Walthall County School District
8th Grade Science Pacing Guide

Strand	DCI	Standard	Performance Objective	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Life Science	L.8.2 Reproduction and Heredity	L.8.2A SWL how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.	**L.8.2A.1** Obtain and communicate information about the relationship of genes, chromosomes, and DNA, and construct explanations comparing their relationship to inherited characteristics.	5									
Life Science	L.8.2 Reproduction and Heredity	L.8.2A SWL how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.	**L.8.2A.2** Create a diagram of mitosis and explain its role in asexual reproduction, which results in offspring with identical genetic information.	4									
Life Science	L.8.2 Reproduction and Heredity	L.8.2A SWL how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.	**L.8.2A.3** Construct explanations of how genetic information is transferred during meiosis.	4									
Life Science	L.8.2 Reproduction and Heredity	L.8.2A SWL how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.	**L.8.2A.4** Engage in discussion using models and evidence to explain that sexual reproduction produces offspring that have a new combination of genetic information different from either parent.	4									
Life Science	L.8.2 Reproduction and Heredity	L.8.2A SWL how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.	**L.8.2A.5** Compare and contrast advantages and disadvantages of asexual and sexual reproduction.	1	3								
Life Science	L.8.2 Reproduction and Heredity	L.8.2B SWL differences in inherited and acquired characteristics and how environmental factors (natural selection) and the use of technologies (selective breeding, genetic engineering) influence the transfer of genetic information.	**L.8.2B.1** Construct an argument based on evidence for how environmental and genetic factors influence the growth of organisms.		4								
Life Science	L.8.2 Reproduction and Heredity	L.8.2B SWL differences in inherited and acquired characteristics and how environmental factors (natural selection) and the use of technologies (selective breeding, genetic engineering) influence the transfer of genetic information.	**L.8.2B.2** Use various scientific resources to research and support the historical findings of Gregor Mendel to explain the basic principles of heredity.		4								
Life Science	L.8.2 Reproduction and Heredity	L.8.2B SWL differences in inherited and acquired characteristics and how environmental factors (natural selection) and the use of technologies (selective breeding, genetic engineering) influence the transfer of genetic information.	**L.8.2B.3** Use mathematical and computational thinking to analyze data and make predictions about the outcome of specific genetic crosses (monohybrid Punnett Squares) involving simple dominant/recessive traits.		4								

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Life Science	L.8.2 Reproduction and Heredity	L.8.2B SWL differences in inherited and acquired characteristics and how environmental factors (natural selection) and the use of technologies (selective breeding, genetic engineering) influence the transfer of genetic information.	**L.8.2B.4** Debate the ethics of artificial selection (selective breeding, genetic engineering) and the societal impacts of humans changing the inheritance of desired traits in organisms.		4								
Life Science	L.8.2 Reproduction and Heredity	L.8.2C SWL chromosomes contain many distinct genes and that each gene holds the instructions for the production of a specific protein, which in turn affects the traits of an individual.	L.8.2C.1 Communicate through diagrams that chromosomes contain many distinct genes and that each gene holds the instructions for the production of specific proteins, which in turn affects the traits of the individual (not to include transcription or translation).			4							
Life Science	L.8.2 Reproduction and Heredity	L.8.2C SWL chromosomes contain many distinct genes and that each gene holds the instructions for the production of a specific protein, which in turn affects the traits of an individual.	**L.8.2C.2** Construct scientific arguments from evidence to support claims about the potentially harmful, beneficial, or neutral effects of genetic mutations on organisms.			3							
Life Science	L.8.4 Adaptation and Diversity	L.8.4A SWL the process of natural selection, in which variations in a population increase some individuals' likelihood of surviving and reproducing in a changing environment.	**L.8.4A.1** Use various scientific resources to analyze the historical findings of Charles Darwin to explain basic principles of natural selection.			4							
Life Science	L.8.4 Adaptation and Diversity	L.8.4A SWL the process of natural selection, in which variations in a population increase some individuals' likelihood of surviving and reproducing in a changing environment.	**L.8.4A.2** Investigate to construct explanations about natural selection that connect growth, survival, and reproduction to genetic factors, environmental factors, food intake, and interactions with other organisms.			4							
Life Science	L.8.4 Adaptation and Diversity	L.8.4B SWL how similarities and differences among living and extinct species provide evidence that changes have occurred in organisms over time and that similarity of characteristics provides evidence of common ancestry.	**L.8.4B.1** Analyze and interpret data (e.g. pictures, graphs) to explain how natural selection may lead to increases and decreases of specific traits in populations over time.				4						
Life Science	L.8.4 Adaptation and Diversity	L.8.4B SWL how similarities and differences among living and extinct species provide evidence that changes have occurred in organisms over time and that similarity of characteristics provides evidence of common ancestry.	**L.8.4B.2** Construct written and verbal explanations to describe how genetic variations of traits in a population increase some organisms' probability of surviving and reproducing in a specific environment.				2						
Life Science	L.8.4 Adaptation and Diversity	L.8.4B SWL how similarities and differences among living and extinct species provide evidence that changes have occurred in organisms over time and that similarity of characteristics provides evidence of common ancestry.	**L.8.4B.3** Obtain and evaluate scientific information to explain that separated populations, that remain separated, can evolve through mutations to become a new species (speciation).				4						
Life Science	L.8.4 Adaptation and Diversity	L.8.4B SWL how similarities and differences among living and extinct species provide evidence that changes have occurred in organisms over time and that similarity of characteristics provides evidence of common ancestry.	**L.8.4B.4** Analyze displays of pictorial data to compare and contrast embryological and homologous/analogous structures across multiple species to identify evolutionary relationships.				4						

