



LAB-AIDS CORRELATIONS FOR THE
ARKANSAS STATE SCIENCE STANDARDS

GRADES 6-8

With Assessment Guidelines information

Materials from the *Science Education for Public Understanding Program* (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by LAB-AIDS, Inc. SEPUP materials are supported by grants from the National Science Foundation. All other materials developed by LAB-AIDS. This correlation is intended to show selected locations in SEPUP 2nd Edition programs that support the Arkansas 6-8 Science Standards in order to show general alignment. It is not an exhaustive list; other locations may exist that are not listed here.

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Key to SEPUP Core Science Programs:

SEPUP programs are available as full year courses, or separately, as units, each taking 3-9 weeks to complete, as listed below.

MIDDLE SCHOOL

Issues and Earth Science, Second Edition (IAES)

Unit Title	Activity Number
Studying Soil Scientifically	1-11
Rocks and Minerals	12-23
Erosion and Deposition	24-35
Plate Tectonics	36-49
Weather and Atmosphere	50-70
The Earth in Space	71-84
Exploring Space	85-98

Issues and Life Science, Second Edition (IALS)

Unit Title	Activity Number
Experimental Design: Studying People Scientifically	1-10
Body Works	11-29
Cell Biology and Disease	30-53
Genetics	54-71
Ecology	72-88
Evolution	89-101
Bioengineering	102-109

Issues and Physical Science, Second Edition (IAPS)

Unit Title	Activity Number
Studying Materials Scientifically	1-11
The Chemistry of Materials	12-29
Water	30-52
Energy	53-72
Force and Motion	73-88
Waves	89-99

Each of the full year programs begins with a “starter” unit sequence on the scientific method in the context of each particular discipline. For example, the Issues and Life Science (IALS) course contains a ten- activity unit called “Experimental Design: Studying People Scientifically,” which uses the science behind clinical trials on human subjects, to frame the study of the life sciences. These are listed first in each course.

<i>SEPUP Course</i>	<i>Main Unit Issue</i>
IAES Issues and Earth Science	
Studying Soils Scientifically	Why don't plants grow in the school garden?
Rocks and Minerals	How do diamonds made in a lab compare to diamonds mined from the earth?
Erosion and Deposition	Where should Boomtown construct the new buildings?
Plate Tectonics	Which site would you recommend for storing nuclear waste?
Weather and Atmosphere	Is the growth of Sunbeam City affecting its weather, atmosphere, and water availability?
The Earth in Space	Why are there many different calendars?
Earth and the Solar System	What kinds of future space missions should we conduct?
IALS Issues and Life Science	
Studying People Scientifically	Which proposals have an experimental design worth funding?
Body Works	How can you convince people to make choices that reduce their level of heart disease risk?
Cell Biology and Disease	How is an emerging disease spread? What can you do to stop it?
Genetics	What are the ethical issues involved in using genetic information?
Ecology	What are the trade-offs of introducing a species into a new environment?
Evolution	What are the trade-offs in deciding whether to save an endangered species or to re-create an extinct one?
Bioengineering	How are new solutions to problems in life science developed?
IAPS Issues and Physical Science	
Studying Materials Scientifically	How should unidentified materials be handled?
The Chemistry of Materials	When you buy a new product, do you think about what materials it is made of? What will happen to it when you no longer have a use for it?
Water	What does your community do to make its water safe to drink? Whose responsibility is it?
Energy	Can you help a family decide what energy improvements they should invest in?
Force and Motion	Should noncommercial vehicles be more alike?
Waves	Are there situations in which some waves are harmful to your health?

Key to SEPUP Assessment System:

SEPUP materials include research-based assessment system developed by SEPUP and the Berkeley Evaluation and Assessment Research Group (BEAR) in the University of California Graduate School of Education. Forming the core of the SEPUP Assessment System are the **assessment variables** (content and process skills to be assessed), **assessment questions or tasks** used to gather evidence and **scoring guides** for interpreting students' responses (correspond to assessment variables).

The seven assessment variables are:

Designing Investigations (DI)

Organizing Data (OD)

Analyzing Data (AD)

Understanding Concepts (UC)

Evidence and Trade-offs (ET)

Communication Skills (CS)

Group Interaction (GI)

Types of assessment:

Quick Checks (✓) present opportunities for informal formative assessment and may be used prior to instruction to find out what students know or think. They may also be used to help teachers track students' knowledge of key information or progress in understanding a concept.

Some embedded questions and tasks and all item bank questions are all suitable for summative assessment. Analysis questions are included at the end of each activity.

Citations included in the correlation document are as follows:

IAPS 55, 74, 82	(55) Q1: UC, Quick Check
IAES 95, 96	(82) Q3: RE
	(95) Q4: AD
	(96) Quick Check

IAPS 55, 74, 82 (55) Q1: UC, Quick Check means that the standard or benchmark may be assessed using Issues and Physical Science Activity 55 Analysis Question 1 using Understanding Concepts scoring guide.

IAES 95, 96 (82) Q3: RE
(95) Q4: AD
(96) Quick Check

means that the standard or benchmark may be assessed using Issues and Earth Science Activity 82 Analysis Question 3 using Recognizing Evidence scoring guide, IAES Activity 95 Analysis Question 4 using Analyzing Data scoring guide and IAES Activity 96 Quick Check.

For more information on program assessment and using SEPUP rubrics, consult the Teacher's Guide, TR part III Assessment section.

SEPUP Support for Engineering Design

The Next Generation Science Frameworks (NGSF) notes that science and engineering are somewhat parallel practices and have many similar elements. Scientists ask questions, make observations, and collect and analyze data, in an attempt to make sense of the natural world. Similarly, engineers create, test, and redesign as they respond with solutions to human needs. And just as we use scaffolds in teaching of scientific inquiry to improve student learning and practice, so do we use scaffolds in teaching about engineering for our students. The NGSF emphasizes three major phases of the engineering design process.

- **DESIGN:** Creates design, prototype or plan, noting constraints of proposed use
- **TEST:** Tests design, prototype or plan, collecting qualitative or quantitative data
- **REDESIGN:** Evaluates prototype, design or plan, suggests further changes as needed

In addition, the NGSF emphasizes the role of design in solving human problems, and of designers in developing criteria for solutions, evaluating solutions, and determining the tradeoffs involved in a design or solution.

The table below shows SEPUP activities that support major elements of engineering design. Some support the initial stages of design, criteria development, and evaluation that precede the full design cycle by suggesting or evaluating scientific or technological solutions to real-world problems. Others involve students in one or all steps of the design cycle as they build, test, and/or redesign prototypes.

