**SRA Life, Earth, and Physical Science Laboratories**
correlation to
Arizona Science Standard Articulated by Grade Level
Grade 6

*SRA Life, Earth, and Physical Science Laboratories* provide core science content in an alternate reading format. Each *SRA Science Lab* contains 180 Science Cards covering key science concepts and vocabulary. Each lab covers 90 different science topics presented at two different reading levels to meet varied student abilities. The *Teacher’s Handbook* includes hands-on inquiry activities as well as vocabulary building exercises. The *Classroom Resource CD-ROM* includes Writing Strategies in Science along with tests and vocabulary games.

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<th>Concept 1: Observations, Questions, and Hypotheses</th>
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<td>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</td>
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<th>PO 1. Differentiate among a question, hypothesis, and prediction.</th>
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| Classroom Resource CD-ROM: Writing Strategy 8, 15 |
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 1: Observations, Questions, and Hypotheses
Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.

PO 3. Locate research information, not limited to a single source, for use in the design of a controlled investigation.

Classroom Resource CD-ROM: Writing Strategy 9, 12, 125, 28

Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.


Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 2. Plan an investigation to test individual variables using scientific processes.


Earth Science Lab Teacher’s Handbook: Hands-On Activity 8, Temperature, Salinity, and Water Density, pages 101-103


Classroom Resource CD-ROM: Writing Strategy 15, 23

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 6, page 2
### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

**PO 3. Conduct a controlled investigation using scientific processes.**

**Life Science Lab Teacher’s Handbook:** Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

**Earth Science Lab Teacher’s Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103

**Physical Science Lab Teacher’s Handbook:** Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83

**Classroom Resource CD-ROM:** Writing Strategy 15, 23

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### Strand 1: Inquiry Process
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### Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

**PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).**


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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

*Grade 6, page 3*
**Strand 1: Inquiry Process**

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**Concept 2: Scientific Testing (Investigating and Modeling)**

Design and conduct controlled investigations.

**PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.**


**Classroom Resource CD-ROM:** Writing Strategy 1, 2, 5, 11, 15

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**Strand 1: Inquiry Process**

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 3: Analysis and Conclusions**

Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 1. Analyze data obtained in a scientific investigation to identify trends.**


**Physical Science Lab Teacher’s Handbook:** Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83

**Classroom Resource CD-ROM:** Writing Strategy 22, 24

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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

Grade 6, page 4
**Strand 1: Inquiry Process**

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 3: Analysis and Conclusions**

Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 2.** Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).


### Classroom Resource CD-ROM: Writing Strategy 7, 23

**Strand 1: Inquiry Process**

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 3: Analysis and Conclusions**

Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 3.** Evaluate the observations and data reported by others.


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*SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level*  
Grade 6, page 5
**Strand 1: Inquiry Process**
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 3: Analysis and Conclusions**
Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 4. Interpret simple tables and graphs produced by others.**


**Classroom Resource CD-ROM:** Writing Strategy 16, 22, 24

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**Strand 1: Inquiry Process**
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 3: Analysis and Conclusions**
Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 5. Analyze the results from previous and/or similar investigations to verify the results of the current investigation.**


### Strand 1: Inquiry Process

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 3: Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 6.** Formulate new questions based on the results of a completed investigation.


### Concept 4: Communication

Communicate results of investigations.

**PO 1.** Choose an appropriate graphic representation for collected data:

- Line graph
- Double bar graph
- Stem and leaf plot
- Histogram.

**Life Science Lab Teacher’s Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91

**Earth Science Lab Teacher’s Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83

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*SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level Grade 6, page 7*
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### Concept 4: Communication

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**PO 2. Display data collected from a controlled investigation.**


**Classroom Resource CD-ROM:** Writing Strategy 16, 22, 24

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### Concept 4: Communication

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**PO 3. Communicate the results of an investigation with appropriate use of qualitative and quantitative information.**


**Classroom Resource CD-ROM:** Writing Strategy 1, 2, 5, 11, 12, 15, 16, 22

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### Concept 4: Communication

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**PO 4. Create a list of instructions that others can follow in carrying out a procedure (without the use of personal pronouns).**

**Classroom Resource CD-ROM:** Writing Strategy 6, 15
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students' learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 4: Communication
Communicate results of investigations.

PO 5. Communicate the results and conclusion of the investigation.


Classroom Resource CD-ROM: Writing Strategy 15

Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 1: History of Science as a Human Endeavor
Identify individual, cultural, and technological contributions to scientific knowledge.

PO 1. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Jacques Cousteau [inventor, marine explorer], supports Strand 4; William Beebe [scientists] supports Strand 4; Thor Heyerdahl [anthropologist] supports Strand 6).

