

EIGHTH GRADE (MAAP SCIENCE) 2021 – 2022 PACING GUIDE




WEST BOLIVAR
CONSOLIDATED SCHOOL DISTRICT

EIGHTH GRADE THEME: CAUSE AND EFFECT


BIG GOAL: Students use an integrated science curriculum to develop and plan controlled investigations and create more explicit and detailed models and explanations. Students must have opportunities to develop the skills necessary to engage in scientific and technical reasoning that are necessary for success in college, careers, and citizenship.

FIRST NINE WEEKS

WEEKS	INSTRUCTIONAL DAYS	PERFORMACNCE OBJ(S).	ACADEMIC FOCUS	OBJECTIVE STATEMENTS – MS CCRS	SCIENCE FUSION UNIT RESOURCES
AUG 5 – 13	7	SEP(s)	The Nature of Science: Science and Engineering Practices	SCIENCE AND ENGINEERING PRACTICES 1. Asking questions and defining problems 2. Planning and carrying out investigations 3. Analyzing and interpreting data 4. Developing and using models 5. Constructing explanations and designing solutions 6. Engaging in argument from evidence 7. Using mathematics and computational thinking 8. Obtaining, evaluating, and communicating information	TEACHER LED PROBLEM OR PROJECT-BASED LESSON
AUG 16 – 27	10	P.8.6.1 P.8.6.2 P.8.6.3 P.8.6.4 P.8.6.5 P.8.6.6 P.8.6.7 P.8.6.8	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. P.8.6.2 Investigate research-based mechanisms for capturing and converting wave energy (frequency, amplitude, wavelength, and speed) into electrical energy. 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). 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. 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).	<u>MODULE J: UNIT 1</u> LESSONS 1 – 2 PP. 4 – 27 <u>MODULE J: UNIT 2</u> LESSONS 1 – 3 PP. 36 – 73 <u>MODULE J: UNIT 3</u> LESSONS 1 – 5 PP. 82 – 139


				<p>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.</p> <p>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).</p> <p>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.</p>	
12 INSTRUCTIONAL DAYS; UNIT REVIEW – 2 DAYS; UNIT TEST – 1 DAY					
AUG 30 – SEPT 17	15	L.8.2A.1 L.8.2A.2 L.8.2A.3 L.8.2A.4 L.8.2A.5	Sexual vs. Asexual Reproduction	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. L.8.2A.2 Create a diagram of mitosis and explain its role in asexual reproduction, which results in offspring with identical genetic information. L.8.2A.3 Construct explanations of how genetic information is transferred during meiosis. 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. L.8.2A.5 Compare and contrast advantages and disadvantages of asexual and sexual reproduction.	MODULE A: UNIT 2 LESSONS 1 – 3 PP. 90 – 121
SEPT 20 – 24	5	L.8.2C.1 L.8.2C.2	Proteins and Genetic Mutations	L.8.2B.1 Construct an argument based on evidence for how environmental and genetic factors influence the growth of organisms. 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). 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.	MODULE A: UNIT 2 LESSON 6 PP. 146 – 157
SEPT 27 – OCT 1	5	REVIEW		REVIEW – WAVES (1 DAY) REVIEW – SEXUAL VS. ASEYUAL REPRODUCTION (2 DAYS) REVIEW – GENES & MUTATIONS (1 DAY)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
OCT 4 – 8	1ST TERM ASSESSMENT (CUMULATIVE UP TO THIS POINT)				

SECOND NINE WEEKS

WEEKS	INSTRUCTIONAL DAYS	PERFORMACNCE OBJ(S).	ACADEMIC FOCUS	OBJECTIVE STATEMENTS – MS CCRS	SCIENCE FUSION UNIT RESOURCES
OCT 11 – 22	10	L.8.2B.1 L.8.2B.2 L.8.2B.3 L.8.2B.4.	Inherited and Acquired Characteristics	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. 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. 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.	MODULE A: UNIT 2 LESSONS 4 – 5, 7 PP. 122 – 145; PP. 160 - 171
8 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
OCT 25 – NOV 5	10	L.8.4A.1 L.8.4A.2	Natural Selection	L.8.4A.1 Use various scientific resources to analyze the historical findings of Charles Darwin to explain basic principles of natural selection. 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.	MODULE B: UNIT 1 LESSONS 1 – 2 PP. 4 – 25
8 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
NOV 8 – 19	10	L.8.4B.1 L.8.4B.2 L.8.4B.3 L.8.4B.4	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. 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. 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). 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.	MODULE B: UNIT 1 LESSON 3 PP. 28 – 37
8 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
NOV 22 – 26 THANKSGIVING BREAK					
DEC 6 – 14	7	REVIEW		REVIEW – REVIEW INHERITED & ACQUIRED TRAITS; GENETICS (3 DAYS) REVIEW – ADAPTATIONS AND EVOLUTION (2 DAYS) REVIEW – 1 ST NINE WEEKS STANDARDS (2 DAYS)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
DEC 15 - 21	2ND TERM ASSESSMENT (CUMULATIVE UP TO THIS POINT)				
DEC 22 – JAN 4 WINTER BREAK					

