



LAB-AIDS CORRELATIONS FOR THE ALASKA MIDDLE LEVEL 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 programs that support the Alaska 6-8 Science Standards. It is not an exhaustive list; other locations may exist that are not listed here.

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Key to Programs:

SEPUP programs are available as full year courses, or separately, as units, which are listed below.

- **IAES = Issues and Earth Science**
Studying Soils 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
Earth and the Solar System, 85-98
- **IALS = Issues and Life Science**
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, 102-108
- **LAPS = Issues and Physical Science**
Studying Materials Scientifically, 1-11
The Chemistry of Materials, 12-29
Water, 30 - 52
Energy, 53-72
Force and Motion, 73-88

Supplementary Product Offerings

The following LAB-AIDS kits and modules address one or more of your state science standards. This listing is primarily for customers not using core SEPUP programs, as most standards are addressed using the core SEPUP programs; however, in a few cases, SEPUP customers may wish to supplement their core programs with one or more of the following products from the LAB-AIDS catalog.

Key to Supplementary Products

LAB-AIDS Applied Science Concept Kits

7	HUMAN GENETICS EXPERIMENT
9	NORMAL MITOSIS
25	ENZYME ACTIVITY STUDY
32	BIOLOGY & CHEMISTRY OF SOIL EXPERIMENT
37	BASIC OWL PELLET STUDY
38	MODELING AND COMPARING FOSSIL FUEL & BIOFUEL COMBUSTION
61	PLANT CELL STUDY
62	THE STUDY OF THE STRUCTURE & FUNCTION OF MITOCHONDRIA
63	DIFFERENTIATION OF CELLS EXPERIMENT
70	GENETICS CONCEPTS
71	MOLECULAR MODEL OF DNA & ITS REPLICATION
78	SICKLE CELL CONCEPTS
79	STRAWBERRY DNA EXTRACTION
80	INTRODUCTION TO pH MEASUREMENT
82	PROPERTIES OF ACIDS AND BASES EXPERIMENT
84	IDENTIFICATION OF CHEMICAL REACTIONS
85	DETERMINATION OF CHEMICAL FORMULAS
91	NATURAL SELECTION EXPERIMENT
92	IMMUNOLOGY AND EVOLUTION EXPERIMENT
125	INDIVIDUAL BASIC STUDENT MOLECULAR MODEL SET
129	FIRST INTRODUCTION TO MOLECULAR MODELS
130	MOLECULAR MODEL
131	ORGANIC CHEMISTRY MOLECULAR MODEL
132	ORGANIC CHEMISTRY (FUNCTIONAL GROUPS) MODEL
133	ORGANIC CHEMISTRY (ISOMERS) MODEL
140	SUBLEVEL ORBITALS OF ATOM
309	INTRODUCTION TO CONDUCTIVITY EXPERIMENT
400	INTRODUCTION TO MINERAL CRYSTALS
401	GEOMETRY OF CRYSTAL STRUCTURE
402	MINERAL STRUCTURE-CLEAVAGE & FRACTURE
430	ROCK CYCLE: AN INTERACTIVE EXPLORATION THROUGH GEOLOGIC TIME
437	MODELING AND INVESTIGATING WATERSHEDS
442	MODELING STREAM EROSION AND DEPOSITION
450	INTRODUCTION TO RADIOACTIVITY & HALF LIFE
501	DIAMOND CRYSTAL MOLECULAR MODEL
502	GRAPHITE CRYSTAL MOLECULAR MODEL
701	CHEMILUMINESCENCE DEMONSTRATION
1101	INTRODUCTION TO SOIL
1102	SOIL COMPOSITION AND STRUCTURE
1270	INVESTIGATING HUMAN HEREDITY

SEPUP Applied Science Concept Kits

39S	BIOFUELS: INVESTIGATING ETHANOL PRODUCTION & COMBUSTION
206S	MEASURING ENERGY EFFICIENCY
318S	SOIL NUTRIENTS AND FERTILIZERS