Engineering and Design Practices in SEPUP

Course activity with description	Students suggest or evaluate a solution	Students engage in the engineering process		
		Design	Test	Re-design
IAES11: Recommend a soil improvement plan	X			
IAES 32: Design a coastal breakwater		X	X	X
IAES 35: Recommend a site plan for housing development		X		
IAES 49: Evaluate sites for nuclear waste disposal	X			
IAES 67: Design/build wind vane/anemometer		X	X	X

IAES 98: Recommend a space mission	X			
IALS 48: Design an improved hand-washing procedure		X	X	X
IALS 88: Suggest a plan for preventing zebra mussel spread	X			
IALS 104: Design artificial heart valve		X		
IALS 105: Design an artificial bone		X	X	X
IALS 107: Design an energy bar		X	X	X
IALS 108: Design a prosthetic limb		X	X	X
IAPS 12: Recommend a material for a drink container	X			
IAPS 13: Construct a product life cycle for a drink container	X			
IAPS 29: Evaluate options to recommend a “green” computer	X			
IAPS 60: Design an ice preservation chamber		X	X	X
IAPS 63: Improve a calorimeter design			X	X
IAPS 69: Design a better solar collector		X	X	X
IAPS 70: Design a warm & cool home		X		
IAPS 72: Recommend an energy-improvement plan for a home	X	X	X	X
IAPS 73: Evaluate vehicle safety features		X		
IAPS 85: Design a crash test dummy		X		

GRADE 6

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Strand 1: Nature of Science		
Standard 1: Characteristics and Processes of Science <i>Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology</i>		
Processes of Science		
NS.1.6.1 Verify accuracy of observations	IAES 1, 20 IALS 14, 38 IAPS 24, 35	(14) Proc: DI Q4: AD (35) Q1: AD
NS.1.6.2 Apply components of experimental design used to produce empirical evidence: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized variables 	IAES 16, 55 IALS 8, 48 IAPS 3, 51 Science Skills Student Sheet 5	(16) Proc: DI (55) Proc: DI (8) Proc: DI (48) Proc: DI (3) Proc: DI (51) Proc: DI
NS.1.6.3 Compare scientific data using mean, median, mode, and range using <i>SI units</i>	IAES 27, 64 IALS 17, 77 IAPS 56, 74	(27) Proc: OD, Quick Check (17) Proc: OD (77) Proc: OD,
NS.1.6.4 Construct and interpret scientific data using <ul style="list-style-type: none"> • data tables/charts • bar and double bar graphs • line graphs 	IAES 51, 93 IALS 14, 54	(51) Proc: OD (14) Proc: DI Q4: AD

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> stem and leaf plots 	IAPS 12, 40	(12) Proc: OD
NS.1.6.5 Communicate results and conclusions from scientific inquiry	IAES 11, 72 IALS 8, 64 IAPS 10, 51	(11) Q2: RE, ET (72) Proc: DI (8) Proc: DI,OD (64) Proc: DI, Q1: AD (10) Proc: DI Q1: AD
NS.1.6.6 Develop and implement strategies for long-term, accurate data collection	IAES 51, 79 IALS 47, 86	(51) Proc: OD (47) Proc: OD, Q3: SI (86) Q1: CS
Characteristics of Science		
NS.1.6.7 Distinguish between scientific fact and opinion	IAES 2, 36 IALS 53, 91 IAPS 26, 31	(2) Q3: RE (53) Q2: RE
NS.1.6.8 Explain the role of prediction in the development of a theory	IAES 42, 73 IALS 2, 37 IAPS 16, 32	(73) Q1: UC (2) Q2b: RE Proc: UC,CS
NS.1.6.9 Define and give examples of laws and theories	IAES 42, 95 IALS 60, 93 IAPS 57, 80	 (57) Q3: UC, (80) Q2:UC
Strand 2: Life Science		
Standard 2: Living Systems: <i>Characteristics, Structure, and Function</i> <i>Students shall demonstrate and apply knowledge of living systems</i>		

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
<i>using appropriate safety procedures, equipment, and technology</i>		
Structure and Function		
LS.2.6.1 Observe, describe, and illustrate plant and animal tissues: <ul style="list-style-type: none"> • muscle • blood • skin • xylem • phloem 	IALS 38, 46	(38, 46) Quick Check
LS.2.6.2 Illustrate the hierarchical relationships of cells, tissues, and organs	IALS 12, 15, 16	(12) Quick Check (15) Quick Check (16) Q7: UC
LS.2.6.3 Investigate the functions of tissues	IALS 15, 16,	(15) Quick Check Q3: UC (16) Quick Check Q6: UC, Q7: UC
LS.2.6.4 Model and explain the functions of animal organs: <ul style="list-style-type: none"> • heart • lung • kidneys • eyes • ears • skin • teeth 	IALS 12, 18, 24	(12) Quick Check (24) Q2: UC
LS.2.6.5 Model and explain the function of plant organs: <ul style="list-style-type: none"> • leaves • roots • stems • flowers 	IALS 76	Resource available on-line at www.sepuplhs.org
LS.2.6.6	IALS 23 (ext)	Resource available

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Dissect organs, including but not limited to <ul style="list-style-type: none"> • heart • eye • lung • stem • root 	IALS 76	on-line at www.sepuplhs.org
LS.2.6.7 Describe the relationship between organ function and the following needs of cells: <ul style="list-style-type: none"> • oxygen • food • water • waste removal 	IALS 14, 15, 39	(14) Q4: AD (15) Quick Check Q3: UC (39) Q2: AD Q2:SI
LS.2.6.8 Investigate careers, scientists, and historical breakthroughs related to tissues and organs	IALS 25, 37, 108	(37) Proc: UC, CS
Standard 3: Life Cycles, Reproduction, and Heredity <i>Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology</i>		
Heredity and Reproduction		
LS.3.6.1 Describe characteristics of plants and animals manipulated through selective breeding	N/C	
LS.3.6.2 Predict the outcome of selective breeding practices over several generations	N/C	
LS.3.6.3 Relate the development of Earth's present-day complex species from earlier, distinctly different simpler species	IALS 92, 98, 99	(98) Proc: AD (99) Q2: UC
LS.3.6.4 Investigate careers, scientists, and historical breakthroughs related to adaptations and selective	IALS 94, 97, 99	(94) Quick Check, Q3: UC

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
breeding		(99) Q2:UC
Regulation and Behavior		
LS.3.6.5 Describe behavioral adaptations of organisms to the environment: <ul style="list-style-type: none"> • hibernation • estivation • tropism • territorial behavior • migration 	IALS 83, 101	(101) Quick Check
LS.3.6.6 Differentiate between innate behaviors: <ul style="list-style-type: none"> • migration • web spinning • defensive posture • communication • imprinting and learned behaviors: • speaking a language • using tools hunting skills 	N/C	
LS.3.6.7 Describe the following structural adaptations for survival in the environment: <ul style="list-style-type: none"> • coloration • mimicry • odor glands • beaks • feet • wings • fur • ears • spines • teeth • thorns • characteristics of seeds 	IALS 95, 96, 97	(96) Q2a: AD (97) Q2: SI

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
LS.3.6.8 Investigate careers, scientists, and historical breakthroughs related to learned and innate behaviors	IALS 94, 97, 108	(94) Quick Check Q3: UC (108) Quick Check
Standard 4: Populations and Ecosystems <i>Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.</i>		
Populations and Ecosystems		
LS.4.6.1 Identify environmental conditions that can affect the survival of individual organisms and entire species	IALS 72, 73, 85	(72) Q6: ET (73) Proc: UC, CS
LS.4.6.2 Conduct simulations demonstrating competition for resources within an ecosystem	IALS 84, 96	(84)Q1a: OD, Q1b: AD, Q3a: OD, Q3b: AD, Quick Check (96) Proc: OD, Q2a: AD
LS.4.6.3 Conduct simulations demonstrating natural selection	IALS 95, 96	(96) Proc: OD, Q2a: AD
LS.4.6.4 Analyze natural selection	IALS 95, 96, 97	(96) Proc: OD Q2a: AD (97) Q2: SI
Strand 3: Physical Science		
Standard 5: Matter: Properties and Changes <i>Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology</i>		
Properties of Matter		
PS.5.6.1 Identify common examples of chemical properties: <ul style="list-style-type: none"> • ability to burn • ability to produce light • ability to react with other substances 	IAPS 14, 26, 27	(27) Q2: CS, Proc: OD

