LAB-AIDS CORRELATIONS FOR THE 2009 WASHINGTON MIDDLE LEVEL (6-8) 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 Washington Science Standards. It is not an exhaustive list; other locations may exist that are not listed here.

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Note: *Standards in italics* may be assessed by the state-testing program.

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

- *IAPS = 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 programs for middle school

Key to LAB-AIDS Kits

These LAB-AIDS kits and modules address one or more science standards not addressed in the core programs, as noted. This listing is primarily for the use of non-SEPUP customers, as most state standards are addressed using core SEPUP programs; however, in a few cases, SEPUP customers may wish to supplement the SEPUP program with one or more LAB-AIDS kits.

7	HUMAN GENETICS EXPERIMENT
12-01	MAKE-A-GAS OXYGEN GAS STUDY
12-02	MAKE-A-GAS HYDROGEN GAS STUDY
12-03	MAKE-A-GAS CARBON DIOXIDE GAS STUDY
32	BIOLOGY & CHEMISTRY OF SOIL EXPERIMENT
35	DECOMPOSITION
38	MODELING AND COMPARING FOSSIL FUEL & BIOFUEL COMBUSTION
39S	BIOFUELS: INVESTIGATING ETHANOL PRODUCTION & COMBUSTION
70	GENETICS CONCEPTS
82	PROPERTIES OF ACIDS AND BASES EXPERIMENT
83	IDENTIFICATION OF SUBSTANCES
84	IDENTIFICATION OF CHEMICAL REACTIONS
85	DETERMINATION OF CHEMICAL FORMULAS
86S	INVESTIGATING THE CHEMISTRY OF CORROSION
87	CHANGING OF EQUILIBRIUM LE CHATERIER'S PRINCIPLE
88	INTRODUCTION TO OXIDATION & REDUCTION
91	NATURAL SELECTION EXPERIMENT
100	OB-SCERTAINER - A BETTER BLACK BOX
100-A	SCIENTIFIC METHOD PROBLEM.SOLVING
110R	FAMILIES OF ELEMENTS EXPERIMENT
111	FLAME TESTS AND EMISSION SPECTROSCOPY
112	HYDROLYSIS OF SALTS EXPERIMENT
113	SOLID ALCOHOL & ESTERIFICATION
120	DETERMINING DIMENSIONS OF A MOLECULE
121	SIZE OF MOLECULES EXPERIMENT
124-1	INDIVIDUAL ELEMENTARY MOLECULAR MODEL SET
125	INDIVIDUAL BASIC STUDENT MOLECULAR MODEL SET
125-1	INDIVIDUALIZED ORGANIC STUDENT MOLECULAR MODEL
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
206S	MEASURING ENERGY EFFICIENCY
318S	SOIL NUTRIENTS AND FERTILIZERS
403S	CLASSIFYING SEDIMENTARY, METAMORPHIC & IGNEOUS ROCK

404S THE ROCK CYCLE ACTVITY
430 ROCK CYCLE: AN INTERACTIVE EXPLORATION THROUGH GEOLOGIC TIME
436S MODELING CONVECTION CURRENTS
438S PLATE TECTONICS: PLATE BOUNDARY COMPUTER SIMULATION
440S COPPER MINING AND EXTRACTION
442 MODELING STREAM EROSION AND DEPOSITION
443S CORRELATING SEDIMENTARY STRATA
445S PLATE TECTONICS: EXAMINING EVIDENCE FOR CONTINENTAL DRIFT
501 DIAMOND CRYSTAL MOLECULAR MODEL
502 GRAPHITE CRYSTAL MOLECULAR MODEL
505 MOLECULES OF LIFE
510 CHEMESTRY OF CARBOHYDRATES MODEL
511 CHEMISTRY OF FATS MODEL
512 CHEMISTRY OF PROTEINS MODEL
513 NUCLEIC ACID MOLECULAR STRUCTURE
520 MOLECULES OF METABOLISM: DIGESTION & RESPIRATION
530A 'DESIGN-YOUR-OWN' CUSTOM MOLECULAR MODEL
550S CLASSIFYING ANIMALS
603S INVESTIGATING AND APPLYING GENETICS
701 CHEMILUMINESCENCE DEMONSTRATION
701A CHEMILUMINESCENCE STUDENT
706S MAKING AND MODELING POLYMERS
P120 COLOR AND SPECTRUM
P210 FORCE AND MOTION
P610 DENSITY: UNDERSTANDING THROUGH EXPERIMENTAL DESIGN

NEW KITS FOR 2009

[31] PHOTOSYNTHESIS, PLANTS, AND FOOD
[211] WAVES, SOUND AND LIGHT
[212] ENERGY TRANSFER: MOTION OF A PENDULUM
[213] ELECTRIC MOTORS AND GENERATORS
[215] ELECTRICAL CONDUCTIVITY AND CIRCUITRY
[216] MAGNETIC FIELDS AND ELECTROMAGNETS
[905] SELECTIVE BREEDING

Recommended Scope and Sequence

If an integrated approach is desired (as recommended by the WA EALR):

Grade	Recommended Units
6	Body Works, Studying Soils Scientifically, Energy, Rocks and Minerals, Weather and Atmosphere
7	Force and Motion, Studying People Scientifically, Ecology, Earth in Space, Erosion and Deposition, Cell Biology and Disease
8	Genetics, Evolution, Plate Tectonics, Exploring the Solar System, Studying Materials Scientifically, The Chemistry of Materials