351S	EXPLORING NEWTON’S FIRST LAW: INERTIA
352S	CLASSIFYING OBJECTS IN THE SOLAR SYSTEM
403S	CLASSIFYING SEDIMENTARY, METAMORPHIC & IGNEOUS ROCK
404S	THE ROCK CYCLE ACTIVITY
406S	EXAMINING FOSSILS
436S	MODELING CONVECTION CURRENTS
438S	PLATE TECTONICS: PLATE BOUNDARY COMPUTER SIMULATION
439S	MAKING AND INTERPRETING TOPOGRAPHIC MAPS
440S	COPPER MINING AND EXTRACTION
443S	CORRELATING SEDIMENTARY STRATA
445S	PLATE TECTONICS: EXAMINING EVIDENCE FOR CONTINENTAL DRIFT
550S	CLASSIFYING ANIMALS
603S	INVESTIGATING AND APPLYING GENETICS

LAB-AIDS Modules

P110	INVESTIGATING LIGHT
P120	COLOR AND SPECTRUM
P130	REFLECTION AND REFRACTION
P210	FORCE AND MOTION
P610	DENSITY: UNDERSTANDING THROUGH EXPERIMENTAL DESIGN

SEPUP Modules

DM-2	DECISION MAKING: PROBABILITY AND RISK TAKING
EHR-2	INVESTIGATING ENVIRONMENTAL HEALTH RISKS
EI-2	ENVIRONMENTAL IMPACT: COMPARING INDUSTRIES
ES-2	INVESTIGATING ENERGY FROM THE SUN
FS-2	INVESTIGATING FOOD SAFETY
FV-2	GROUNDWATER CONTAMINATION: TROUBLE IN FRUITVALE
HC-2	HOUSEHOLD CHEMICALS: BETTER BY DESIGN
HM-2	HAZARDOUS MATERIALS INVESTIGATION: THE BARREL MYSTERY
PL-2	LIVING WITH PLASTICS
SP-2	INVESTIGATING WASTEWATER: SOLUTIONS AND POLLUTION
TT-2	THRESHOLDS AND TOXICOLOGY
WD-2	WASTE DISPOSAL: COMPUTERS AND THE ENVIRONMENT

NEW Applied Science Content kits

31	PHOTOSYNTHESIS, PLANTS, AND FOOD
211	WAVES, SOUND AND LIGHT
213	ELECTRIC MOTORS AND GENERATORS
905	SELECTIVE BREEDING
109S	ELEMENTS AND THE PERIODIC TABLE
220S	INVESTIGATING PHOTOVOLTAIC CELLS
434S	CONTAMINANTS AND THE WATER CYCLE

NEW Applied Science Content kits in progress

[89]	MODELING CHEMICAL EQUILIBRIUM
[212]	ENERGY TRANSFER: MOTION OF A PENDULUM
[214]	SIMPLE MACHINES
[215]	ELECTRICAL CONDUCTIVITY AND CIRCUITRY
[216]	MAGNETIC FIELDS AND ELECTROMAGNETS
[405]	IDENTIFYING ROCK FORMING MINERALS
[207S]	CONVERTING GRAVITATIONAL POTENTIAL ENERGY TO KINETIC ENERGY

Recommended Scope and Sequence

Please contact our Regional Sales Manager for options.

Key to assessment terms

The SEPUP assessment system uses analysis questions (AQ) in the student book activities, short answer or brief constructed response (BCR) to prompts in the student book activities, and item bank test questions in the Teacher's Guide (TG), most of which are selected-response (SR) type. The following key can be used to interpret how the program works for the following citation:

IALS 75 Q4 ET; IB E-2, 3, 5, 6-8

IB = **Test item bank questions**, this citation means questions 2, 3, 5, and 6-8 from SALI item bank **E** measure student performance

IALS 75 AQ4 E; IB E-2, 3, 5, 6-8

UC, AD, ET, etc. represent SEPUP **assessment variables** (UC = Understanding concepts; AD = analyzing data; ET = Using evidence and tradeoffs; DI = Designing and conducting investigations; GI = Group interactions; CM = Communication scientific information). The above citation means that analysis question 4 of the activity can be used to measure student performance on the ET variable, and assessment item bank E, questions 2, 3, 5, 6-8 can also be used for this purpose.

For more information, consult the Teacher's Guides.