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
PS.5.6.2 Compare and contrast characteristics of physical and chemical properties	IAPS 6, 7, 14	(6) Q1: AD (7) Q1: AD
PS.5.6.3 Conduct investigations using acid/base indicators	IAPS 46, 48, 51	(46) Proc: OD, (51) Q4: DI,SI,
PS.5.6.4 Apply skills of scientific investigation to determine density using SI units	IAPS 8, 9, 10	(8) Quick Check (9) Quick Check, Q3e: UC (10) Q1: AD, Proc: DI
PS.5.6.5 Construct a density column using a minimum of four different liquids (e.g., alcohol, colored water, syrup, oil)	N/C	
PS.5.6.6 Use a density column to test the density of various solid objects (e.g., piece of candy, cork, candle, paper clip, egg)	N/C	
PS.5.6.7 Identify characteristics of chemical changes: <ul style="list-style-type: none"> • burning • production of a new substance • production of light • color change • endothermic and exothermic reactions • reactivity 	IAPS 6, 19, 50	(6) Q1: AD (19) Proc: OD
PS.5.6.8 Conduct investigations comparing and contrasting physical and chemical changes	IAPS 14, 18, 19	(18) Q3: AD (19) Proc: OD
PS.5.6.9 Demonstrate the law of the conservation of matter	IAPS 25	(25) Quick Check

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
PS.5.6.10 Investigate scientists, careers, and historical breakthroughs related to chemical properties and chemical changes	IAPS 16, 33	(33) Q3: RE,SI
Standard 6: Motion and Forces <i>Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology</i>		
Motion and Forces		
PS.6.6.1 Compare and contrast simple machines and compound machines	ASC Kit 214	
PS.6.6.2 Identify and analyze the simple machines that make up a compound machine	N/C	
PS.6.6.3 Conduct investigations of various forces using SI units (Newton)	IAPS 81	
PS.6.6.4 Recognize and give examples of different types of forces: <ul style="list-style-type: none"> • gravitational forces • magnetic forces • friction 	IAPS 55, 74, 82 IAES 95, 96	(55) Q1: UC, Quick Check (82) Q3: RE (95) Q4: AD (96) Quick Check
PS.6.6.5 Understand why objects have weight	IAPS 96	
PS.6.6.6 Compare and contrast weight and mass	IAPS 95, 96	(95) Q4: AD
PS.6.6.7 Describe the effects of force: <ul style="list-style-type: none"> • move a stationary object • speed up, slow down or change the direction of motion 	IAPS 74, 76, 81	(74) Proc: DI

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> change the shape of objects 		
PS.6.6.8 Conduct investigations to demonstrate change in direction caused by force	IAPS 75, 79, 81	(75) Q2: UC (79) Quick Check
PS.6.6.9 Conduct investigations to calculate the change in speed caused by applying forces to an object	IAPS 74, 76, 82	(74) Proc: DI (82) Q3: RE
PS.6.6.10 Investigate careers, scientists, and historical breakthroughs related to compound machines and forces	IAPS 80	(80) Q2: UC
Strand 3: Physical Science		
Standard 7: Energy and Transfer of Energy Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology		
Energy		
PS.7.6.1 Classify examples of energy forms: <ul style="list-style-type: none"> chemical electromagnetic mechanical thermal nuclear 	IAPS 56, 58, 64	(58) Q2: UC (64) Q4: AD
PS.7.6.2 Summarize the application of the law of conservation of energy in real world situations: <ul style="list-style-type: none"> electrical energy into mechanical energy electrical energy into heat chemical energy into mechanical energy chemical energy into light 	IAPS 57, 58, 67	(57) Q3: UC, Quick Check (58) Q2: UC (67) Q5: AD
PS.7.6.3 Conduct investigations demonstrating how energy can be converted from one form to another	IAPS 65,66, 68	(65) Proc: DI (66) Proc: DI

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
		(68) Proc: DI
PS.7.6.4 Investigate the transfer of energy in real world situations: <ul style="list-style-type: none"> • conduction • convection • radiation 	IAPS 58, 65, 66	(58) Q2: UC (65) Proc: DI (66) Proc: DI
PS.7.6.5 Investigate careers, scientists, and historical breakthroughs related to energy forms and conversions	IAPS 55	
Strand 4: Earth and Space Science		
Standard 8: Earth Systems <i>Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology</i>		
Structure and Properties		
ESS.8.6.1 Identify and diagram the layers of the Earth: <ul style="list-style-type: none"> • crust • mantle • inner and outer core 	IAES 38	(38) Quick Check Q5: UC
ESS.8.6.2 Model the layers of the Earth	IAES 38	(38) Quick Check Q5: UC
ESS.8.6.3 Model how <i>convection</i> currents in the mantle affect lithosphere movement	IAES 46	
ESS.8.6.4 Conduct investigations to identify the <i>variables</i> within volcanoes that cause different types of eruptions	IAES 37	
ESS.8.6.5 Diagram and explain how volcanoes work	IAES 37	

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
ESS.8.6.6 Explain how volcanic activity relates to mountain formation	IAES 37	
ESS.8.6.7 Connect short-term changes in climate with volcanic activity	N/C	
ESS.8.6.8 Compare and contrast the different land forms caused by Earth's internal forces: <ul style="list-style-type: none"> • mountains • plateaus • trenches • islands 	IAES 47, 48	(47) Quick Check (48) Q4: UC
ESS.8.6.9 Research local, regional, and state landforms created by internal forces in the earth: <ul style="list-style-type: none"> • Ozark Plateau • Crater of Diamonds • Ouachita Mountains • New Madrid Fault 	Local program goal	
ESS.8.6.10 Identify the effects of earthquakes on Earth's surface: <ul style="list-style-type: none"> • tsunamis • floods • changes in natural and man-made structures 	IAES 47. 48	(47) Quick Check (48) Q4: UC
ESS.8.6.11 Investigate and map patterns of earthquake and volcanic activity	IAES 44	
ESS.8.6.12 Locate <i>earthquake</i> belts on Earth: <ul style="list-style-type: none"> • Mediterranean-Trans-Asiatic • Circum-Pacific (Ring of Fire) 	IAES 44	
ESS.8.6.13 Analyze how earthquake occurrences are recorded	IAES 43	