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Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.1** Collect, organize, and interpret data about the characteristics of sound and light waves to construct explanations about the relationship between matter and energy.					4					
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.2** Investigate research-based mechanisms for capturing and converting wave energy (frequency, amplitude, wavelength, and speed) into electrical energy.					4					
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.3** Conduct simple investigations about the performance of waves to describe their behavior (e.g., refraction, reflection, transmission, and absorption) as they interact with various materials (e.g., lenses, mirrors, and prisms).					4					
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.4** Use scientific processes to plan and conduct controlled investigations to conclude sound is a wave phenomenon that is characterized by amplitude and frequency.						3				
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.5** Conduct scientific investigations that describe the behavior of sound when resonance changes (e.g., waves in a stretched string and design of musical instruments).						4				
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.6** Obtain and evaluate scientific information to explain the relationship between seeing color and the transmission, absorption, or reflection of light waves by various materials.						4				
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.7** Research the historical significance of wave technology to explain how digitized tools have evolved to encode and transmit information (e.g., telegraph, cell phones, and wireless computer networks).						4				
Physical Science	P.8.6 Motions, Forces, and Energy	P.8.6 SWL properties, behaviors, and application of waves.	**P.8.6.8** Compare and contrast the behavior of sound and light waves to determine which types of waves need a medium for transmission.						4				
Earth and Space Science	E.8.7 Earth's Structure and History	E.8.7 SWL geological evidence to analyze patterns in Earth's major events, processes, and evolution in history.	**E.8.7.1** Use scientific evidence to create a timeline of Earth's history that depicts relative dates from index fossil records and layers of rock (strata).							4			
Earth and Space Science	E.8.7 Earth's Structure and History	E.8.7 SWL geological evidence to analyze patterns in Earth's major events, processes, and evolution in history.	**E.8.7.2** Create a model of the processes involved in the rock cycle and relate it to the fossil record.							3			
Earth and Space Science	E.8.7 Earth's Structure and History	E.8.7 SWL geological evidence to analyze patterns in Earth's major events, processes, and evolution in history.	**E.8.7.3** Construct and analyze scientific arguments to support claims that most fossil evidence is an indication of the diversity of life that was present on Earth and that relationships exist between past and current life forms.							4			
Earth and Space Science	E.8.7 Earth's Structure and History	E.8.7 SWL geological evidence to analyze patterns in Earth's major events, processes, and evolution in history.	**E.8.7.4** Use research and evidence to document how evolution has been shaped both gradually and through mass extinction by Earth's varying geological conditions (e.g., climate change, meteor impacts, and volcanic eruptions).							4			
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.1** Investigate and explain how the flow of Earth's internal energy drives the cycling of matter through convection currents between Earth's surface and the deep interior causing plate movements.								4		

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Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.2** Explore and debate theories of plate tectonics to form conclusions about past and current movements of rocks at Earth's surface throughout history.								4		
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.3** Map land and water patterns from various time periods and use rocks and fossils to report evidence of how Earth's plates have moved great distances, collided, and spread apart.								4		
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.4** Research and assess the credibility of scientific ideas to debate and discuss how Earth's constructive and destructive processes have changed Earth's surface at varying time and spatial scales.								4		
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.5** Use models that demonstrate convergent and divergent plate movements that are responsible for most landforms and the distribution of most rocks and minerals within Earth's crust.								2		
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.6** Design and conduct investigations to evaluate the chemical and physical processes involved in the formation of soils.									4	
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9A SWL physical processes and major geological events (e.g., plate movement, volcanic activity, mountain building, weathering, erosion) are powered by the Sun and the Earth's internal heat and have occurred over millions of years.	**E.8.9A.7** Explain the interconnected relationship between surface water and groundwater.									4	
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9B SWL natural hazards (volcanic eruptions, severe weather, earthquakes) and construct explanations for why some hazards are predictable and others are not.	**E.8.9B.1** Research and map various types of natural hazards to determine their impact on society.									4	

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Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9B SWL natural hazards (volcanic eruptions, severe weather, earthquakes) and construct explanations for why some hazards are predictable and others are not.	**E.8.9B.2** Compare and contrast technologies that predict natural hazards to identify which types of technologies are most effective.									3	
Earth and Space Science	E.8.9 Earth's Systems and Cycles	E.8.9B SWL natural hazards (volcanic eruptions, severe weather, earthquakes) and construct explanations for why some hazards are predictable and others are not.	**E.8.9B.3** Using an engineering design process, create mechanisms to improve community resilience, which safeguard against natural hazards (e.g., building restrictions in flood or tidal zones, regional watershed management, Firewise construction).*									3	
Earth and Space Science	E.8.10 Earth's Resources	E. 8.10 SWL a decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.	**E.8.10.1** Read and evaluate scientific information about advancements in renewable and nonrenewable resources. Propose and defend ways to decrease national and global dependency on nonrenewable resources.										3
Earth and Space Science	E.8.10 Earth's Resources	E. 8.10 SWL a decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.	**E.8.10.2** Create and defend a proposal for reducing the environmental effects humans have on Earth (e.g., population increases, consumer demands, chemical pollution, deforestation, and change in average annual temperature).										2
Earth and Space Science	E.8.10 Earth's Resources	E. 8.10 SWL a decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.	**E.8.10.3** Using scientific data, debate the societal advantages and disadvantages of technological advancements in renewable energy sources.										3
Earth and Space Science	E.8.10 Earth's Resources	E. 8.10 SWL a decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.	**E.8.10.4** Using an engineering design process, develop a system to capture and distribute thermal energy that makes renewable energy more readily available and reduces human impact on the environment (e.g., building solar water heaters, conserving home energy).*										2