GRADE 6

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SA1 Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.			
The student demonstrates an understanding of the processes of science by: SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.	IAES 67, 72 IALS 5, 48 IAPS 51, 65 TR II: Science Skills Sheet 5	(67) Proc: DI (72) Proc: DI, Quick check [IB] A: 12-14 (5) Q7: DI, SI (48) Proc: DI, Q4: UC [IB] A: 14-19 (51) Q4: DI, SI, Q5: ET (65) Proc: DI [IB] A: 7-12	
The student demonstrates an understanding of the processes of science by: SA1.2 collaborating to design and conduct simple repeatable investigations.	IAES 16, 67 IALS 86, 109 IAPS 28, 65	(16) Proc: DI, Q3: RE (67) Proc: DI [IB] A: 1 (86) Q1: CS (109) Proc: DI, SI [IB] A: 1-3 [IB] G: 24-25 (28) Q3: ET (65) Proc: DI [IB] A: 16, 17	
SA2 Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review.			
The student demonstrates an understanding of the attitudes and approaches to scientific inquiry by: SA2.1 identifying and differentiating fact from opinion.	IAES 2, 36 IALS 53, 91 IAPS 26, 31	(2) Q3: RE (53) Q2: RE	
SA3 Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and that local applications provide opportunity for understanding scientific concepts and global issues			
The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by: SA3.1 gathering data to build a knowledge base that contributes to the development of questions about the local environment (e.g., moose browsing, trail usage, river erosion).	IALS 72, 73, 79 Also local issue	(72) Q6: ET (73) Proc: UC, CS (79) Q2: SI	
SB1 Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.			