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
(seismograph) and measured (Richter scale)		
ESS.8.6.14 Model the effect of major geological events on land and ocean features: <ul style="list-style-type: none"> • mountain building • ocean trenches • island formation • mid-ocean ridges 	IAES 47, 48	(47) Quick Check (48) Q4: UC
ESS.8.6.15 Investigate careers, scientists, and historical breakthroughs related to internal forces that change the Earth	IAES 41, 42	(41) Quick Check Q3: UC, SI
Standard 9: Earth's History <i>Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology</i>		
Earth's History		
ESS.9.6.1 Research methods of determining geologic time: <ul style="list-style-type: none"> • fossil records • mountain building • rock sequencing 	IAES 21, 39, 40	
ESS.9.6.2 Model rock layer sequencing based on characteristics of fossils	IALS 93	(93) Q4: UC
ESS.9.6.3 Analyze evidence that supports the theory of plate tectonics: <ul style="list-style-type: none"> • matching coastlines • similar rock types • fossil record 	IAES 40, 41, 42	(41) Quick Check Q3: UC, SI
Standard 10: Objects in the Universe <i>Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology</i>		

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Solar system: Sun, Earth, Moons, Planets, Galaxies		
ESS.10.6.1 Explain how planets seem to wander against the background of the stars	IAES 85, 86, 88	
ESS.10.6.2 Compare the distance of the following: <ul style="list-style-type: none"> • from the sun to Earth (light minutes) • from the next nearest star to Earth (light years) 	IAES 90, 92	(90) Quick Check
ESS.10.6.3 Describe how astronomers measure distance to stars	N/C	
ESS.10.6.4 Calculate the rate at which we would have to travel to other stars and planets in our solar system using current technology	IAES 97, 98	(97) Q1: RE (98) Q2: ET, CS
ESS.10.6.5 Explain the effect of the sun on comets	N/C	
ESS.10.6.6 Compare and contrast comets, meteors, and asteroids by <ul style="list-style-type: none"> • size • orbits • nucleus • mass 	IAES 88	
ESS.10.6.7 Model moon phases demonstrating the position of Earth, moon, and sun	IAES 80, 81,82	(81) Q5: UC (82) Q3: AD
ESS.10.6.8 Compare and contrast solar eclipse and lunar eclipse	IAES 81	
ESS.10.6.9 Investigate careers, scientists, and historical	IAES 87, 97	(97) Q1: RE

6 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
breakthroughs related to the sun and space travel		

GRADE 7

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Strand 1: Nature of Science		
Standard 1: Characteristics and Processes of Science <i>Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology</i>		
Processes of Science		
NS.1.7.1 Interpret evidence based on observations	IAES 6, 76 IALS 30, 68 IAPS 7, 28	(6) Q3: AD (76) Q4: AD (30) AD: Q1a (7) AD: Q1 (28) ET: Q3
NS.1.7.2 Analyze components of experimental design used to produce empirical evidence: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized variables 	IAES 16, 55 IALS 10, 64 IAPS 38, 54	(16) Proc: DI, (55) Proc: DI (64) Proc: DI (38) Proc: DI (54) Proc: DI
NS.1.7.3 Interpret scientific data using mean, median, mode, and range using SI units	IAES 27, 51 IALS 17, 54 IAPS 56, 74	(27) Proc: OD (51) Proc: OD (17) Proc: OD (54) Proc: OD (74) Proc: DI
NS.1.7.4 Construct and interpret scientific data using <ul style="list-style-type: none"> • histograms 	IAES 55, 75	(55) Proc: DI (75) Quick check

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> • circle graphs • scatter plots • double line graphs • line graphs by approximating line of best fit 	<p>IALS 51, 84</p> <p>IAPS 22, 40</p>	<p>(51) Q1: AD,</p> <p>(84) Q1a, Q3a: OD</p> <p>Q1b, Q3b: AD</p> <p>(22) Proc: OD</p>
<p>NS.1.7.5</p> <p>Communicate results and conclusions from scientific inquiry</p>	<p>IAES 11, 35</p> <p>IALS 48, 88</p> <p>IAPS 29, 51</p>	<p>(11) Q2: ET</p> <p>(35) Proc: CS</p> <p>(48) Proc: DI</p> <p>(88) Proc: CS</p> <p>(29) Proc: CS</p> <p>(51) Q4: DI</p> <p>(51) Q5: ET</p>
<p>NS.1.7.6</p> <p>Develop and implement strategies for long-term, accurate data collection</p>	<p>IAES 67, 79</p> <p>IALS 47, 55</p> <p>IAPS 69</p>	<p>(67) Proc: DI</p> <p>(47) Proc: OD</p>
Characteristics of Science		
<p>NS.1.7.7</p> <p>Distinguish between questions that can and cannot be answered by science</p>	<p>IAES 23, 49</p> <p>IALS 20, 71</p> <p>IAPS 11,29</p>	<p>(23) Q3: ET</p> <p>(49) Q2: ET</p> <p>(20) Q5: ET</p> <p>(71) Q2: ET</p> <p>(11) Q1: ET</p> <p>(29) Q1: ET</p>
<p>NS.1.7.8</p> <p>Explain the role of testability and modification in the development of a theory</p>	<p>IAES 10, 72</p> <p>IALS 2, 91</p>	<p>(72) Proc: DI</p> <p>(2) Q2b: RE</p>

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
	IAPS 32, 65	(91) Proc 10a (91) 11a: AD (65) Proc: DI
NS.1.7.9 Compare and contrast hypotheses, laws, and theories	IAES 32, 73, IALS 37, 94 IAPS 25, 80	(73) Q1 UC (94) Q3: UC (80) Q2: UC
Strand 2: Life Science		
Standard 2: Living Systems: <i>Characteristics, Structure, and Function</i> <i>Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology</i>		
Structure and Function		
LS.2.7.1 Illustrate the hierarchical relationships of cells, tissues, organs, and organ systems	IALS 12, 15, 16	(12) Quick Check (15) Quick Check (15) Q3: UC (16) Quick Check (16) Q7: UC
LS.2.7.2 Analyze how two or more organs work together to perform a function (e.g., mouth and stomach to digest food)	IALS 15, 16, 18	(15) Quick Check (15) Q3UC (16) Quick Check (16) Q6: UC (16) Q7: UC (18) Q5b: SI
LS.2.7.3 Identify organ systems in vertebrates and plants	IALS 12, 17, 18	(12) Quick Check (17) Proc: OD (18) Q5b: SI
LS.2.7.4	IALS 12, 15, 76	(12) Quick Check

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Analyze the structure and function of tissues, organs, and organ systems of a vertebrate and an angiosperm using various models or methods of dissection		(15) Quick Check (15) Q3: UC
LS.2.7.5 Compare and contrast vertebrate systems and plant organ systems	IALS 12, 76	(12) Quick Check
LS.2.7.6 Identify human body systems: <ul style="list-style-type: none"> • nervous • digestive • circulatory • respiratory • excretory • integumentary • skeletal/muscular • endocrine • reproductive 	IALS 12, 16, 18	(12) Quick Check (16) Quick Check (16) Q6: UC (16) Q7: UC (18) Q5b: SI
LS.2.7.7 Relate the structure of vertebrate and plant body systems to their functions	IALS 12, 16, 76	(12) Quick Check (16) Quick Check (16) Q6: UC, (16) Q7: UC
LS.2.7.8 Investigate functions of human body systems	IALS 15, 16, 18	(15) Q3: UC (16) Quick Check (16) Q6: UC (16) Q7: UC (17) Proc: OD (18) Q5b: SI
LS.2.7.9 Describe interactions between major organ systems	IALS 13, 15, 18	(15) Quick Check (15) Q3: UC