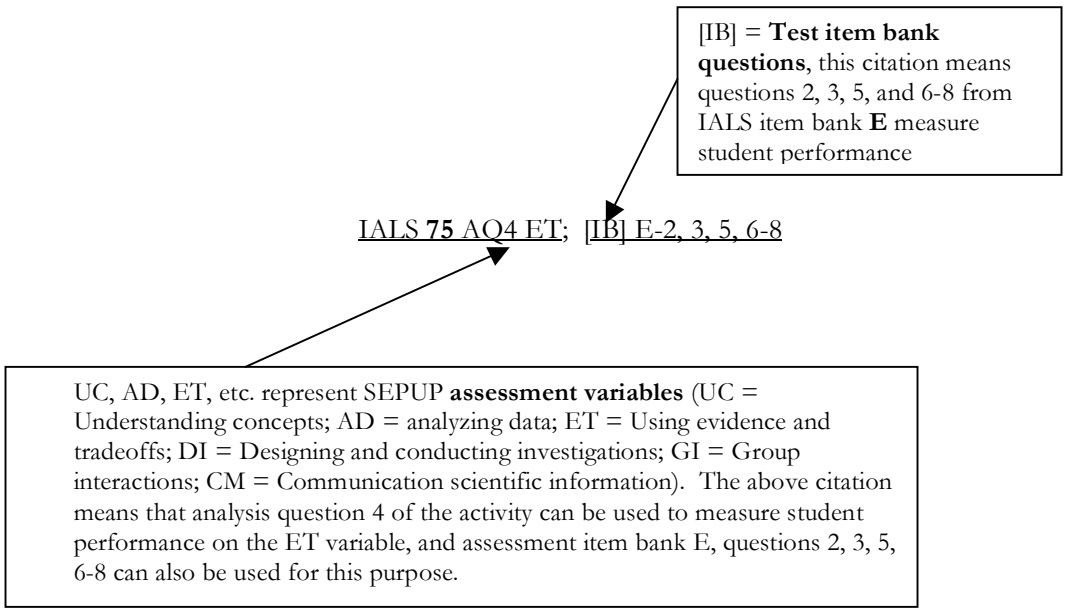
If a discipline- or subject-based approach is desired:

Grade	Recommended Units
6	IAES (Issues and Earth Science)
7	IALS (Issues and Life Science)
8	IAPS (Issues and Physical Science)

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



For more information, consult the Teacher's Guides.

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
6-8 SYSA	Any system may be thought of as containing subsystems and as being a subsystem of larger systems.	Given a system (e.g., ecosystems, body systems, water cycle, plate tectonics), identify subsystems and a larger encompassing system.	IAES 42, 62 IAPS 15, 16 IALS 12	**42** [IB] D4, 6, 8-10, 16 **62** AQ4 SI; [IB] E3, 9, 11, 15 **15** AQ5 UC [IB] B7-11 **16** [IB] B7-11 **12** [IB] B12, B15	EI-2, FV-2, SP-2, WD-2
6-8 SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and purpose of the investigation.	Illustrate how the boundaries of a system can be drawn in different ways, depending on the purpose of the study (e.g., to study insect populations an ecosystem might be bordered by the perimeter of a lawn; to study heat flow a physical system could be defined as the walls of a house).	IALS 18, 74, 84 IAPS 71	**18** [IB] B9, B17-18, B29 **74** AQ3 CM, [IB] E6, E18 **75** [IB] E4, E36 **71** AQ1 UC	EI-2, FV-2, SP-2, WD-2
6-8 SYSC	The output of one system can become the input of another system.	Give an example of how output of matter or energy from system can become input for another system (e.g., household waste can become the input to a landfill system and/or recycling system).	IAPS 58 IALS 80	**58** AQ2 UC, [IB] D4-5, D8 **80** [IB] E2-3, E7-10, E15, E16, E25	EI-2, FV-2, SP-2, WD-2
6-8 SYSD	In an open system, matter flows into and out of the system; in a closed system, matter is cycled within the system.	Give examples to illustrate a closed system (e.g., the cooling system of a refrigerator) and an open system (e.g., the water system of a city).	IALS 18, 24 IAES 22, 62 IAPS 13	**18** [IB] B9, B17-18, B29 **24** AQ 2 UC, [IB] B22, B24 **22** AQ7 UC; [IB] B4-6, B11 **62** AQ4 SI; [IB] E3, 9, 11, 15 **13** Proc RE, GI; [IB] B2-3	
6-8 SYSE	If the input of matter or energy to a system is the same as the output, then the amount in the system won't change; but if the	Measure the flow of matter into and out of an open system and predict how the system is likely to change over time (e.g., a lake, water vapor in Earth's atmosphere locally	IAES 61, 62, 65	**62** AQ4 SI; [IB] E3, 9, 11, 15 **65** AQ8 UC	