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
The student demonstrates understanding of the structure and properties of matter by: SB1.1 using models to represent matter as it changes from one state to another.	IAPS 36, 38, 39	(36) Q8: UC (38) Proc: DI, Q1-3: AD (39) Proc: DI, Q7: SI [IB] B: 7	
SB2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.			
The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by: SB2.1 recognizing that energy can exist in many forms (i.e., heat, light, chemical, electrical, mechanical).	IAPS 58, 66, 67	(58) Q2: UC (66) Proc: DI (67) Q5: AD, Quick check [IB] D: 4, 5, 8	
SB3 Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.			
The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by: SB3.1 recognizing that most substances can exist as a solid, liquid, or gas depending on temperature.	IAPS 36, 38, 39	(36) Q8: UC (38) Proc: DI, Q1-3: AD (39) Proc: DI, Q7: SI [IB] B: 7	
SB4 Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.			
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.2 stating that every object exerts gravitational force on every other object.	IAES 82, 95, 96	(82) Q3: AD (95) Q4: AD (96) Quick check [IB] G: 10	
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.3 making waves move through a variety of media.	IAPS Unit F (in development)		
SC1 Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.			
The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by: SC1.1 recognizing sexual and asexual reproduction.	IALS 57, 63, 65	(63) Q1: UC [IB] D: 3, 4, 26 (65) Q8: UC, Quick check	
The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by: SC1.2 recognizing that species survive by adapting to changes in their environment.	IALS 83, 95, 96	(83) Proc: DI, CS, Quick check [IB] E: 29-33 (95) Q4: AD [IB] F: 4, 7, 10-13	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SC2 Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.			
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.1 using a <u>dichotomous key to classify</u> animals and plants into groups using external or internal features.	IALS 44, 78	(78) Quick check	
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.2 identifying basic behaviors (e.g., migration, communication, hibernation) used by organisms to meet the requirements of life.	IALS 74, 83, 86	(74) Q3: SI, CS (83) Proc: DI, CS, Q3:DI, Quick Check (86) Q1: CS	
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.3 describing the levels of organization within a human body (i.e., cells, tissues, organs, systems).	IALS 15, 16, 18	(15) Quick check, Q3: UC (16) Q6: UC, Q7: UC, Quick check (18) Q5b: SI [IB] B: 13	
SC3 Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.			
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.1 recognizing that organisms can cause physical and chemical changes (e.g., digestion, growth, respiration, photosynthesis) to matter and recognizing the importance of energy transfer in these changes.	IALS 15, 78, 81	(15) Q3: UC (78) Quick check (81) Proc: UC	
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.2 organizing a food web using familiar plants and animals.	IALS 78, 79, 80	(78) Quick check (79) Q2: SI [IB] E: 14, 15, 17	
SD1 Students develop an understanding of Earth's geochemical cycles.			
The student demonstrates an understanding of geochemical cycles by: SD1.1 exploring the rock cycle and its relationship to igneous, metamorphic, and sedimentary rocks.	IAES 19, 20, 22	(19) Quick check (22) Q7: UC [IB] B: 5, 6, 11	
The student demonstrates an understanding of geochemical cycles by: SD1.2 identifying the physical properties of water within the stages of the water cycle.	IAES 60, 62	(60) Quick check 62) Q4: SI	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SD2 Students develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth.			
The student demonstrates an understanding of the forces that shape Earth by: SD2.1 describing the formation and composition (i.e., sand, silt, clay, organics) of soils.	IAES 3, 4, 5	(4) Quick check (5) Q5: UC	
The student demonstrates an understanding of the forces that shape Earth by: SD2.2 identifying and describing its layers (i.e., crust, mantle, core).	IAES 38	(38) Q5: UC Quick check [IB] D: 6, 7, 11	
The student demonstrates an understanding of the forces that shape Earth by: SD2.3 describing how the surface can change rapidly as a result of geological activities (i.e., earthquakes, tsunamis, volcanoes, floods, landslides, avalanches).	IAES 30, 47, 48	(30) Quick check (47) Quick check (48) Q4: UC [IB] D: 10, 12	
SD3 Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.			
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.1 connecting the water cycle to weather phenomena.	IAES 57, 58, 62	(57) Quick check (58) Quick check [IB] E: 7, 10, 12-13 (62) Q4: SI	
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.2 identifying that energy transfer is affected by surface conditions (e.g., snow cover, asphalt, vegetation) and that this affects weather.	Not covered		
SD4 Students develop an understanding of the theories regarding the evolution of the universe.			
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by: SD4.1 contrasting characteristics of planets and stars. (i.e., light reflecting, light emitting, orbiting, orbited, composition.)	IAES 89, 91, 92	(89) Proc: RE (91) Q4: UC [IB] G: 2, 11	
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by: SD4.2 defining a light year	NC		
SE1 Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.			
The student demonstrates understanding	IAES 35, 49	(35) Proc: CS, Q1: ET	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
of how to integrate scientific knowledge and technology to address problems by: SE1.1 recognizing that technology cannot always provide successful solutions for problems or fulfill every human need.	IALS 53, 87 IAPS 29, 52	(49) Q2: ET (53) Q2: RE, Q3: ET (87) Q1: ET (29) Proc: CS, Q1: ET (52) Proc: CS, Q1: ET	
SE2 Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.			
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.1 identifying and designing a solution to a problem.	IAES 11, 35 IALS 70, 88 IAPS 29, 72	(11) Q2: RE, ET (35) Q1: ET (70) Q2: RE (88) Proc: SI, Q2: AD, Q3: ET (29) Q1: ET (72) Q1: ET	
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.2 comparing the student's work to the work of peers in order to identify multiple paths that can be used to investigate a question or problem.	IAES 16, 67 IALS 86, 109 IAPS 28, 65	(16) Proc: DI, Q3: RE (67) Proc: DI [IB] A: 1 (86) Q1: CS (109) Proc: DI, SI [IB] A: 1-3 [IB] G: 24-25 (28) Q3: ET (65) Proc: DI [IB] A: 16, 17	
SE3 Students develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.			
The student demonstrates an understanding of how scientific discoveries and technological innovations affect our lives and society by: SE3.1 describing the various effects of an innovation on a <u>global level</u> .	IAES 87, 94 IALS 25, 71 IAPS 19, 29	(71) Q2: ET, CS (19) Proc: OD (29) Q1: ET, Proc: CS	
SF1 Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.			
The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by: SF1.1-SF3.1 telling a local or traditional story that explains a natural event (e.g., animal adaptation, weather, rapid changes to Earth's surface) and relating it to a scientific explanation. * Cross referenced with SA3.1	IAES 8, 30 IALS 72, 94,	(30) Quick check (72) Q6: ET (94) Quick check, Q3: UC	
SF2 Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.			
SF3 Students develop an understanding of the importance of recording and validating cultural knowledge.			