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
		(18) Q5b: SI
LS.2.7.10 Investigate careers, scientists, and historical breakthroughs related to life systems	IALS 25, 103, 108	(108)Quick Check (108) Q3: ET
Standard 3: Life Cycles, Reproduction, and Heredity <i>Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology</i>		
Heredity and Reproduction		
LS.3.7.1 Explain that the fertilized egg cell carries genetic information from each parent and multiplies to form a complete organism	IALS 57,63	(63) Q1: UC
LS.3.7.2 Distinguish between sperm cells and egg cells	IALS 57,63	
LS.3.7.3 Compare and contrast the structure and function of the sperm cell and the egg cell in vertebrates and plants and their role in sexual reproduction	IALS 63, 76	
LS.3.7.4 Investigate and analyze the development of embryos	IALS 63	
LS.3.7.5 Dissect a poultry egg to analyze its structure (e.g., paper, plastic, or clay models, virtual dissection, or specimen dissection)	N/C	
LS.3.7.6 Dissect a flower to analyze the reproductive system of angiosperms (e.g., paper, plastic, or clay models; virtual dissection; or specimen dissection)	IALS 76	
LS.3.7.7 Differentiate between sexual and asexual reproduction	IALS 57, 76	

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
in <ul style="list-style-type: none"> vertebrates plants 		
LS.3.7.8 Identify the number and source of chromosomes in human body cells	IALS 57, 63	
LS.3.7.9 Identify the number and source of chromosomes in human sex cells	IALS 57, 63	
LS.3.7.10 Explain the role of cell division	IALS 57	
LS.3.7.11 Investigate careers, scientists, and historical breakthroughs related to reproduction	IALS 60, 71	(71) Q2: ET, CS
Regulation and Behavior		
LS.3.7.12 Summarize the interactions between organ systems in the maintenance of homeostasis	IALS 18, 24	(18) Q5b: SI (24) Q2: UC
Standard 4: Populations and Ecosystems <i>Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.</i>		
Populations and Ecosystems		
LS.4.7.1 Explain the role of reproduction in the continuation of a species	IALS 95, 96, 97	(96) Q2a: AD
Strand 3: Physical Science		
Standard 5: Matter: Properties and Changes <i>Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology</i>		

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Properties of Matter		
PS.5.7.1 Explain how a small number of naturally-occurring elements can result in the large variety of substances found in the world	IAPS 15, 16	(16) Quick Check
PS.5.7.2 Create models of common compounds: <ul style="list-style-type: none"> • water • carbon dioxide • salt • iron oxide • ammonia 	IAPS 17, 20, 36	(17) Q6: UC
PS.5.7.3 Identify compounds as substances consisting of two or more elements chemically combined	IAPS 16,17, 20	(16) Quick Check (17) Q6: UC
PS.5.7.4 Compare and contrast properties of compounds to those of the elements that compose them: <ul style="list-style-type: none"> • salt: sodium, chlorine • water: hydrogen, oxygen carbon dioxide: carbon, oxygen 	IAPS 16, 17	(16) Quick Check (17) Q6: UC
PS.5.7.5 Demonstrate techniques for forming and separating mixtures: <ul style="list-style-type: none"> • mixing • magnetic attraction • evaporation • filtration • chromatography • settling 	IAPS 5, 37, 45	(5) Quick Check (37) Quick Check Q2: AD (45) Quick Check
PS.5.7.6 Classify substances as <ul style="list-style-type: none"> • elements • compounds • mixtures 	IAPS 3, 15, 16	(3) Proc: DI (15) Q5: UC (16) Quick Check
PS.5.7.7 Distinguish among solvent, solute, and solution	IAPS 37, 38, 40	(37) Quick Check

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
		Q2: AD (38) Q1-3: AD
PS.5.7.8 Investigate the effect of variables on solubility rates	IAPS 37, 38	(37) Quick Check Q2: AD (38) Q1-3: AD
PS.5.7.9 Interpret solubility graphs	N/C	
PS.5.7.10 Investigate scientists, careers, and historical breakthroughs related to elements, mixtures, and compounds	IAPS 16	
Standard 6: Motion and Forces <i>Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology</i>		
Motion and Forces		
PS.6.7.1 Compare and contrast Newton's three laws of motion	IAPS 80	(80) Quick Check Q2: UC
PS.6.7.2 Conduct investigations demonstrating Newton's first law of motion	IAPS 79, 80	(79) Quick Check (80) Quick Check Q2: UC
PS.6.7.3 Demonstrate Newton's second law of motion	IAPS 78, 80, 81	(80) Quick Check Q2: UC
PS.6.7.4 Conduct investigations of Newton's third law of motion	IAPS 80, 81, 82	(80) Quick Check (82) Q3: RE
PS.6.7.5 Explain how Newton's three laws of motion apply to real world situations (e.g., sports, transportation)	IAPS 78, 79, 80	(79) Quick Check (80) Quick Check Q2: UC
PS.6.7.6	IAPS 80, 85	(80) Quick Check

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
Investigate careers, scientists, and historical breakthroughs related to laws of motion		Q2: UC
Strand 3: Physical Science		
Standard 7: Energy and Transfer of Energy <i>Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology</i>		
Energy		
PS.7.7.1 Identify natural resources used to supply energy needs	IAPS 64, 68, 69	(64) Q3: ET, Q4: AD
PS.7.7.2 Describe alternatives to the use of fossil fuels: <ul style="list-style-type: none"> • solar energy • geothermal energy • wind • hydroelectric power • nuclear energy • biomass 	IAPS 64, 68, 69	(64) Q3: ET, Q4: AD
PS.7.7.3 Conduct investigations to identify types of potential energy and kinetic energy	IAPS 54, 55	(55) Quick Check Q1: UC
PS.7.7.4 Investigate alternative energy sources	IAPS 68, 69, 70	(68) Proc: DI
PS.7.7.5 Investigate careers, scientists, and historical breakthroughs related to natural resources, alternative resources, electricity, and magnetism	IAPS 55, 72	
Strand 4: Earth and Space Science		
Standard 8: Earth Systems <i>Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology</i>		
Structure and Properties		
ESS.8.7.1 Describe the composition and physical characteristics	IAES 64, 65, 66	(66) Q2: UC

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
of the atmosphere		
ESS.8.7.2 Investigate the influence of global patterns on local weather: <ul style="list-style-type: none"> • movement of air masses • Coriolis effect • jet stream • global wind belts 	IAES 66, 68, 69	(69) Proc: CS
ESS.8.7.3 Conduct investigations demonstrating the effects of solar energy on the atmosphere	IAES 55, 64	(55) Proc: DI Quick Check
ESS.8.7.4 Investigate the effect that oceans have on climate	IAES 56, 57, 58	(57) Quick Check (58) Quick Check
ESS.8.7.5 Identify elements of weather: <ul style="list-style-type: none"> • temperature • air pressure • wind speed • wind direction • humidity 	IAES 67, 68, 69	(67) Proc: DI
ESS.8.7.6 Conduct investigations using weather measurement devices: <ul style="list-style-type: none"> • anemometers • barometers • sling psychrometers • thermometers • weather charts 	IAES 55, 67, 69	(55) Proc: DI Quick Check (67) Proc: DI
ESS.8.7.7 Predict weather conditions using data on the following: <ul style="list-style-type: none"> • temperature • air pressure: highs, lows, fronts • clouds • wind speed • wind direction • humidity 	IAES 69	(69) Proc: CS
ESS.8.7.8 Identify the causes and effects of weather-related phenomena: <ul style="list-style-type: none"> • thunderstorms 	IAES 52, 69	

