify variables and list them from a specified system. • Understand that variables can affect the outcome of an experiment. • Design an experiment to test the variables from a given list. • Construct graphs to display data. • Understand the importance of collaboration through working with group members. • Design a controlled experiment.	Metric Measuring Lab Compound microscope Stereoscope Science Equipment Lab: thermometer, triple beam balance, beakers, flasks, thermometer, probe, electronic balance, test tubes.	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

				• Formulate accurate measurement techniques. interpreting data use evidence, apply logic, and construct an argument for conclusions based on reported data.			
Experimentation	3.1.7A9	Variable Dependent Variable Independent Variable Constants	How do independent and dependent variables differ? How is scientific inquiry used in a real-life scientific investigation?	identifying a variable in an experimental setting relating independent and dependent variable to each other drawing conclusions from observations/data	Composting Virtual Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Unit:	**Classifying and Exploring Life**
Big Ideas:	All living things have life processes in common and can be classified by these life processes.
Unit Essential Questions:	What are living things, and how can they be classified?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Characteristics of Life	3.1.6-8A 3.1.7.A1 3.1.7.A4 3.1.7.A9	Organism Cell Unicellular Multicellular Homeostasis	What characteristics do all living things share?	Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells. identifying characteristics of living things	Living/Nonliving Card sort	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Classifying Organisms	3.1.6-8.A-B 3.1.6.A1 3.1.7.A1	Binomial Nomenclature Species Genus Dichotomous Key Cladogram	What methods are used to classify living things into groups? Why does every species have a scientific name?	use a key to identify different organisms based on the organism's observable traits. use a cladogram to establish the evolutionary relatedness of a set of organisms Use a dichotomous key to identify various species	Using Dichotomous Key Construct a cladogram	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Exploring Life	3.1.6.A8	Light Microscope Compound Microscope Electron Microscope	How did microscopes change our ideas about living things? What are the types of microscopes, and how do they compare?	make a wet mount slide focus on a slide using low, medium, high power objective lens compare and contrast compound microscopes vs electron microscopes	Getting to Know the Microscope Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Unit:	**Cell Structure and Function**						
Big Ideas:	Cell structures and processes enable it to survive.						
Unit Essential Questions:	How do the structures and processes of a cell enable it to survive?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
Cells and Life	3.1.7.A1 3.1.7.A2 3.1.7.A4 3.1.7.A5 3.1.7.A9	Cell Theory Macromolecule Nucleic Acid Protein Lipid Carbohydrate	How did scientists' understanding of cells develop? What basic substances make up a cell?	Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. Recognize the 4 basic macromolecules distinguish between the 4 basic macromolecules	Macromolecule foldable Cell theory rap Make a model of a cell	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title Life Science

The Cell	3.1.7.A4 3.1.7.A5 3.1.7.A7	Cell Membrane Cell Wall Cytoplasm Cytoskeleton Organelle Nucleus Chloroplast		Develop and use a model to describe the function of a cell as a whole and the ways that parts of cells contribute to the function. Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	Microslide – Cell Structure Lab Cell Organelle Flipbooks	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Moving Cellular Materials	3.1.7.A5 3.1.7.A7	Passive Transport Diffusion Osmosis Facilitated Diffusion Active Transport Endocytosis Exocytosis	How do materials enter and leave cells? How does cell size affect the transport of materials?	set up an experiment that will help demonstrate the basic mechanism by which biological molecules and water are transported within a living organism Calculate the surface area to volume ratio of a cell	Diffusion Demo Osmosis Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Cells and Energy	3.1.6.A2 3.1.7.A2 3.1.7.A7	Cellular Respiration Glycolysis Fermentation Photosynthesis	How does a cell obtain energy? How do some cells make food molecules?	understand how cells obtain energy from food molecules through cellular respiration and/or fermentation Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	Bromo Blue "What's in your Mouth?"	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	**From a Cell to an Organism**
Big Ideas:	Multicellular organisms develop from one cell into an entire organism.
Unit Essential Questions:	How can one cell become a multicellular organism?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
The cell cycle and division	3.1.7.A3 3.1.7.A4	Cell cycle Interphase Sister Chromatid Centromere Mitosis Cytokinesis Daughter Cell	What are the phases of the cell cycle? Why is the result of the cell cycle important?	Explain the role of the cell cycle in carrying out the cell's essential functions Sequence the steps in the cell cycle, including the phases of mitosis. Differentiate between the purpose of mitosis and meiosis. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	Mitosis Model project Microslide – Mitosis Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Levels of Organization	3.1.7.A6 3.1.7.A9	Cell Differentiation Stem cell Tissue Organ Organ System	How do unicellular and multicellular organisms differ? How does cell differentiation lead to the organization within a multicellular organism?	Explain the relationship among cells, tissue, organs, and organ systems. Differentiate between unicellular organisms and multicellular organisms and name common examples of each. Compare and contrast how unicellular and multicellular organisms perform various life functions. This includes the application of knowledge about systems in organisms.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Title __Life Science__