GRADE 7

AK SCIENCE STANDARD	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SA1 Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.			
The student demonstrates an understanding of the processes of science by: SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.	IAES 67, 72 IALS 5, 48 IAPS 51, 65 TR II: Science Skills Sheet 5	(67) Proc: DI (72) Proc: DI, Quick check [IB] A: 12-14 (5) Q7: DI, SI (48) Proc: DI, Q4: UC [IB] A: 14-19 (51) Q4: DI, SI, Q5: ET (65) Proc: DI [IB] A: 7-12	
The student demonstrates an understanding of the processes of science by: SA1.2 collaborating to design and conduct simple repeatable investigation, in order to record, analyze (i.e., range, mean, median, mode), interpret data, and present findings.	IAES 55, 67 IALS 8, 14 IAPS 10, 74	(55) Proc: DI, Quick check (67) Proc: DI (8) Proc: DI, OD, Quick check (14) Proc: DI (10) Q1: AD, Proc: DI (74) Proc: DI	
SA2 Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review.			
The student demonstrates an understanding of the attitudes and approaches to scientific inquiry by: SA2.1 identifying and evaluating the sources used to support scientific statements.	IAES 23, 70 IALS 9, 94 IAPS 52, 72	(23) Q5: ET (70) Q3: ET (9) Q3: RE, ET (94) Quick check, Q3: UC (52) Proc: CS, Q1: ET (72) Q1: ET	
SA3 Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and that local applications provide opportunity for understanding scientific concepts and global issues			
The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by: SA3.1 designing and conducting a simple investigation about the local environment.	IAES 6, 51 IALS 86 Also local issue	(6) Q3: AD (51) Proc: OD (86) Q1: CS	
SB1 Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.			
The student demonstrates understanding of the structure and properties of matter by: SB1.1 using physical properties (i.e., density, boiling point, freezing point, conductivity) to differentiate among and/or separate materials (i.e., elements,	IAPS 5, 10, 14	(5) Quick check (10) Q1: AD [IB] A: 7, 8	

	SEPUP	LAB-AIDS	
compounds, and mixtures).			
SB2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.			
The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by: SB.2.1 explaining that energy (i.e., heat, light, chemical, electrical, mechanical) can change form.	IAPS 58, 66, 67	(58) Q2: UC (66) Proc DI (67) Q5: AD, Quick check [IB] D: 4, 5, 8	
SB3 Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.			
The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by: SB3.1 recognizing that most substances can exist as a solid, liquid, or gas depending on the motion of its particles.	IAPS 7, 9, 14	(7) Q1: AD (9) Quick check, Q3e: UC [IB] A: 7, 8	
SB4 Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.			
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.1 illustrating that unbalanced forces will cause an object to accelerate.	IAPS 75, 78, 81	(75) Q2: UC (80) Quick check, Q2: UC [IB] E: 20	
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.2 recognizing that electric currents and magnets can exert a force on each other	Not covered		LA 211 LA 213
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.3 describing the characteristics of a wave (i.e., amplitude, wavelength, and frequency).	Not covered		LA 211 LA 213
SC1 Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.			
The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by: SC1.1 comparing and contrasting sexual and asexual reproduction.	IALS 57, 63, 65	(63) Q1: UC (65) Q8: UC, Quick check [IB] D: 3, 4, 26	
The student demonstrates an understanding of how science explains	IALS 57, 62, 63,	(62) Proc: AD, Q3a: UC, Quick check	

	SEPUP		LAB-AIDS
changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by: SC1.2 describing possible outcomes of mutations (i.e., no effect, damage, benefit).		(63) Q1: UC	
SC2 Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.			
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.1 describing the basic structure and function of plant and animal cells.	IALS 16, 38, 42	(16) Q6: UC, Q7: UC Quick check (42) Quick check	
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.2 identifying the seven levels of classification of organisms.	IALS 44, 75, 76	[IB] E: 41, 42	
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.3 identifying and describing the functions of human organs (i.e., heart, lungs, brain).	IALS 12, 15, 18	(12) Quick check (18) Q5: SI [IB] B: 21, 22, 43	
SC3 Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.			
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.1 recognizing and explaining that organisms can cause physical and chemical changes (e.g., digestion, growth, respiration, photosynthesis) to matter and recognizing and explaining the importance of energy transfer in these changes.	IALS 12, 17, 18	(12) Quick check (17) Proc: OD (18) Q5: SI	
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.2 classifying organisms within a food web as producers, consumers, or decomposers.	IALS 78, 80, 81	(78) Quick check (81) Proc: UC [IB] E: 14, 15, 17	
SD1 Students develop an understanding of Earth's geochemical cycles.			
The student demonstrates an understanding of geochemical cycles by: SD1.1 describing the rock cycle and its relationship to igneous, metamorphic, and sedimentary rocks.	IAES 20, 21, 22	(22) Q7: UC [IB] B: 5, 6, 11	