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
	input is more or less than the output, then the amount will change.	and globally).*b			
6-8 SYSF	The natural and designed world is complex; it is too large and complicated to investigate and comprehend all at once. Scientists and students learn to define small portions for the convenience of investigation. The units of investigation can be referred to as ―systems.	Given a complex societal issue with strong science and technology components (e.g., overfishing, global warming) describe the issue from a systems point of view, highlighting open and/or closed systems, system boundaries, subsystems, and how changes in one part of the system are likely to influence other parts of the system	IAES 35, 36, 70 IAPS 29, 52, 72	**35** AQ1 ET; [IB] C13 **36** AQ2 ET **70** AQ3 ET, [IB] E16 **29** AQ1 ET; [IB] B22-23 **52** AQ1 ET **72** AQ1 ET, [IB] D17	
6-8 INQA	Scientific inquiry involves asking and answering questions about the world.	Generate a question that can be answered through scientific investigation. This may involve refining and refocusing a broad and ill-defined question, using scientific knowledge to modify the question, or generating new questions based on observations.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB] C24	

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
6-8 INQB	Different kinds of questions suggest different kinds of scientific investigations.	Plan and conduct a scientific investigation (e.g., field study, systematic observation, or controlled experiment) appropriate for the question being asked. Work collaboratively with other students to carry out the plan.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB] C24	100, P610, [215]
6-8 INQC	Collecting, analyzing and displaying data are essential aspects of all investigations.	Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate and informative. Recognize and interpret patterns as well as variations from previously learned or observed patterns in data, diagrams, symbols, and words. Use statistical procedures (e.g., mean, median, and mode) to analyze data and make inferences about relationships. *b	IAPS 12, 31, 54, 73… IAES 12, 24, 39, 50… IALS 22, 30, 54, 72…	**12** AQ5 ET; [IB] B1 **54** Proc DI; [IB] D1 **39** [IB] D5, D13 **50** [IB] E1 **22** Act GI, [IB] B4, B10-11, B20 **30** AQ 1a DCI, [IB] C1, C30-31 **54** Act DCI, [IB] D2 **72** AQ5 UC, [IB] E2, 3, E5, E13-14	
6-8 INQD	For an experiment to be valid, all controlled variables must be kept the same whenever	Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables. Determine	IAPS 18, 37, 54, 74… IAES 16, 28, 55, 72… IALS 14, 30,	**18** AQ3 AD, [IB] B19-21 **37** AQ2 AD; [IB] C1 **54** Proc DI; [IB]	

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			Location	Assessment	
	possible, except for the manipulated (independent) variable being tested, and the responding (dependent) variable being measured and recorded. If a variable cannot be controlled, it must be reported and accounted for.	which variables should be kept the same (controlled), which (independent) variable should be systematically manipulated and which (responding) variable is to be measured and recorded. Report any variables not controlled and explain how they might affect results.	55, 72, 90…	D1 **74** Proc DI; [IB] E1-2, 5-6 **16** AQ3 RE; [IB] B7-10 **28** Proc GI; [IB] C2, C7 **55** Proc DI **72** [IB] F17 **14** [IB] B16 **30** AQ 1a DCI, [IB] C1, C30-31 **55** AQ2 UC **72** AQ5 UC, [IB] E2, 3, E5, E13-14	
6-8 INQE	Models are used to represent objects, events, systems, and processes. Models can be used to make predictions and better understand phenomena, but they have limitations.	Create a model or simulation to represent the behavior of objects, events, systems, or processes. Use the model to make predictions and point out how the model is similar to or different from the actual phenomenon.	IAPS 17, 36, 70, 86 IAES 21, 28, 31, 43, 62, 77 IALS 18, 30, 40, 51, 58, 69	**43** Proc GI **62** AQ4 SI; [IB] E3, 9, 11, 15 **77** [IB] F10-12 **18** [IB] B9, B17-18, B29 **40** AQ3 DCI, [IB] C15, C18	
6-8 INQF	It is important to distinguish between the results of a particular investigation and general conclusions drawn from those results.	Generate a scientific conclusion from an investigation, using inferential logic, and clearly distinguish between results (i.e., evidence) and conclusions (i.e., explanation). Describe the differences between an objective summary of the findings and an inference made from the findings.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4	EI-2, FV-2, SP-2, WD-2

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
				51 AQ4 DI, DI; AQ5 ET, [IB] C24	
6-8 INQG	Scientific reports should enable another investigator to repeat the study to check the results.	Report on investigations by clearly describing what was done, as well as results and conclusions. Reports should explain relationships between two or more variables, make predictions, account for anomalous data, and identify limitations of the investigation.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB] C24	EI-2, FV-2, SP-2, WD-2
6-8 INQH	Science advances through legitimate skepticism. Asking questions and querying other scientists' explanations are part of scientific inquiry.	Recognize flaws in scientific claims, such as uncontrolled variables, overgeneralizations from limited data, and experimenter bias. Listen actively and respectfully to research reports by other students. Criticize their presentations respectfully, using logical argument and evidence. Engage in reflection and self-evaluation.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB]	EI-2, FV-2, SP-2, WD-2