Unit:	Reproduction of Organisms
Big Ideas:	Organisms reproduce to maintain a population of their species.
Unit Essential Questions:	Why do living things reproduce?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Sexual Reproduction and Meiosis	3.1.7.A3 3.1.7.B2	Sexual Reproduction Egg Sperm Fertilization Zygote Diploid Homologous Chromosomes Haploid Meiosis	What is sexual reproduction, and why is it beneficial? What is the order of the phases of meiosis, and what happens during each phrase? Why is meiosis important?	Compare various basic sexual and asexual reproductive processes (e.g., budding, cuttings).		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Asexual Reproduction	3.1.7.B2	Asexual Reproduction Fission Budding Regeneration Vegetative Reproduction Cloning	What is asexual reproduction, and why is it beneficial? How do the types of asexual reproduction differ?	Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	Genetics
Big Ideas:	Traits are passed from parents to offspring through heredity.
Unit Essential Questions:	How are traits passed from parents to offspring?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Mendel and His Peas	3.1.7.B1 3.1.7.B5 3.1.7.B7	Heredity Genetics Dominant Trait Recessive Trait	Why did Mendel perform cross-pollination experiments? What did Mendel conclude about inherited traits? How do dominant and recessive factors interact?	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	Dominant Trait mini-lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Understanding Inheritance	3.1.7.B1 3.1.7.B5	Gene Allele Phenotype Genotype Homozygous Heterozygous Punnett Square Incomplete Dominance Codominance Polygenic Inheritance	What determines the expression of traits? How can inheritance be modeled? How do some patterns of inheritance differ from Mendel's model?	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	Genetic Tree Inferring Genotype mini-lab Punnett Squares	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
DNA and Genetics	3.1.7.B4 3.1.7.C2 3.4.7.E1	DNA Nucleotide Replication RNA Transcription Translation Mutation	What is DNA? What is the role of RNA in protein production? How do changes in the sequence of DNA affect traits?	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	A Recipe of Traits -Doggie DNA	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science_________________________