	SEPUP		LAB-AIDS
The student demonstrates an understanding of geochemical cycles by: SD1.2 explaining the water cycle's connection to changes in the Earth's surface.	IAES 28, 60, 62	[IB] B: 5, 6, 11 (60) Quick check (62) Q4: SI	
SD2 Students develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth.			
The student demonstrates an understanding of the forces that shape Earth by: SD2.1 identifying strategies (e.g., reforestation, dikes, wind breaks, off road activity guidelines) for minimizing erosion.	IAES 29, 31, 32	(29) Q2: UC	
The student demonstrates an understanding of the forces that shape Earth by: SD2.2 describing how the movement of the tectonic plates results in both slow changes (e.g., formation of mountains, ocean floors, and basins) and short –term events (e.g., volcanic eruptions, seismic waves, and earthquakes) on the surface.	IAES 45, 47, 48	(45) Quick check (47) Quick check (48) Q4: UC [IB] D: 2, 4	
SD3 Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.			
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.1 describing the weather using accepted meteorological terms (e.g., pressure systems, fronts, precipitation).	IAES 64, 66, 69	(66) Q2: UC (69) Proc: CS	
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.2 recognizing the relationship between phase changes (i.e., sublimation, condensation, evaporation) and energy transfer.	IAES 58, 60, 62	(58) Quick check (60) Quick check (62) Q4: SI	
SD4 Students develop an understanding of the theories regarding the evolution of the universe.			
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by: SD4.1 comparing and contrasting characteristics of planets and stars. (i.e., light reflecting, light emitting, orbiting, orbited, composition.)	IAES 86, 88	(88) Q2: UC, Quick check [IB] G: 3, 13, 14	
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by:	Not covered		

	SEPUP		LAB-AIDS
SD4.2 using light-years to describe distances between objects in the universe.			
SE1 Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.			
The student demonstrates understanding of how to integrate scientific knowledge and technology to address problems by: SE1.1 describing how public policy affects the student's life. (e.g., public waste disposal).	IAES 11, 35 IALS 70, 88 IAPS 29, 72	(11) Q2: RE, ET (35) Q1: ET (70) Q2: RE (88) Proc: SI, Q2: AD, Q3: ET (29) Q1: ET (72) Q1: ET	
SE2 Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.			
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.1 identifying, designing, testing, and revising solutions to a local problem.	Local issue		
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.2 comparing the student's work to the work of peers in order to identify multiple paths that can be used to investigate a question or problem.	IAES 35, 49 IALS 53, 87 IAPS 11, 29	(35) Q1: ET (49) Q2: ET (53) Q2: RE, Q3: ET (87) Q1: ET (11) Q1: ET (29) Q1: ET, Proc: CS	
SE3 Students develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.			
The student demonstrates an understanding of how scientific discoveries and technological innovations affect our lives and society by: SE3.1 recognizing the effects of a past scientific discovery, invention, or scientific breakthrough (e.g., DDT, internal combustion engine).	IAES 42, 87 IALS 37, 108 IAPS 16, 80	(37) Proc: UC, CS (108) Q3: ET, Quick check (16) Quick check (80) Q2: UC, Quick check	
SF1 Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.			
The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by: SF1.1-SF3.1 investigating the basis of local knowledge (e.g., describing and predicting weather) and sharing that information. (L) Cross referenced with SA3.1	Local issue		
SF2 Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.			
SF3 Students develop an understanding of the importance of recording and validating cultural knowledge.			

GRADE 8

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SA1 Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.			
The student demonstrates an understanding of the processes of science by: SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.	IAES 67, 72 IALS 5, 48 IAPS 51, 65 TR II: Science Skills Sheet 5	(67) Proc: DI (72) Proc: DI, Quick check (5) Q7: DI, SI (48) Proc: DI, Q4: UC (51) Q4: DI, SI, Q5: ET (65) Proc: DI	
The student demonstrates an understanding of the processes of science by: SA1.2 collaborating to design and conduct repeatable investigations, in order to record, analyze (i.e., range, mean, median, mode), interpret data, and present findings.	IAES 55, 67 IALS 8, 14 IAPS 10, 74	(55) Proc: DI, Quick check (67) Proc: DI (8) Proc: DI, OD, Quick check (14) Proc: DI (10) Q1: AD, Proc: DI (74) Proc: DI	
SA2 Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review.			
The student demonstrates an understanding of the attitudes and approaches to scientific inquiry by: SA2.1 recognizing and analyzing differing scientific explanations and models.	IAES 28, 43 IAPS 17, 36 IALS 18, 65	(17) Q6: UC (36) Q8: UC (18) Q5b: SI (65) Q8: UC, Quick check	
SA3 Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and that local applications provide opportunity for understanding scientific concepts and global issues			
The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by: SA3.1 conducting research to learn how the local environment is used by a variety of competing interests (e.g., competition for habitat/resources, tourism, oil and mining companies, hunting groups).	IAES 11, 35 IALS 87, 88 IAPS 29, 51 Also local issue	(11) Q2: RE, ET (35) Q1: ET (88) Proc: SI, Q2: AD, Q3: ET (29) Q1: ET (51) Q4: DI, SI, Q5: ET	
SB1 Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.			
The student demonstrates understanding of the structure and properties of matter by: SB1.1 using physical and chemical properties (i.e., density, boiling point, freezing point, conductivity, flammability) to differentiate among materials (i.e., elements, compounds, and mixtures).	IAPS 5, 10, 14	(5) Quick check (10) Q1: AD	
SB2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.			