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
				C24	
6-8 INQI	Scientists and engineers have ethical codes governing animals experiments, research in natural ecosystems, and studies involving human subjects.	Demonstrate ethical concerns and precautions in response to scenarios of scientific investigations involving animal experiments, research in natural ecosystems, and studies that involve human subjects.	IALS 74, 83	**74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI	
6-8 APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	Describe how a technology has changed over time in response to societal challenges (e.g., population increase created a need for mass communication).	IAES 36, 49, 70, 87, 98 IALS 37, 52, 71, 107 IAPS 22, 29, 72, 85	**36** AQ2 ET **49** AQ2 ET **70** AQ3 ET, [IB] E16 **98** AQ2 ET, CS; [IB] G16, G20 **52** AQ4 UC **71** AQ1 GI, AQ2 ET **22** Proc OD **29** AQ1 ET; [IB] B22-23 **72** AQ1 ET, [IB] D17 **85** Proc CS; [IB] E16	
6-8 APPB	Scientists and technological designers (including engineers) have different goals. Scientists answer questions about the natural world; technological designers solve problems that help people reach their goals.	Give examples to illustrate how science has helped solve technological problems (e.g., how the science of biology has helped sustain fisheries) and how technology has aided scientific discoveries (e.g., telescopes used to discover the nature of planets).	IAES 36, 49, 70, 98 IALS 52, 71, 107 IAPS 22, 29, 72, 85	**36** AQ2 ET **49** AQ2 ET **70** AQ3 ET, [IB] E16 **98** AQ2 ET, CS; [IB] G16, G20 **52** AQ4 UC **71** AQ1 GI, AQ2 ET **22** Proc OD **29** AQ1 ET; [IB] B22-23 **72** AQ1 ET, [IB] D17 **85** Proc CS; [IB] E16	

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
6-8 APPC	Science and technology are interdependent: Science drives technology by demanding better instruments and suggesting ideas for new designs. Technology drives science by providing instruments and research methods.	Give examples to illustrate how scientists have helped solve technological problems (e.g., how the science of biology has helped sustain fisheries) and how engineers have aided science (e.g., by designing telescopes to discover distant planets).	IAES 36, 49, 70, 87, 98 IALS 37, 52, 71, 107 IAPS 22, 29, 72, 85	**36** AQ2 ET **49** AQ2 ET **70** AQ3 ET, [IB] E16 **98** AQ2 ET, CS; [IB] G16, G20 **52** AQ4 UC **71** AQ1 GI, AQ2 ET **22** Proc OD **29** AQ1 ET; [IB] B22-23 **72** AQ1 ET, [IB] D17 **85** Proc CS; [IB] E16	
6-8 APPD	The process of technological design begins by defining a problem, followed by research to better understand the problem and brainstorming potential solutions.	Formulate a problem that can be solved by the technological design process and identify criteria for success. Research how others have solved the problem. Brainstorm different solutions.	IAES 36, 49, 70, 87, 98 IALS 37, 52, 71, 107 IAPS 22, 29, 72, 85	**36** AQ2 ET **49** AQ2 ET **70** AQ3 ET, [IB] E16 **98** AQ2 ET, CS; [IB] G16, G20 **52** AQ4 UC **71** AQ1 GI, AQ2 ET **22** Proc OD **29** AQ1 ET; [IB] B22-23 **72** AQ1 ET, [IB] D17 **85** Proc CS; [IB] E16	
6-8 APPE	Scientists and engineers often work together to generate creative solutions to problems and decide which ones are most promising.	Collaborate with other students to generate creative solutions, and apply accepted methods for making trade-offs in choosing the best solution.	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16	EI-2, FV-2, SP-2, WD-2

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
				10 AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB] C24	
6-8 APPF	Solutions must be tested to determine whether or not they will solve the problem. The results are used to modify the design, and findings are communicated persuasively.	Test the best solution by building a model or other representation, and using it with the intended audience. Redesign of necessary. Present the recommend design using models or drawings and an engaging presentation. *b	IAES 16, 31, 77, 80 IALS 7, 9, 14, 74, 83 IAPS 3, 10, 38, 39, 51	**16** AQ3 RE; [IB] B7-10 **31** [IB] C12 **77** [IB] F10-12 **80** [IB] F4-9 **7** AQ5 DCI & CM, [IB] A4-6 **9** Act DCI & GI, [IB] A4-6, A8-10, A15-16 **14** [IB] B16 **74** AQ3 CM, [IB] E6, E18 **83** AQ3 DCI **3** Proc DI; [IB] A16 **10** AQ1 AD, Proc DI; [IB] A10-12 **39** AQ7 SI; [IB] C3-4 **51** AQ4 DI, DI; AQ5 ET, [IB] C24	100-A, HC-2
6-8 APPG	The benefits of science and technology are not available to all the people in the world.	Contrast the benefits of science and technology enjoyed by people in industrialized and developing nations.	N/C		
6-8 APPH	People in all cultures have made and continue to make contributions to science and technology.	Describe scientific or technological contributions to society by people in various cultures.	IALS 1, 11, 31, 46, 47, 67, 70 IAES 2, 24, 35, 36, 51, 68, 77 IAPS 11, 13, 29, 53, 71, 73, 88	**1** [IB] A1-2 **11** AQ2 ET **31** [IB] C8 **2** AQ3 RE **35** AQ1 ET; [IB] C13 **36** AQ2 ET **51** Proc OD **11** AQ1 ET, [IB] A17 **13** Proc RE, GI; [IB] B2-3	