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> tornadoes/ hurricanes/cyclones/ typhoons drought acid precipitation 		
ESS.8.7.9 Explain tornado belt weather patterns using a map of the United States	IAES 69	
ESS.8.7.10 Describe ways human beings protect themselves, others, and their property from adverse weather conditions	N/C	
ESS.8.7.11 Describe and map climates of major Earth regions	IAES 53	(53) Quick Check
ESS.8.7.12 Analyze the effect of the shape of Earth and the tilt of Earth's axis on climate	IAES 58, 76, 77	(58) Quick Check (76) Q4: AD (77) Quick Check
ESS.8.7.13 Identify and explain the effects that human activities have on weather and atmosphere	IAES 64, 65, 70	(70) Q3: ET
ESS.8.7.14 Describe causes and effects of acid precipitation	IAES 62	(62) Q4: SI
ESS.8.7.15 Investigate careers, scientists, and historical breakthroughs related to atmosphere and weather	IAES 57, 61, 70	(57) Quick Check (70) Q3: ET
Cycles		
ESS.8.7.16 Conduct investigations demonstrating the water cycle	IAES 62 IAPS 39	(62) Q4: SI (39) Q7: SI
ESS.8.7.17 Explain the relationship between the water cycle and ground water	IAPS 39	(39) Q7: SI
ESS.8.7.18 Investigate cloud formation	IAES 60	
ESS.8.7.19 Conduct investigations demonstrating the greenhouse effect	IAES 55 IAPS 70	(55) Proc: DI
ESS.8.7.20 Research how human activities may contribute to global warming	IAES 64	

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
ESS.8.7.21 Explain examples of actual events that cause temporary climate changes: <ul style="list-style-type: none"> • volcanic dust • drought • meteor impact 	N/C	
Standard 9: Earth's History <i>Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology</i>		
Earth's History		
ESS.9.7.1 Analyze charts to infer past atmospheric conditions based on the organisms found in the fossil record	IAES 65	
ESS.9.7.2 Demonstrate that Earth has a magnetic field that is detectible at the surface with a compass	IAPS 65A	
ESS.9.7.3 Compare and contrast Earth's magnetic field to those of natural or human-made magnets with <ul style="list-style-type: none"> • North and South poles • lines of force 	IAPS 65A	
ESS.9.7.4 Analyze evidence of sea floor spreading: <ul style="list-style-type: none"> • magnetic reversal • molten material • drilling samples 	IAES 41, 42, 45	(41) Quick Check Q5: UC (45) Quick Check
ESS.9.7.5 Research ways in which people have used compasses	N/C	
Standard 10: Objects in the Universe <i>Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology</i>		
Solar System: Sun, Earth, Moons, Planets, Galaxies		
ESS.10.7.1 Identify and model the causes of night and day	IAES 73, 74	(73) Quick Check Q1: UC
ESS.10.7.2 Compare and contrast Earth's day to those of other planets in our solar system	IAES 89	(89) Proc: RE

7 SCIENCE STANDARD	SEPUP	
	LOCATION	ASSESSMENT
ESS.10.7.3 Identify and model the cause of planetary years	IAES 76, 84	(84) Quick Check Proc: UC
ESS.10.7.4 Compare and contrast Earth's year to those of other planets in our solar system	IAES 76, 84	(84) Quick Check Proc: UC
ESS.10.7.5 Identify and model the causes of seasons	IAES 75, 76, 77	(75) Quick Check (76) Q4: D (77) Quick Check
ESS.10.7.6 Investigate careers, scientists, and historical breakthroughs related to rotations and revolutions of bodies in space	IAES 85, 93, 97	(97) Q1: RE

GRADE 8

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Strand 1: Nature of Science		
Standard 1: Characteristics and Processes of Science <i>Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology</i>		
Processes of Science		
NS.1.8.1 Justify conclusions based on appropriate and unbiased observations	IAES 11, 35 IALS 32, 53 IAPS 27, 51	(11) Q2: RE, ET (35) Q1: ET (32) Q2: RE, Q5: ET (53) Q3: ET (27) Q3: ET (51) Q5: ET
NS.1.8.2 Evaluate the merits of empirical evidence based on experimental design: <ul style="list-style-type: none"> • hypothesis • replication • sample size • appropriate use of control • use of standardized independent and dependent variables 	IAES 16, 55 IALS 5, 48 IAPS 3, 38	(16) Proc: DI (55) Proc: DI (5) Proc: DI (48) Proc: DI (3) Proc: DI (38) Proc: DI
NS.1.8.3 Formulate a testable problem using experimental design	IAES 67, 72 IALS 8, 83 IAPS 54, 77	(67) Proc: DI (72) Proc: DI (8) Proc: DI (83) Proc: DI (54) Proc: DI (77) Proc: DI

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
NS.1.8.4 Analyze a set of scientific data using mean, median, mode, and range using SI units	IAES 27, 51 IALS 19, 77 IAPS 56, 74	(27) Quick Check (19) Q3b: AD, Quick Check (77) Q4, Q6: AD
NS.1.8.5 Suggest solutions to real world problems by analyzing scientific data in <ul style="list-style-type: none"> • data tables/charts • histograms • circle graphs • scatter plots • stem and leaf plots • line and double line • graphs by approximating line of best fit 	IAES 31, 82 IALS 51, 70 IAPS 41, 67	(51) Q1: AD (70) Q2: RE (41) Q2: AD (67) Q5: AD
NS.1.8.6 Formulate inferences based on scientific data	IAES 20, 57 IALS 2, 32 IAPS 3, 40	(57) Quick Check (2) Q2b: RE (32) Q2: RE, Q5: ET, Quick Check
NS.1.8.7 Communicate results and conclusions from scientific inquiry following peer review	IAES 11, 49 IALS 53, 88 IAPS 11, 44	(11) Q2: RE, ET (49) Q2: ET (53) Q2: RE, Q3: ET (88) Proc: CS, SI (44) Q5: UC
NS.1.8.8 Develop and implement strategies for long-term, accurate data collection	IAES 51, 79 IALS 64, 86	(51) Proc: OD (64) Proc: DI
Characteristics of Science		
NS.1.8.9 Generate questions that can and cannot be answered by	IAES 23, 49	(23) Q3: ET

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
science	IALS 71, 89 IAPS 29, 72	(49) Q2: ET (71) Q2: ET (89) Q4: ET (29) Q1: ET (72) Q1: ET
NS.1.8.10 Explain the role of peer review, evidence, and modification in the development of a theory	IAES 28, 42 IALS 37, 94 IAPS 32, 65	(94) Quick Check Q3: UC (65) Proc: DI
NS.1.8.11 Evaluate the merit of hypotheses, laws, and theories	IAES 42, 96 IALS 60, 97 IAPS 57, 76	(96) Quick Check (57) Q3: UC, Quick Check
Strand 2: Life Science		
Standard 2: Living Systems: <i>Characteristics, Structure, and Function</i> <i>Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology</i>		
Structure and Function		
LS.2.8.1 Illustrate the hierarchical relationships of cells, tissues, organs, organ systems, and organisms	IALS 12, 15, 16	(12) Quick Check (15) Quick Check (16) Quick Check Q7: UC
LS.2.8.2 Identify different types of single-celled organisms: <ul style="list-style-type: none"> • protists • bacteria 	IALS 43, 44	(43) Q5: UC
LS.2.8.3	N/C	