Unit:	**The Environment and Change Over Time**
Big Ideas:	Species adapt to a changing environment overtime.
Unit Essential Questions:	How do species adapt to changing environments over time?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Fossil Evidence of Evolution	3.1.7.C2 3.1.7.C3 3.3.7.A3	Fossil Record Mold Cast Trace Fossil Geologic Time Scale Extinction Biological Evolution	How do fossils form? How do scientists date fossils? How are fossils evidence of biological evolution?	Apply scientific ideas to construct an explanation for anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	Cyber Ed – Fossils and Geologic time scale	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Theory of Evolution and Natural Selection	3.1.6.C1 3.1.7.B4 3.1.7.C1 3.1.7.C2 3.1.7.C3 3.1.8.A8 3.1.8.C1	Variation Natural Selection Adaptation Selective Breeding	Who was Charles Darwin? How does Darwin's theory of evolution by natural selection explain how species change over time? How are adaptations evidence of natural selection?	Analyze displays of pictorial data to compare patterns of similarities in anatomical structures across multiple species to identify relationships not evident in the fully formed anatomy.	CyberEd – Evolution and Natural Selection	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Biological Evidence of Evolution	3.1.7.C3	Homologous Structures Analogous Structures Vestigal Structure Embryology	What evidence from living species supports the theory that species descended from other species over time? How are Earth's organisms related?	Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Evolution Video Quiz	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	**Bacteria and Viruses**						
Big Ideas:	Bacteria and viruses are prokaryotes that affect our daily lives.						
Unit Essential Questions:	What are bacteria and viruses and why are they important?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
Bacteria	3.1.6.A1 3.1.6.A3 3.1.7.A3 3.1.7.C2 3.1.7.C3 3.3.7. A1	Bacterium Flagellum Fission Conjugation Endospore	What are bacteria?	Construct a scientific explanation based on evidence for how bacteria are classified as beneficial or harmful.	Microslide-Moneran	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Bacteria in Nature	3.1.6.A2 3.1.7.A2 3.1.7.A8	Decomposition Nitrogen Fixation Bioremediation Pathogen Antibiotic Pasteurization	How can bacteria affect the environment? How can bacteria affect health?	Discuss bacteria's role in decomposition. Recognize the role of bacteria in nitrogen fixation. Identify and recognize bacteria shapes.	Bacteria in Nature Project	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Viruses	3.1.6.A1 3.1.6.A5 3.1.7.A1 3.1.7.A3 3.1.7.A8 3.4.7.E1	Virus Antibody Vaccine	What are viruses? How do viruses affect human health?	Recognize physical characteristics of viruses. Identify parts of viruses and how they function. Develop an understanding of how viruses affect human health.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	Protists and Fungi
Big Ideas:	Protists and fungi are organisms that affect our daily lives.
Unit Essential Questions:	What are protists and fungi, and how do they affect an environment?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Protists	3.1.6.A1 3.1.6.A2 3.1.7.A1 3.1.7.A2 3.1.7.A8	Protist Algae Diatom Protozoan Cilia Paramecium Amoeba Pseudopod	What are the different types of protists and how do they compare? How are protists beneficial?	Use a compound microscope and prepare a slide for viewing various live specimens of protists. Recognize different types of protists and how they compare under the microscope. Comparisons should include mode of feeding, locomotion, and reproduction .Provide detailed drawings with labels of various protists. Develop an understanding of the harmful and helpful protists in nature.	Protista Kingdom Flipbook Live specimens under the microscope:: amoeba, paramecium, stentor, euglena, diatoms.	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Fungi	3.1.6.A1 3.1.6.A2 3.1.7.A1 3.1.7.A2 3.1.7.A8	Hyphae Mycelium Basidium Ascus Zygosporangia Mycorrhizae Lichen	What are the different types of fungi and how do they compare? Why are fungi important? What are lichens?	Develop an understanding that fungi are eukaryotic, non-vascular, non-motile and heterotrophic organisms. They may be unicellular or filamentous. They reproduce by means of spores. Fungi exhibit the phenomenon of alternation of generation. Fungi lack chlorophyll and hence cannot perform photosynthesis.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science________________________

Unit:	Animal Diversity						
Big Ideas:	Major animal groups differ by body structures and energy needs.						
Unit Essential Questions:	What are the major groups of animals, and how do they differ?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
What defines an animal	3.1.6.A1 3.1.6.A6 3.1.7.A1 3.1.7.A7	Vertebrate Invertebrate Radial Symmetry Bilateral Symmetry Asymmetry	What characteristics do all animals have? How are animals classified?	Demonstrate that similarities among organisms are found in internal and external anatomical structures. Trace the complexity of an organism from organelle to organ system. Understand what it takes to keep an organism alive.	Graphing Mini-lab Letter of Symmetry	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Invertebrate Phyla	3.1.6.A1 3.1.6.A6 3.1.7.A1 3.1.7.A6	Exoskeleton Appendage	What are the characteristics of invertebrates? How do the invertebrate phyla differ?	Vertebrate animals are more complex than invertebrate animals. Organisms are grouped based upon similarity in structure and function.	9 Square Share	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Phylum Chordata	3.1.6.A1 3.1.7.A1	Notochord Chordate	What are the characteristics of all chordates? What are the characteristics of all vertebrates? How do the classes of vertebrates differ?	Investigate the organization of the human body in relation to its ability to accomplish life functions and construct an explanation for the relationship between anatomy and physiology. Identify major bones within the axial and appendicular divisions, describing their physiological roles in creating a body scaffold, internal organ protection, and anchor points for skeletal muscles participating in movement.	Pond Life Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science____________________________