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
				29 AQ1 ET; [IB] B22-23	
6-8 PS1A	Average speed is defined as the distance traveled in a given period of time.	Measure the distance an object travels in a given interval of time, and calculate the object's speed: $S = d/t$. (e.g., a battery-powered toy car travels 20 feet in 5 seconds, so its speed is 4 feet per second).*a Illustrate the motion of an object, using a graph, or infer the motion of an object from a graph of the object's position vs. time or speed vs. time.*b	IAPS 74, 75	**74** Proc DI; [IB] E1-2, 5-6 **75** AQ2 UC, [IB] E2, 4-6, 7, 14	P210
6-8 PS1B	Friction is a force that acts to slow or stop the motion of objects.	Explain that frictional forces act to slow or stop the motion of objects.	IAPS 82, 83	**82** AQ3 RE; [IB] E3, 9, 12 **83** AQ6 AD, [IB] E3, 12	P210
6-8 PS1C	Unbalanced forces will cause changes in the speed or direction of an object's motion.	Determine whether forces are balanced or unbalanced. Determine whether forces on an object are balanced or unbalanced and justify with observational evidence. Given a description of forces on an object predict the object's motion. *c	IAPS 81	**81** AQ5 UC, [IB] E2, 3, E5, E13-14	P210
6-8 PS1D	The same unbalanced force will change the motion of an object with more mass more slowly than an object with less mass.	Given two different masses that receive the same unbalanced force, predict which will move more quickly.	IAPS 77, 78	**77** Proc DI **78** [IB] E2, 3, 8	P210
6-8 PS2A	Substances have characteristic properties, such as density, boiling point, and melting point, all of which are independent of	Use characteristic intrinsic properties such as density, a boiling point, and a melting point to identify an unknown substance.	IAPS 14, 18	**14** [IB] B4-6 **18** AQ3 AD, [IB] B19-21	100R, 111

	Content Standard	Performance Objective	Core SEPUP Program		LAB-AIDS KITS
			Location	Assessment	
	the amount of the sample.				
6-8 PS2B	*Mixtures* are combinations of substances whose molecules and properties are preserved. *Chemical compounds* are combinations of substances that have reacted chemically, and so have different molecular structures and different properties from the reacting substances.	Separate a mixture using differences in properties (e.g., solubility, size, magnetic attraction) of the substances used to make the mixture. Demonstrate that the properties of a compound are different from the properties of the reactants from which it was formed.	IAPS 3, 16	**3** Proc DI; [IB] A16 **16** [IB] B7-11	HM-2
6-8 PS2C	All matter is made of *atoms*. Matter made of only one type of atom is called an element.	Explain that all matter is made of atoms and give examples of examples of common elements – substances composed of just one type of atom.	IAPS 15, 16	**15** AQ5 UC [IB] B7-11 **16** [IB] B7-11	100R, 111
6-8 PS2D	Compounds are composed of two or more kinds of atoms, which are bound together in well defined molecules or arrays.	Demonstrate with s labeled diagram and explain the	IAPS 15, 16, 17	**15** AQ5 UC [IB] B7-11 **16** [IB] B7-11 **17** AQ6 UC	12-01, 12-02, 12-03, 38, 39S, 82, 83, 84, 85, 86S, 87, 88, 110R, 111, 112, 113, 124, 1215, 129, 130, 131, 132, 133, 440S, 501, 502, 505, 510, 511, 512, 513, 520, 530A, 701, 706S,
6-8 PS2E	Solids, liquids, and gases differ in the distances between individual molecules or atoms. In solids the structure is nearly rigid; in liquids,	Describe how solids, liquids, and gases behave when put into a container (e.g., a gas fills the entire volume of the container). Relate these properties to the freedom of movement of the particles in the three	IAPS 35	**35** AQ1 AD	

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	molecules move around one another; and in gases, molecules move almost independently and are mostly far apart.	states of matter.			
6-8 PS2F	When substances within a closed system interact the total mass of the system remains the same. This concept, called ***conservation of mass***, applies to all physical and chemical changes.	Apply the concept of *conservation of mass* to correctly predict changes in mass before and after chemical reactions, including reactions that occur in closed containers, and reactions that occur in open containers where a gas is given off.*a	IAPS 25	SB AQ 3	
6-8 PS3A	Energy exists in many forms: thermal light, chemical, electrical, motion of objects, and sound. Energy can be transformed from one form to another and transferred from one place to another.	List different forms of energy (e.g., thermal, light, chemical, electrical, kinetic, potential, and sound energy). Describe ways in which energy is transformed from one form to another and transferred from one place to another (e.g., chemical energy to electricity in a battery, electrical to light energy in a bulb).	IAPS 58	**58** AQ2 UC, [IB] D4-5, D8	206S, P210, [211], [212], [213]
6-8 PS3B	*Heat* (*thermal energy*) flows from warmer objects to cooler ones, until the objects reach the same temperature. *Conduction*, radiation and *convection*, or mechanical mixing are the means of heat transfer.	Use everyday examples of conduction, convection, and radiation to illustrate the transfer of heat energy from warmer objects to cooler ones, until the objects reach the same temperature.	IAPS 59, 60, 61 IAES 46	**59** [IB] D9 **61** [IB] D10 **46** [IB] D16	436S
6-8 PS3C	*Heat (thermal energy)* consists of random motion and the vibrations of atoms	Explain how various types of insulation slows transfer of heat energy, based on the atomic molecular	IAPS 59, 60, 61 IAES 46	**59** [IB] D9 **61** [IB] D10 **46** [IB] D16	436S