THIRD NINE WEEKS

WEEKS	INSTRUCTIONAL DAYS	PERFORMACNCE OBJ(S).	ACADEMIC FOCUS	OBJECTIVE STATEMENTS – MS CCRS	SCIENCE FUSION RESOURCES
JAN 6 – 14	7	E..8.7.1 E.8.7.2 E.8.7.3 E.8.7.4	Earth's History	<p>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).</p> <p>E.8.7.2 Create a model of the processes involved in the rock cycle and relate it to the fossil record.</p> <p>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.</p> <p>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).</p>	<p>MODULE B: UNIT 1 LESSON 4 PP. 38 – 49</p> <p>MODULE E: UNIT 2 LESSONS 1 – 4 PP. 78 – 131</p>
5 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
JAN 17 – 28	10	E.8.9A.1 E.8.9A.2 E.8.9A.3 E.8.9A.4 E.8.9A.5 E.8.9A.6 E.8.9A.7	Geological Events/ Plate Tectonics	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>E.8.9A.6 Design and conduct investigations to evaluate the chemical and physical processes involved in the formation of soils.</p> <p>E.8.9A.7 Explain the interconnected relationship between surface water and groundwater.</p>	<p>MODULE E: UNIT 4 LESSONS 1 – 4 PP. 192 – 237</p> <p>MODULE E: UNIT 1 LESSONS 2 – 5 PP. 18 – 69</p>
8 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
JAN 31 – FEB 11	7	E.8.9B.1 E.8.9B.2	Natural Hazards	<p>E.8.9B.1 Research and map various types of natural hazards to determine their impact on society.</p> <p>E.8.9B.2 Compare and contrast technologies that predict natural hazards to identify which types of technologies are most effective.</p> <p>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).*</p>	<p>MODULE E: UNIT 4 LESSONS 5 – 6 PP. 238 – 267</p> <p>MODULE F: UNIT 4 LESSON 4 PP. 194 – 207</p>
5 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					

FEB 14 – 25	8	E.8.10.1 E.8.10.2 E.8.10.3 E.8.10.4	Reducing Human Impact on the Environment Natural Resources	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. 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). E.8.10.3 Using scientific data, debate the societal advantages and disadvantages of technological advancements in renewable energy sources. 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).*	<u>MODULE D: UNIT 3</u> LESSONS 2 – 4 PP. 146 – 181 <u>MODULE D: UNIT 4</u> LESSONS 1 – 4 PP. 206 - 259 <u>MODULE F: UNIT 4</u> LESSON 7 PP. 238 – 255
6 INSTRUCTIONAL DAYS; UNIT REVIEW – 1 DAY; UNIT TEST – 1 DAY					
FEB 21 – 25	5	REVIEW		REVIEW – EARTH’S HISTORY AND GEOLOGICAL EVENTS (1 DAY) REVIEW – NATURAL HAZARDS, RESOURCES, & HUMAN IMPACT ON THE ENVIRONMENT (2 DAYS) REVIEW – HUMAN IMPACT ON THE ENVIRONMENT	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
FEB 28 – MAR 4	3RD TERM ASSESSMENT (CUMULATIVE, COVERING ALL STANDARDS)				