Title __Life Science__

Unit:	**Animal Structure and Function**
Big Ideas:	Animals have different structures that perform similar functions.
Unit Essential Questions:	Why do animals have different structures that perform similar functions?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Support, Control, and Movement	3.1.6.A5 3.1.7.A5	Hydrostatic Skeleton Coelom Nerve Net Undulation	How are the types of support alike, and how are they different? How do the types of control compare and contrast? How do the types of movement compare and contrast?	All organisms must eat, move, breathe, and reproduce in order to survive. Create a model to distinguish animal germ layers (endoderm, mesoderm, and ectoderm) and resulting tissue types. Use the model to make predictions regarding phylogenetic relationships among groups of organisms with varying body plans.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Circulation and Gas Exchange	3.1.6.A1 3.1.7.A1 3.1.7.A7	Diffusion Spiracle Gills Open circulatory system Closed circulatory system Respiratory system	How do the types of gas exchange differ? What are the differences between open and closed circulatory system?	Organisms are self-regulating creatures. Explain how the anatomy of the respiratory system functions to provide oxygen and carbon dioxide transport mechanisms between the lungs and the circulatory system, considering capillary structures, red blood cell structures, diffusion, and affinity. Obtain and communicate information on how the nervous and endocrine systems in a model vertebrate organism coordinate body functions such as: growth and development; stimuli response and information transmission; and, the maintenance of homeostasis.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Digestion and Excretion	3.1.6.A5 3.1.7.A2 3.1.7.A5 3.1.7.A7	Crop Gizzard Absorption	How is an animal's structure for feeding and digestion related to its diet? How do the excretory structures of aquatic and terrestrial animals differ?	Design and carry out an investigation examining how major body systems interact to maintain homeostasis of nutrient, energy, water, waste, and/or temperature balance.	Earthworm Dissection Frog Dissection	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Unit:	***Animal Behavior and Reproduction***						
Big Ideas:	Animals communicate, interact and reproduce with each other.						
Unit Essential Questions:	How do animals communicate, interact, and reproduce?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
Types of Behavior	3.1.6.C1	Behavior Innate behavior Instinct Migration Hibernation Imprinting Conditioning	How do behaviors help animals maintain homeostasis? How are animal behavior classified?	Compare innate versus learned behavior. Construct an argument from evidence that shows the value of both types of behavior and their importance to species survival.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Interacting with Others		Bioluminescence Pheromone Society Territory Aggression	How do animals communicate? How do animals interact in societies?	Obtain information and construct an explanation to support or oppose an adaptive advantage of social behaviors.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Animal Reproduction and Development		Sexual Reproduction Testis Ovary Fertilization Zygote Metamorphosis	What are the roles of male and female reproductive organs? How do the two types of fertilization differ? What are the different types of animal development?	Observe examples of organisms from major animal phyla in order to describe the diverse structures associated with the following functions: gas exchange; energy acquisition; nutrient processing and distribution; environmental responses; and reproduction. Model several reproductive strategies used by example organisms and compare them to explain how each differentially accomplishes reproductive success. Collect information in support of the argument that rapidly reproducing species that produce more young are more resilient.	Gestation Period Mini lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Unit:	**Matter and Energy in the Environment**						
Big Ideas:	Living things and nonliving parts of the environment interact.						
Unit Essential Questions:	How do living things and the nonliving parts of the environment interact?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
Abiotic Factors		Ecosystem Biotic Factor Abiotic Factor Climate Atmosphere	What are the nonliving parts of an environment?	graph and interpret a population growth curve and identify the carrying capacity of the populations. make predictions about changes that could occur in population numbers as the result of population interactions. illustrate and/or model the key processes in the water, carbon, and nitrogen cycle and explain the role of living things in each of the cycles.	abiotic vs biotic recognition challenge.	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Cycles of Matter	3.2.7.A3	Evaporation Condensation Precipitation Nitrogen Fixation	How does matter move in ecosystems?	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	Incredible journey	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Energy in Ecosystems	3.1.6.A2 3.1.7.A2 3.1.7.A8	Photosynthesis Chemosynthesis Food Chain Food Web Energy Pyramid	How does energy move in ecosystems? How is the movement of energy in an ecosystem modeled?	given an illustration of a food chain and a food web, identify each organism as a producer (autotroph), consumer (primary/second order), or decomposer and describe their role in the ecosystem.	construct a food chain, food web, and energy pyramid.	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	**Populations and Communities**
Big Ideas:	Populations and Communities interact and change over time.
Unit Essential Questions:	How do populations and communities interact and change?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Populations	3.1.7.A8	Biosphere Community Population Competition Limiting factor Population density Biotic potential Carrying capacity	What defines a population? What factors affect the size of a population?	Differentiate between the needs of the individual and the needs of a population. Interpret, analyze, and evaluate data from systematic studies and experiments concerning the interactions among members of a population. Determine the relationship between a population's position in a food web and the types of interactions seen among the individuals of the population. Observe and identify populations in ecosystems and collect, record, chart, and interpret data concerning the interactions of these organisms (from observations and print and electronic resources).	Population Counting Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Changing Populations		Birth rate Death rate Extinct species Endangered species Threatened species Migration	How do populations change? Why do human populations change?	Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	BrainPop- Populations What events can change a population? Mini Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring