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	and molecules. The higher the temperature, the greater the atomic or molecular motion. Thermal insulators are materials that resist the flow of heat.	model of heat or thermal energy.			
6-8 PS3D	Visible light from the Sun is made up of a mixture of all colors of light. To see an object, light from that object must enter the eye.	Describe how to demonstrate that visible light from the sun is made up of different colors. Draw and label a diagram showing that to see an object, light must come directly from the object from an external source, be reflected from the object and enter the eye.	N/C		ES-2, P120, [211]
6-8 PS3E	Energy from a variety of energy sources and can be transformed into almost any other form of energy. Electricity can also be distributed quickly to distant locations.	Illustrate the transfers of energy in an electrical circuit when heat, light, and sound are produced. Identify the transfers of energy in a battery within an electrical circuit.	IAPS 64, 66, 67	**64** AQ3 ET, AQ4 AD, [IB] D7 **66** Proc DI; [IB] D16 **67** AQ5 AD, [IB] D-14	[215]
6-8 PS3F	Energy can be transferred from one place to another through waves. Sound and earthquake waves are examples. These and other waves move at different speeds in different materials.	Contrast a light wave with a sound wave by identifying that both have characteristic wavelengths, but light waves can travel through a vacuum while sound waves cannot. Explain that sound results from the vibration of an object	IAPS 58	**58** AQ2 UC, [IB] D4-5, D8	[211]
6-8 ES1A	The Moon's monthly cycle of phases can be explained by its changing relative position as it orbits earth. Solar and	Use a physical model or diagram to explain how the Moon's changing position in its orbit results in the changing phases of the moon as observed from earth. Explain how	IAES 79-81	**79** [IB] F10-12, F14-16 **80** [IB] F4-9 **81** AQ5 UC; [IB] F5, F8	

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	lunar eclipses are caused by variations in the earth-sun-moon system.	the cause of an eclipse of the moon is different from the cause of the moon's phases.			
6-8 ES1B	Earth is the third planet from the sun in a system that includes the Moon, the Sun, seven other major planets and their moons, and smaller objects, such as plutoids, asteroids, and comets.	Use a model to illustrate the relative sizes and distances of the Sun, Moon, Earth, seven other major planets besides Earth, many moons, and smaller objects, such as asteroids, plutoids, and comets.	IAES 88, 90, 91	**88** AQ2 UC, [IB] G3, G13, G17 **90** [IB] G9, 16, 18 **91** AQ4 UC	
6-8 ES1C	Most objects in the Solar System are in regular and predictable motion. These motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	Use a model of the Earth, Sun, Moon system to demonstrate understanding of day and night, phases of the Moon, and eclipses of the Moon and Sun.*b	IAES 76, 77	**76** AQ4 AD **77** [IB] F10-12	
6-8 ES1D	Gravity is the force that keeps planets in orbit around the Sun and governs the rest of the motion in the Solar System. Gravity alone holds us to the Earth's surface.	Identify gravity as the force that keeps planets in orbit around the Sun, that governs motions within the Solar System, and that holds us to Earth's surface.	IAES 95, 96	**95** AQ4 AD; [IB] G10, 12 **96** [IB] G 4, 7, 19	
6-8 ES1E	Our Sun is one of hundreds of billions of stars in the Milky Way galaxy. Many of these stars have planets orbiting around them. The Milky Way galaxy is one of hundreds of billions of galaxies	Construct a physical model or diagram showing the earth's position in the solar system, the solar system's position in the Milky Way, and the Milky Way among other galaxies.	IAES 90, 92	**90** [IB] G9, 16, 18 **92** [IB] G2, G11	

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	in the universe.				
6-8 ES2A	The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations.	Describe the composition and properties of the troposphere and stratosphere.	IAES 65, 66	**66** AQ2 UC; [IB] E12-13	
6-8 ES2B	The sun is the major source of energy for the phenomena on earth's surface such as winds, ocean currents, and the water cycle.	Connect the uneven heating of earth's surface by the sun to global wind and ocean currents. Describe the role of the sun in the water cycle.	IAES 55, 58	**58** [IB] E6	
6-8 ES2C	In the *water cycle, w*ater evaporates from Earth's surface, rises and cools, forms clouds, then condenses and falls as rain or snow, and collects in bodies of water.	Describe the water cycle and give local examples of where parts of the water cycle can be seen.	IAES 62	**62** AQ4 SI; [IB] E3, 9, 11, 15	
6-8 ES2D	Water is a solvent. As it passes through the water cycle, it dissolves minerals and gases and carries them to the oceans.	Distinguish between salt and freshwater and explain how salt water can become salty.	IAES 62	**62** AQ4 SI; [IB] E3, 9, 11, 15	
6-8 ES2E	The solid Earth is composed of a relatively thin *crust*, a dense metallic *core*, and a layer called the *mantle* between the crust and core that is	Sketch and label the major layers of Earth, showing the approximate relative thicknesses and consistency of the *crust*, *core,* and *mantle.**a	IAES 38	**38** AQ5 UC; [IB] D1, D15	436S, 438S