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by: SB2.1 identifying the initial source and resulting change in forms of energy in common phenomena (e.g., sun to tree to wood to stove to cabin heat).	IAPS 58, 66, 67	(58) Q2: UC (66) Proc DI (67) Q5: AD, Quick check [IB] D: 4, 5, 8	
SB3 Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.			
The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by: SB3.1 exploring changes of state with increase or decrease of particle speed associated with heat transfer.	IAPS 7, 9, 14	(7) Q1: AD (9) Quick check, Q3e: UC [IB] A: 7, 8	
The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by: SB3.2 exploring through a variety of models (e.g., gumdrops and toothpicks) how atoms may bond together into well defined molecules or bond together in large arrays.	IAPS 17, 20, 36	(17) Q6: UC [IB] A: 3, 6 [IB] B: 7-13	
SB4 Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.			
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.1 demonstrating (L) and explaining circular motion.	IAES 79	(79) Quick check	
The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by: SB4.2 describing the interactions between charges.	IAPS 49, 50	(50) Q5: UC	
SC1 Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.			
The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection and biological evolution by: SC1.1 describing the role of genes in sexual reproduction (i.e., traits of the offspring).	IALS 59, 61, 65	(59) Proc: OD, Q7: UC (65) Q8: UC, Quick check	
SC2 Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.			
The student demonstrates an	IALS 44, 75, 76	[IB] E: 41, 42	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.1 placing vertebrates into correct classes of taxonomy based on external, observable features.			
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.2 explaining that most organisms utilize inherited and learned behaviors to meet the basic requirements of life.	IALS 76, 79, 83 (optional extension in 76)	(79) Q2: SI (83) Proc: DI, Q3: DI	
The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by: SC2.3 describing the functions and interdependence of human body systems (i.e., circulatory, respiratory, nervous).	IALS 5, 18, 24	(5) Q7: DI, SI Quick check (18) Q5b: SI (24) Q2: UC	
SC3 Students develop an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy.			
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.1 stating that energy flows and that matter cycles but is conserved within an ecosystem.	IALS 78, 79, 81	(78) Quick check (79) Q2: SI (81) Proc: UC [IB] E: 14, 15, 17	
The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by: SC3.2 organizing a food web that shows the cycling of matter.	IALS 78, 79, 80	(78) Quick check (79) Q2: SI [IB] E: 14, 15, 17	
SD1 Students develop an understanding of Earth's geochemical cycles.			
The student demonstrates an understanding of geochemical cycles by: SD1.1 making connections between components of the locally observable geologic environment and the rock cycle.	IAES 20, 21, 22 Also local issue	(22) Q7: UC [IB] B: 5, 6, 11	
The student demonstrates an understanding of geochemical cycles by: SD1.2 applying knowledge of the water cycle to explain changes in the Earth's surface.	IAES 28, 60, 62	[IB] B: 5, 6, 11 (60) Quick check (62) Q4: SI	
SD2 Students develop an understanding of the origins, ongoing processes, and forces that shape the structure, composition, and physical history of the Earth.			
The student demonstrates an understanding of the forces that shape Earth by: SD2.1 interpreting topographical maps	IAES 25, 26	(25) Quick check	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
to identify features (i.e., rivers, lakes, mountains, valleys, islands, and tundra).			
The student demonstrates an understanding of the forces that shape Earth by: SD2.2 using models to show the relationship between convection currents within the mantle and the large-scale movement of the surface.	IAES 42, 45, 46	(45) Quick check	
SD3 Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.			
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.1 recognizing the relationship between the seasons and Earth's tilt relative to the sun and describing the day/night cycle as caused by the rotation of the Earth every 24 hrs.	IAES 73, 74, 76	(73) Quick check, Q1: UC (76) Q4: AD [IB] F: 2-10	