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Relate the effect of bacteria on oral health		
LS.2.8.4 Describe and illustrate single-celled organisms found in pond water	IALS 36	(36) Q3: SI
LS.2.8.5 Use a dichotomous key to classify organisms found in pond water	IALS 44	
LS.2.8.6 Compare and contrast characteristics of unicellular organisms and multi-cellular organisms	IALS 44, 45	
LS.2.8.7 Classify cells as eukaryotic or prokaryotic	IALS 44, 45	(45) Q7: UC
LS.2.8.8 Identify and describe similarities and differences among organisms of different, but closely related taxa (e.g., pine trees, big cats, rodents, ungulates)	IALS 76	
LS.2.8.9 Investigate careers, scientists, and historical breakthroughs related to organisms	IALS 37, 50, 108	(37) Proc: UC (108) Quick Check
Standard 3: Life Cycles, Reproduction, and Heredity <i>Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology</i>		
Heredity and Reproduction		
LS.3.8.1 Identify and explain why inherited characteristics of living things depend on genes	IALS 57, 58, 59	(59) Proc: DI, Q7: UC
LS.3.8.2 Differentiate between dominant and recessive traits	IALS 59, 60, 61	(59) Proc: OD, Q7: UC

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
LS.3.8.3 Observe and classify traits as dominant or recessive: <ul style="list-style-type: none"> • tongue rolling • detached earlobes • widow’s peak • hitchhiker’s thumb • dimples • unibrow 	IALS 54 Note: Many traits formerly assumed to follow simple dominant or recessive patterns are now thought to be more complex.	
LS.3.8.4 Differentiate among observed inherited traits and acquired traits of plants and animals	IALS 54, 64, 65	(65) Quick Check
LS.3.8.5 Interpret simple genetic crosses using Punnett Squares	IALS 61, 66	(66) Q3: AD Q4: AD
LS.3.8.6 Predict patterns that emerge from simple genetic crosses	IALS 60, 61, 62	(62) Proc: AD, Q3a: UC, Quick Check
LS.3.8.7 Conduct investigations demonstrating that the phenotype of a genetic trait is the result of genotype	IALS 59, 60, 65	(59) Proc: OD, Q7: UC (65) Q8: UC, Quick Check
LS.3.8.8 Explain how genetic variation within a species is a result of dominant traits and recessive traits	IALS 59, 65, 66	(59) Proc: OD, Q7: UC (65) Q8: UC, Quick Check (66) Q3: AD, Q4: AD
LS.3.8.9 Compare and contrast patterns of embryological development for all vertebrates, including humans	IALS 63 (humans only)	
LS.3.8.10 Distinguish between characteristics of plants and	N/C	

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
animals through selective breeding		
LS.3.8.11 Investigate careers, scientists, and historical breakthroughs related to genetics	IALS 60,71, 108	(108) Quick Check
Regulation and Behavior		
LS.3.8.12 Compare the theory of evolution to the characteristics of a scientific theory	IALS TR-343	
LS.3.8.13 Identify basic ideas related to biological evolution: <ul style="list-style-type: none"> • diversity of species • variations within species • adaptations • natural selection • extinction of a species 	IALS 95, 96, 97	(96) Proc: OD, Q2a: AD (97) Q2: SI
LS.3.8.14 Explain that the fossil record provides evidence of life forms' appearance, diversification, and extinction	IALS 90, 98, 99	(90) Q3: SI (98) Proc: AD (99) Q2: UC
LS.3.8.15 Explain the process of natural selection	IALS 96, 97, 99	(96) Proc: OD, Q2a: AD (97) Q2: SI (99) Q2: UC
LS.3.8.16 Identify genetic traits that make organisms more likely to survive and reproduce in a particular environment	IALS 96, 97, 101	(96) Proc: OD, Q2a: AD (97) Q2: SI
LS.3.8.17 Investigate careers, scientists, and historical breakthroughs related to natural selection and the fossil record	IALS 94, 99	(94) Quick Check, Q3: UC (99) Q2: UC

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Standard 4: Populations and Ecosystems <i>Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.</i>		
Populations and Ecosystems		
LS.4.8.1 Analyze the effect of changes in environmental conditions on the survival of individual organisms and entire species	IALS 84, 95, 96	(84) Q1b: AD Q3b: AD (96) Proc: OD, Q2a: AD
Strand 3: Physical Science		
Standard 5: Matter: Properties and Changes <i>Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology</i>		
Properties of Matter		
PS.5.8.1 Compare the atomic theory to the characteristics of a scientific theory	IAPS 16, 17, 47	
PS.5.8.2 Explain the structure of atoms	IAPS 16, 50	(16) Quick Check
PS.5.8.3 Determine the number of protons, neutrons, and electrons in an atom	IAPS 16, 50	(16) Quick Check (50) Q5: UC
PS.5.8.4 Create atomic models of common elements	IAPS 17, 36	(17) Q6: UC (36) Q8: UC
PS.5.8.5 Investigate scientists, careers, and historical breakthroughs related to the atomic theory	IAPS 16	
Standard 6: Motion and Forces <i>Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology</i>		

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Motion and Forces		
PS.6.8.1 Model how motion and forces change Earth’s surface: <ul style="list-style-type: none"> • compression • tension • weathering • erosion 	IAES 28, 31, 43	
PS.6.8.2 Conduct investigations demonstrating the field force (lines of force) in magnetic fields	IAPS 65A	
PS.6.8.3 Design and conduct investigations applying variables affecting the strength of an electromagnet	N/C	
PS.6.8.4 Analyze and compare the relationship between electricity and magnetism	N/C	
PS.6.8.5 Investigate careers, scientists, and historical breakthroughs related to motion and forces that change Earth’s surface	IAES 34, 41, 42	(34) Q1: RE (41) Quick Check Q3: UC
Strand 3: Physical Science		
Standard 7: Energy and Transfer of Energy Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology		
Energy		
PS.7.8.1 Construct open and closed electrical circuits: <ul style="list-style-type: none"> • series circuits • parallel circuits 	IAPS 66, 68	(66) Proc: DI

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
PS.7.8.2 Describe and diagram open and closed series and parallel circuits	IAPS 68	
PS.7.8.3 Compare and contrast open and closed series circuits and parallel circuits	IAPS 66, 68	(66) Proc: DI
PS.7.8.4 Conduct investigations demonstrating the characteristics of a wave: <ul style="list-style-type: none"> • wavelength • frequency • speed • amplitude 	IAPS 90, 93	
PS.7.8.5 Conduct investigations of longitudinal and transverse waves to determine how they are different	IAPS 91	(91) Q1
PS.7.8.6 Explain how energy is transferred through waves: <ul style="list-style-type: none"> • seismic waves • sound waves • water waves • electromagnetic waves 	IAPS 90	(90) Q1
PS.7.8.7 Describe how waves travel through different kinds of media	IAPS93	
PS.7.8.8 Differentiate among reflection, refraction, and absorption of various types of waves	IAPS 94, 95, 97	(95) Q2
PS.7.8.9 Describe and diagram the electromagnetic spectrum	IAPS 96	(96) Q3
PS.7.8.10	IAPS 96	(96) Q4