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	very hot, and partially solid and partially melted.				
6-8 ES2F	The crust is composed of huge crustal plates on the scale of continents and oceans which move centimeters per year, pushed by convection in the upper mantle, causing earthquakes, volcanoes, and mountains.	Draw a labeled diagram showing how convection in the upper mantle drives movement of crustal plates. Describe what may happen when plate boundaries meet, with examples from the Pacific Northwest.	IAES 44, 45	**44** [IB] D7, D16 **45** [IB] D3, D11-12, D16	438S
6-8 ES2G	Landforms are created by processes that build up structures and processes that break down and carry away material through erosion and weathering.	Explain how a given landform (e.g. a mountain) has been shaped by processes that build up structures (e.g., uplift) and by processes that break down and carry away material (e.g., weathering and erosion).	IAES 28, 29	**28** Proc GI; [IB] C2, C7 **29** AQ2 UC; [IB] C1, C3	438S, 442
6-8 ES2H	The rock cycle describes the formation of *igneous* rock in volcanoes, *sedimentary* rock produced by compaction-eroded particles, and *metamorphic* rock by heating and pressure.	Identify samples of igneous, sedimentary, and metamorphic rock, and describe how they may have formed, and how one kind of rock could eventually become a different kind of rock.	IAES 22	**22** AQ7 UC; [IB] B4-6, B11	403S, 404S, 430
6-8 ES3A	Our understanding of earth history is based on the assumption that processes we see today are similar to those that occurred in the past.	Describe Earth processes that we can observe and measure today (e.g., rate of sedimentation, movement of crustal plates, and changes in composition of the atmosphere) that provide clues to Earth's past.*a	IAES 39	**39** [IB] D5, D13	442, 445S

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6-8 ES3B	Thousands of layers of sedimentary rock provide evidence that allows us to determine the age of Earth's changing surface and to estimate the age of fossils found in the rocks.	Explain how the age of landforms can be estimated by studying the number and thickness of rock layers as well as fossils found within rock layers.	IAES 21	**21** SB Q 2, 3, 5	443S
6-8 ES3C	In most locations, sedimentary rocks are in horizontal formations with the oldest layers on the bottom. However, in some locations, rock layers are folded, tipped, or even inverted, providing evidence of geologic events in the distant past.	Explain why younger layers of sedimentary rocks are usually on top of older layers, and hypothesize what geologic events could have caused huge blocks of horizontal sedimentary layers to be tipped, or older rock layers to be on top of younger rock layers.	IAES 45, 47	**45** [IB] D3, D11-12, D16 **47** [IB] D16	
6-8 ES3D	Earth history has been shaped by many natural catastrophes, including earthquakes, volcanic eruptions, glaciers, floods, storms, tsunamis, and the impacts of asteroids.	Interpret current landforms of the Pacific Northwest as evidence of past geologic events that (e.g., Mount St Helens, Crater lake and the Channeled Scablands).	IAES 37, 38, 45, 47	**38** AQ5 UC; [IB] D1, D15 **38** AQ5 UC; [IB] D1, D15 **45** [IB] D3, D11-12, D16 **47** [IB] D16	
6-8 ES3F	Living organisms have played several critical roles in shaping the Earth system that we see today.	List several ways that living organisms have shaped Earth's history (e.g., coral islands, limestone deposits, and oil and coal deposits).	IAES 5, 65	**5** AQ5 UC; [IB] A3-4	
6-8 LS1A	All organisms are composed of cells, which carry on the many functions needed to sustain life.	Draw and describe observations made with a microscope showing that plants and animals are made of cells and explain that cells are the	IALS 42	**42** [IB] D3, D7, D16-10, C23	

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		fundamental units of life. Describe the functions performed by cells to sustain a living organism (i.e., growth and division to produce more cells, taking in nutrients, releasing waste products, using energy to do work, and producing materials that the organism needs).			
6-8 LS1B	One-celled organisms must contain parts to carry out all life functions.	Draw and describe observations made with a microscope showing that a single celled organism (e.g., paramecium) contains parts used for all life functions.	IALS 42	**42** [IB] D3, D7, D16-10, C23	
6-8 LS1C	Multi-cellular organisms have specialized cells that perform different functions. These cells join together to form tissues that give organs their structure and enable the organs to perform specialized functions within organ systems.	Relate the structure of a specialized cell to the function that the cell performs. Explain the relationship between tissues that make up individual organs and the functions the organ performs. Describe the components and functions of the digestive, circulatory, and respiratory systems in humans.	IALS 12, 18, 42	**12** [IB] B12, B15 **18** [IB] B9, B17-18, B29 **42** [IB] D3, D7, D16-10, C23	
6-8 LS1D	Both plant and animal cells must carry on life functions so they have parts in common, such as nuclei, cytoplasm, cell membranes and mitochondria. But plants have specialized cell parts such as chloroplasts and cells walls because they are producers	Use labeled diagrams to illustrate similarities and differences between plant and animal cells (i.e., plant cells have cell walls and chloroplasts, while animal cells have cell membranes and no chloroplasts).	IALS 82	**82** [IB] E5, E13-14, E17	