The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by: SD3.2 recognizing types of energy transfer (convection, conduction, and radiation) and how they affect weather.	IAES 57, 58, 62	(57) Quick check (58) Quick check [IB] E: 7, 10, 12-13 (62) Q4: SI	
SD4 Students develop an understanding of the theories regarding the evolution of the universe.			
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by: SD4.1 creating models of the solar system illustrating size, location/position, composition, moons/rings, and conditions.	IAES 89, 91, 92	(89) Proc: RE (91) Q4: UC [IB] G: 2, 11	
The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by: SD4.2 comparing the brightness of a star to its distance and size.	Not covered		
Skills: Describes how the apparent brightness of a star depends on its size and distance from Earth	Not covered		
Skills: Uses light years as a measure of distance	Not covered		
SE1 Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.			
The student demonstrates understanding of how to integrate scientific knowledge and technology to address problems by:	IAES 11, 35 IALS 70, 88	(11) Q2: RE, ET (35) Q1: ET (70) Q2: RE	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
SE1.1 describing how public policy affects their lives and participating diplomatically in evidence-based discussions relating to their community.	IAPS 29, 72 Also local issue	(88) Proc: SI, Q2: AD, Q3: ET (29) Q1: ET (72) Q1: ET	
SE2 Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.			
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.1 identifying, designing, testing, and revising solutions to a local problem.	Local issue		
The student demonstrates an understanding that solving problems involves different ways of thinking by: SE2.2 comparing the student's work to the work of peers in order to identify multiple paths that can be used to investigate and evaluate potential solutions to a question or problem.	IAES 35, 49 IALS 53, 87 IAPS 11, 29	(35) Q1: ET (49) Q2: ET (53) Q2: RE, Q3: ET (87) Q1: ET (11) Q1: ET (29) Q1: ET, Proc: CS	
SE3 Students develop an understanding of how scientific discoveries and technological innovations affect and are affected by our lives and cultures.			
The student demonstrates an understanding of how scientific discoveries and technological innovations affect our lives and society by: SE3.1 predicting the possible effects of a recent scientific discovery, invention, or scientific breakthrough.	IAES 42, 87 IALS 37, 108 IAPS 16, 80	(37) Proc: UC, CS (108) Q3: ET, Quick check (16) Quick check (80) Q2: UC, Quick check	
SF1 Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.			
The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by: SF1.1-SF3.1 describing how local knowledge, culture, and the technologies of various activities (e.g., hunting, fishing, subsistence) influence the development of scientific knowledge. (L) Cross referenced with SA3.1, grade 8	Local issue		
SF2 Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.			
SF3 Students develop an understanding of the importance of recording and validating cultural knowledge.			
SG2 Students develop an understanding that the advancement of scientific knowledge embraces innovation and requires empirical evidence, repeatable investigations, logical arguments, and critical review in striving for the best possible explanations of the natural world.			
The student demonstrates an understanding of the bases of the advancement of scientific knowledge by: SG2.1 describing how repeating experiments improves the likelihood of accurate results.	IAES 67, 72 IALS 5, 8	(67) Proc: DI (72) Proc: DI, Quick check (5) Q7: DI, SI (8) Proc: DI, OD Quick check [IB] A: 11, 14-19 (40) Q1: ET	

AK SCIENCE STANDARDS	SEPUP		LAB-AIDS KITS
	LOCATION	ASSESSMENT	
	IAPS 40, 82	(82) Q3: RE	
SG3 Students develop an understanding that scientific knowledge is ongoing and subject to change as new evidence becomes available through experimental and/or observational confirmation(s).			
The student demonstrates an understanding that scientific knowledge is ongoing and subject to change by: SG3.1 revising a personal idea when presented with experimental/observational data inconsistent with that personal idea (e.g., the rates of falling bodies of different masses).	IAES 42, 73 IALS 53, 97 IAPS 44, 64	(73) Quick check, Q1: UC (53) Q2: RE, Q3: ET (97) Q2: SI (44) Q5: UC (64) Q3: ET, Q4: AD	