FOURTH NINE WEEKS

FOURTH NINE WEEKS					
WEEKS	INSTRUCTIONAL DAYS	PERFORMACNCE OBJ(S).	ACADEMIC FOCUS	OBJECTIVE STATEMENTS – MS CCRS	SCIENCE FUSION UNIT RESOURCES
MAR 7 - 11	5	VARIED	REVIEW PRIORITY STANDARDS (SEE ATTACHED TEST BLUEPRINT)	REVIEW OF STANDARDS (PHYSICAL SCIENCE: WAVES)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
MAR 14 – 18 SPRING BREAK					
MAR 21 – APR 1	10	VARIED	REVIEW PRIORITY STANDARDS (SEE ATTACHED TEST BLUEPRINT)	REVIEW OF STANDARDS (LIFE SCIENCE: GENETICS & HEREDITY)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
APR 4 – 12	7	VARIED	REVIEW PRIORITY STANDARDS (SEE ATTACHED TEST BLUEPRINT)	REVIEW OF STANDARDS (LIFE SCIENCE: ADAPTATIONS & DIVERSITY)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
APR 13 – 22	6	VARIED	REVIEW PRIORITY STANDARDS (SEE ATTACHED TEST BLUEPRINT)	REVIEW OF STANDARDS (EARTH SCIENCE: EARTH'S HISTORY & RESOURCES)	TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
APR 25 – 29	5	BOOTCAMP/REVIEW SKILLS WEEK			TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
MAY 2 – 6	5	MAAP SCI – 8 ASSESSMENT			
MAY 9 – 13	5	REVIEW	REVIEW – 1 ST TERM STANDARDS (2 DAYS) REVIEW – 2 ND TERM STANDARDS (2 DAYS) REVIEW – 3 RD TERM STANDARDS (1 DAY)		TEACHER LED PROBLEM OR PROJECT – BASED LESSON/REVIEW
MAY 16 – 20	4 TH 9 WEEKS ASSESSMENT				

Providing many opportunities for students to fail, learn, and try again, with appropriate levels of support, fosters a deeper level of understanding and greater student interest and engagement. (MS CCRS, p. 13)

*If you do not finish covering standards by the end of the 3rd 9 weeks, we encourage you to use the 4th 9 weeks to finish covering these standards to prepare our young scientists for the MAAP SCI ASSESSMENT FOR GRADE 8 and for high school Biology!

NOTE: 8TH GRADE ACCELERATED – STUDENTS SHOULD COMPLETE OE MAJOR PROJECT EACH NINE WEEKS. THE TOPIC AND NATURE OF THE PROJECT CAN BE CHOSEN AT YOUR DISCRETION.

MAAP

Assessment Blueprint

Science Grade 8

This blueprint describes the content and structure of an assessment and defines the ideal percentage of operational test items by reporting category for the Mississippi Academic Assessment Program (MAAP).

Content Strand/Disciplinary Core Idea	MS CCRS Standards Available for Assessment		Percentage of Points by Reporting Category
Life Science			26% - 44%
Reproduction and Heredity	L.8.2A; L.8.2B; L.8.2C (11 objectives)		
Adaptation and Diversity	L.8.4A; L.8.4B (6 objectives)		
Physical Science			12% - 20%
Motions, Forces, and Energy	P.8.6 (8 objectives)		
Earth and Space Science			26% - 50%
Earth's Structure and History	E.8.7 (4 objectives)		
Earth's Systems and Cycles	E.8.9A; E.8.9B (10 objectives)		
Earth's Resources	E.8.10 (4 objectives)		
Operational Items	45	Total Points	50
Field Test Items	10	Total Testing Time	180 Minutes (3 Hours)
Total Items	55		

- The Depth of Knowledge (DOK) level of items across the operational test form will be tracked to have as much variety as possible. The goal is for 65-85% of the items on the form to be DOK level 2 and approximately 5-10% of the items on the form to be DOK level 1 and DOK level 3 combined. However, we recognize that standard distribution, item types, and item statistics take priority when building the form.
- All science assessments will utilize an embedded field-test design and will consist of
 - Multiple Choice (MC) items including 1 answer/4 options and multi-select 2-4 answers/many options; and
 - Technology-Enhanced (TE) items.
- The TE items are designed to elicit evidence of a broad range of student understanding; student interacts with enhanced features of these computer-delivered, **auto-scorable** test items to show understanding of skills and concepts; includes drag-and-drop, hot-spot, bar graphs, data displays, matching interactions, text highlights, text entry, and drop-down menus. These items are scored on a 0-1 or 0-2 point scale using item-specific scoring rules.