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	and do not move.				
6-8 LS1E	In classifying organisms, scientists consider both internal and external structures and behaviors.	Use a classification key to identify organisms, noting use of both internal and external structures as well as behaviors.	IALS 75	**75** [IB] E4, E36	550S
6-8 LS1F	Lifestyle choices and living environments can damage structures at any level of organization of the human body and can significantly harm the whole organism.	Evaluate how specific lifestyle choices and living environments (e.g., tobacco and alcohol use, amount of exercise, quality of air, and kinds of food) affect parts of the human body and the organism as a whole.	IALS 31, 37	**31** [IB] C8 **37** Act UC, [IB] C14	
6-8 LS2A	An ecosystem consists of all the populations living within a specific area and the nonliving factors they interact with. The same geographical area may contain many ecosystems.	Explain that an ecosystem is a defined area that contains populations of organisms and nonliving factors. Give examples of an ecosystem and describe its boundaries and contents.	IALS 72, 74	**72** AQ5 UC, [IB] E2, 3, E5, E13-14 **74** AQ3 CM, [IB] E6, E18	
6-8 LS2B	Energy flows through an ecosystem from producers to consumers to decomposers. These relationships can be shown for specific populations on a food web.	Analyze the flow of energy in a local ecosystem and draw a labeled food web showing the relationships among all of the ecosystems plant and animal populations.	IALS 81-83	**81** AQ5 UC, [IB] E2, 3, E5, E13-14 **82** [IB] E5, E13-14, E17 **83** AQ3 DCI	32, 91, 318S
6-8 LS2C	The major source of energy for ecosystems on Earth's surface is sunlight. *Producers* (plants) transform the energy of sunlight into the chemical energy of	Explain how energy from the sun is transformed through photosynthesis to produce chemical energy in food. Explain that plants are the only organisms that make their own food. Animals	IALS 81, 82	**81** AQ5 UC, [IB] E2, 3, E5, E13-14 **82** [IB] E5, E13-14, E17	

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	food through photosynthesis. The energy then passes from organism to organism by a food web.	cannot survive without plants because animals, including humans, get food by eating plants or other animals that eat plants.			
6-8 LS2D	Ecosystems are continually changing. Causes of these changes include nonliving factors such as the amount of light, range of temperatures, and availability of water, as well as living factors such as the disappearance of different species through disease, predation, and overuse or resources or the introduction of new species.	Predict what may happen to an ecosystem if nonliving factors change or if one or more populations are removed from or added to the ecosystem.	IALS 78, 79	**78** [IB] E7-10, E16 **79** AQ1 UC, [IB] E2-3, E7-11, E16, E35	
6-8 LS2E	Investigations of environmental issues should uncover factors causing the issue and the science underlying the issue, and evaluate the benefits and risks of different ways to address the issue.	Investigate a local environmental issue by defining the problem, by researching causative factors, understanding the underlying science, and evaluating the benefits and risks of alternative solutions. Identify resource uses that reduce the capacity of ecosystems to support various populations (e.g., use of pesticides, construction).	IALS 85, 87, 88	**85** AQ1 UC, [IB] E21-23 **87** AQ1 ET **88** AQ3 ET, [IB] E28-32	EI-2, FV-2, HM-2, SP-2, WD-2
6-8 LS3A	The scientific theory of evolution underlies the study of biology and explains both the diversity	Explain and provide evidence of how biological evolution accounts for the diversity of species on Earth today.	IAPS 94, 97	**94** AQ3 UC, [IB] F16, F26 **97** AQ2 CM, [IB] F15, F22-25, F27-28, F30-31	

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	of life on Earth and similarities of all organisms at the chemical, cellular (and molecular) level. Evolution is supported by multiple forms of scientific evidence.				
6-8 LS3B	Every organism requires a set of genetic information (instructions) to specify its traits. This information is contained within genes in the chromosomes in the nucleus of each cell.	Explain that information on how cells are to grow and function is contained in genes in the chromosomes of each cell nucleus, and that during the process of reproduction, the genes are passed from the parent cells to offspring.	IALS 57, 63	**63** [IB] D1, D2-5, D8-11, D18, D22-24	7, 70, 603S, [905]
6-8 LS3C	Reproduction is essential for every species to continue to exist. Some plants and animals reproduce sexually while others reproduce asexually. Sexual reproduction leads to greater diversity of characteristics because children inherit genes from both parents.	Identify sexually and asexually reproducing plants and animals. Explain why offspring that result from sexual reproduction are likely to have more diverse characteristics than offspring that result from asexual reproduction.	IALS 57, 63	**63** [IB] D1, D2-5, D8-11, D18, D22-24	
6-8 LS3D	In sexual reproduction, the new organism receives genetic information from a female and male, so the offspring are never identical to the parents. In asexual reproduction, just	Describe that in sexual reproduction the offspring receive genetic information from both parents and therefore differ from the parents in significant ways. Explain the survival value of variation.	IALS 57, 63	**63** [IB] D1, D2-5, D8-11, D18, D22-24	7, 70, 603S, [905]

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	one parent is involved and genetic information is passed on nearly unchanged.				
6-8 LS3E	*Adaptations* are physical or behavioral changes that are inherited and that enhance survival and reproductive success in a particular environment.	Give an example of a plant or animal adaptation that would confer a survival and reproductive advantage during a given environmental change.	IALS 95, 96, 97	**95** [IB] F18-21 **96** AQ2 DCI **97** AQ2 CM, [IB] F15, F22-25, F27-28, F30-31	91
6-8 LS3F	*Extinction* occurs when the environment changes and the adaptive characteristics of a species, including its behaviors, are insufficient to allow its survival.	Given an ecosystem, predict which organisms are most likely to disappear from that environment when the environment changes in specific ways.	IAPS 89	**89** AQ4 ET, [IB] F1-4, F29	
6-8 LS3G	Evidence for evolution includes similarities among anatomical and cell structures and patterns of development make it possible to infer degree of relatedness among organisms.	Infer the degree of relatedness of two species, given diagrams of anatomical features of the two species (e.g., chicken wing, whale flipper, human hand, bee leg).	IAPS 99, 100, 101	**99** AQ2 UC, [IB] 434-36	550S