Title __Life Science__

							Rubric
Communities	3.1.7.A8	Habitat Niche Producer Comsumer Symbiosis Mututalism Commensalism Parasitism	What defines a community? How do the populations in a community interact?	Identify relationships of populations within communities. Identify factors that can increase or decrease a community's population.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	Biomes and Ecosystems
Big Ideas:	Earth's biomes and ecosystems differ by climate, soils and biodiversity.
Unit Essential Questions:	How do Earth's biomes and ecosystems differ?

Concept & Pacing	Pa Core Standard	Key Vocabulary	Essential Questions	Competencies (skills, knowledge, abilities)	Mini-Lessons/Activities	Instructional Materials	Assessments
Land Biomes	3.4.7.B1 3.4.7.B2	Biome Desert Grassland Temperate Taiga Tundra	How do Earth's land biomes differ? How do humans impact land biomes?	Identify land biomes and their distinct climates, animals, and plants that inhabit these biomes. Discuss how land biomes are affected through agriculture, construction, and other activities.	dodecahedron activity	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Aquatic Ecosystems		Salinity Wetland Estuary Intertidal Zone Coral Reef	How do Earth's aquatic ecosystems differ? How do humans impact aquatic ecosystems?	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve.	Toxic or Not Lab	Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
How Ecosystems Change		Ecological Succession Climax Community Pioneer Species Eutrophication	How do land ecosystems change over time? How do aquatic ecosystems change over time?	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. Collect, analyze, and interpret environmental data to describe a local environment.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric

Title __Life Science__

Unit:	**Using Natural Resources**						
Big Ideas:	People can protect Earth's resources.						
Unit Essential Questions:	How can people protect Earth's resources?						
Concept & Pacing	**Pa Core Standard**	**Key Vocabulary**	**Essential Questions**	**Competencies (skills, knowledge, abilities)**	**Mini-Lessons/Activities**	**Instructional Materials**	**Assessments**
Earth's Resources		Natural Resource Nonrenewable Resource Renewable Resource Inexhaustible Resource Geothermal Energy	What are natural resources? How do the three types of natural resources differ?	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Pollution	3.4.7.B1 3.4.7.B2	Pollution Ozone Layer Photochemical smog Global Warming Acid Precipitation	How does pollution affect air resources? How does pollution affect water resources? How does pollution affect land resources?	Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's systems.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals Lesson plans	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping Chapter Tests Observing and inferring Rubric
Protecting Earth		Sustainability Recycling	How can people monitor resource use? How can people conserve resources?	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.		Life iScience textbook Reinforcement Exercises Lab instructions Power points Video streaming Internet research sites Current periodicals	Concept builder Mini Labs Activities Graphs and models Quizzes Concept mapping

Title __Life Science__

				Generate and design possible solutions to a current environmental issue, threat, or concern.		Lesson plans	Chapter Tests Observing and inferring Rubric