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Analyze the electromagnetic spectrum		
PS.7.8.11 Investigate examples of real world uses of the electromagnetic spectrum	IAPS 96	
PS.7.8.12 Conduct investigations demonstrating the separation of white light into its spectrum using refraction	IAPS 94, 95	
PS.7.8.13 Compare ways to transfer information: <ul style="list-style-type: none"> • sound • light • radio • microwave energy 	N/C	
PS.7.8.14 Investigate careers, scientists, and historical breakthroughs related to waves and the electromagnetic spectrum	N/C	
Strand 4: Earth and Space Science		
Standard 8: Earth Systems <i>Students shall demonstrate and apply knowledge of Earth's structure and properties using appropriate safety procedures, equipment, and technology</i>		
Structure and Properties		
ESS.8.8.1 Analyze the causes and predict the consequences of global warming on the following: <ul style="list-style-type: none"> • weather • temperature • ocean water levels 	IAES 65	
ESS.8.8.2 Investigate how global patterns of water currents influence local weather: <ul style="list-style-type: none"> • Gulf Stream • Atlantic Currents 	IAES 56, 57	(57) Quick Check

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> California Current 		
<p>ESS.8.8.3 Conduct investigations to compare and contrast different landforms found on Earth:</p> <ul style="list-style-type: none"> mountains plateaus plains 	IAES 24, 25, 26	(25) Quick Check
<p>ESS.8.8.4 Synthesize and model the result of both constructive and destructive forces on land forms:</p> <ul style="list-style-type: none"> deposition erosion weathering crustal deformation 	IAES 28, 31, 37	
<p>ESS.8.8.5 Compare and contrast the different landforms caused by Earth's external forces:</p> <ul style="list-style-type: none"> plains canyons deltas valleys swamps 	IAES 24, 28, 30	(30) Quick Check
<p>ESS.8.8.6 Research local, regional, and state landforms created by external forces on Earth:</p> <ul style="list-style-type: none"> Gulf Coastal Plain Arkansas River Valley Mississippi Alluvial Plain, including the delta region Crowley's Ridge 	These represent local program goals	
<p>ESS.8.8.7 Use topographic maps to identify surface features of Earth</p>	IAES 25, 26	(25) Quick Check
<p>ESS.8.8.8 Demonstrate an understanding of the agents of erosion:</p> <ul style="list-style-type: none"> gravity water ice 	IAES 29, 35	(29) Q2: UC (35) Proc: CS, Q1: ET

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
<ul style="list-style-type: none"> wind animals, including humans 		
ESS.8.8.9 Using models of rivers, predict changes when variables, such as load, slope, amount of water, or the composition of a stream bed, are changed through erosion or deposition	IAES 28, 32	
ESS.8.8.10 Explain how weathering and erosion affect the oceans' salinity	N/C	
ESS.8.8.11 Investigate careers, scientists, and historical breakthroughs related to external forces that change the Earth	IAES 30, 34, 42	(30) Quick Check (34) Q1: RE
Cycles		
ESS.8.8.12 Investigate the types of weathering involved in the breakdown of organic and inorganic components of Earth's surface	IAES 5, 22, 29	(5) Q5: UC (22) Q7: UC
ESS.8.8.13 Illustrate soil profiles	IAES 4, 5, 6	(4) Quick Check (5) Q5: UC (6) Q3: AD
ESS.8.8.14 Apply knowledge of soil profiles to local soil samples	IAES 6, 7	(6) Q3: AD
ESS.8.8.15 Investigate the formation of soil types	IAES 5, 6	(5) Q5: UC (6) Q3: AD
ESS.8.8.16 Identify components of soil as inorganic or organic through investigations	IAES 5, 10	(5) Q5: UC (10) Quick Check
ESS.8.8.17 Identify the basic nutrients needed by plants that are present in soils: <ul style="list-style-type: none"> nitrogen phosphorous potassium 	IAES 9	
ESS.8.8.18 Identify ways plants use organic and inorganic components in the soil	N/C	

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
ESS.8.8.19 Investigate and analyze the composition of a variety of soils	IAES 5, 6, 7	(5) Q5: UC (6) Q3: AD
ESS.8.8.20 Conduct investigations on soil permeability	IAES 3, 4	
Standard 9: Earth's History <i>Students shall demonstrate and apply knowledge of Earth's history using appropriate safety procedures, equipment, and technology</i>		
Earth's History		
ESS.9.8.1 Explain processes that have changed Earth's surface that have resulted from sudden events (e.g., earthquakes and volcanoes) and gradual changes (e.g., uplift, erosion, and weathering)	IAES 29, 37, 43	(29) Q2: UC
ESS.9.8.2 Analyze how rock sequences may be disturbed by the following: <ul style="list-style-type: none"> • erosion • deposition • igneous intrusion • folding • faulting • uplifting 	IAES 28, 33, 40	(33) Quick Check
ESS.9.8.3 Explain how scientists determine the relative ages of fossils found in layers of sedimentary rock: <ul style="list-style-type: none"> • law of superposition • law of cross-cutting 	IAES 40 IALS 93	(93) Q4: UC
ESS.9.8.4 Apply geologic laws of superposition and cross-cutting to determine the relative age of rock in a cross section	IAES 40 IALS 93	(93) Q4: UC
Standard 10: Objects in the Universe <i>Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures,</i>		

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
<i>equipment, and technology</i>		
Solar system: Sun, Earth, Moons, Planets, Galaxies		
ESS.10.8.1 Summarize the effects of gravity on bodies in space	IAES 95, 96	(95) Q4: AD (96) Quick Check
ESS.10.8.2 Identify variables that affect the amount of gravitational force between two objects: <ul style="list-style-type: none"> • mass of the objects • distance between the objects 	IAES 95, 96	(95) Q4: AD (96) Quick Check
ESS.10.8.3 Relate the effects of the moon’s gravitational force on Earth’s ocean tides	IAES 82	(82) Q3: AD
ESS.10.8.4 Identify the causes of the following: <ul style="list-style-type: none"> • high tides • low tides • spring tides • neap tides 	IAES 82	(82) Q3: AD
ESS.10.8.5 Define the terms galaxy and universe	IAES 86, 88	(88) Quick Check
ESS.10.8.6 Illustrate the appearance of galaxies as seen through a telescope: <ul style="list-style-type: none"> • clarity • shape 	N/C	
ESS.10.8.7 Compare and contrast the Milky Way Galaxy to other galaxies	N/C	
ESS.10.8.8 Illustrate the position of our solar system within the	N/C	

8 SCIENCE STANDARDS	SEPUP	
	LOCATION	ASSESSMENT
Milky Way Galaxy		
ESS.10.8.9 Investigate careers, scientists, and historical breakthroughs related to gravity, galaxies, and the universe	IAES 85, 87, 94	