Life Science Lab, Level A: Cards 2, 5, 46, 59
Life Science Lab, Level B: Cards 2, 5, 46, 59

Earth Science Lab, Level A: Cards 10, 68, 72, 78
Earth Science Lab, Level B: Cards 10, 68, 72, 78

Physical Science Lab, Level A: Cards 3, 7, 17, 55
Physical Science Lab, Level B: Cards 3, 7, 17, 55

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 6, page 9
### Concept 1: History of Science as a Human Endeavor

#### Identify individual, cultural, and technological contributions to scientific knowledge.

**PO 2.** Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., Cell Theory, sonar, SCUBA, underwater robotics).

| Life Science Lab, Level A: | Cards 5, 49, 59, 64, 69, 83 |
| Life Science Lab, Level B: | Cards 5, 49, 59, 64, 69, 83 |
| Earth Science Lab, Level A: | Cards 16, 20, 31, 70, 72, 79, 80, 81, 88 |
| Earth Science Lab, Level B: | Cards 16, 20, 31, 70, 72, 79, 80, 81, 88 |
| Physical Science Lab, Level A: | Cards 33, 34, 35, 76, 81, 82, 90 |
| Physical Science Lab, Level B: | Cards 33, 34, 35, 76, 81, 82, 90 |

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**PO 3.** Analyze the impact of a major scientific development occurring within the past decade.

| Life Science Lab, Level A: | Cards 64, 69, 83 |
| Life Science Lab, Level B: | Cards 64, 69, 83 |
| Earth Science Lab, Level A: | Cards 20, 72, 79 |
| Earth Science Lab, Level B: | Cards 20, 72, 79 |
| Physical Science Lab, Level A: | Cards 33, 35, 81, 84 |
| Physical Science Lab, Level B: | Cards 33, 35, 81, 84 |

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**PO 4.** Describe the use of technology in science-related careers.

This concept is not covered at this level.

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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

*Grade 6, page 10*
Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

**PO 1. Describe how science is an ongoing process that changes in response to new information and discoveries.**

| Life Science Lab, Level A: Cards 5, 64, 69 |
| Life Science Lab, Level B: Cards 5, 64, 69 |
| Earth Science Lab, Level A: Cards 10, 20, 31, 68, 72, 78, 79 |
| Earth Science Lab, Level B: Cards 10, 20, 31, 68, 72, 78, 79 |
| Physical Science Lab, Level A: Cards 3, 7, 17, 33, 35, 53, 55, 81, 84 |
| Physical Science Lab, Level B: Cards 3, 7, 17, 33, 35, 53, 55, 81, 84 |

**PO 2. Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.**

| Life Science Lab, Level A: Cards 1, 49, 64, 69 |
| Life Science Lab, Level B: Cards 1, 49, 64, 69 |
| Earth Science Lab, Level A: Cards 10, 68, 72, 78 |
| Earth Science Lab, Level B: Cards 10, 68, 72, 78 |
| Physical Science Lab, Level A: Cards 3, 81, 84 |
| Physical Science Lab, Level B: Cards 3, 81, 84 |
Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 3. Apply the following scientific processes to other problem solving or decision making situations:
- Observing
- Questioning
- Communicating
- Comparing
- Measuring
- Classifying
- Predicting
- Organizing data
- Inferring
- Generating hypotheses
- Identifying variables.


Strand 3: Science in Personal and Social Perspectives
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Evaluate the effects of the following natural hazards:
- Sandstorm
- Hurricane
- Tornado
- Ultraviolet light
- Lightning—caused fire.

Life Science Lab, Level A: Card 80
Life Science Lab, Level B: Card 80

Earth Science Lab, Level A: Cards 15, 16, 17, 52, 53, 54, 60
Earth Science Lab, Level B: Cards 15, 16, 17, 52, 53, 54, 60

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
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**Strand 3: Science in Personal and Social Perspectives**
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

**Concept 1: Changes in Environments**
Describe the interactions between human populations, natural hazards, and the environment.

**PO 2.** Describe how people plan for, and respond to, the following natural disasters:
- Drought
- Flooding
- Tornadoes.

Earth Science Lab, Level A: Cards 15, 17, 52, 53, 54
Earth Science Lab, Level B: Cards 15, 17, 52, 53, 54

**Concept 2: Science and Technology in Society**
Develop viable solutions to a need or problem.

**PO 1.** Propose viable methods of responding to an identified need or problem.
**PO 2.** Compare possible solutions to best address an identified need of problem.
**PO 3.** Design and construct a solution to an identified need or problem using simple classroom materials.
**PO 4.** Describe a technological discovery that influences science.

This concept is not covered at this level.

**Strand 4: Life Science**
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

**Concept 1: Structure and Function in Living Systems**
Understand the relationships between structures and functions of organisms.

**PO 1.** Explain the importance of water to organisms.

Life Science Lab, Level A: Cards 16, 17, 45, 46, 52, 70, 82, 90
Life Science Lab, Level B: Cards 16, 17, 45, 46, 52, 70, 82, 90

Earth Science Lab, Level A: Card 47
Earth Science Lab, Level B: Card 47
Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

Concept 1: Structure and Function in Living Systems
Understand the relationships between structures and functions of organisms.

PO 2. Describe the basic structure of a cell, including:
- Cell wall
- Cell membrane
- Nucleus.

Life Science Lab, Level A: Cards 6, 7, 8
Life Science Lab, Level B: Cards 6, 7, 8
Life Science Lab Teacher’s Handbook: Hands-On Activity 1, Examining Cells, pages 77-79

Strand 4: Life Science
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Concept 1: Structure and Function in Living Systems
Understand the relationships between structures and functions of organisms.

PO 3. Describe the function of each of the following cell parts:
- Cell wall
- Cell membrane
- Nucleus.

Life Science Lab, Level A: Cards 6, 7, 8
Life Science Lab, Level B: Cards 6, 7, 8
Life Science Lab Teacher’s Handbook: Hands-On Activity 1, Examining Cells, pages 77-79

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Concept 1: Structure and Function in Living Systems
Understand the relationships between structures and functions of organisms.

PO 4. Differentiate between plant and animal cells.

Life Science Lab, Level A: Cards 6, 7
Life Science Lab, Level B: Cards 6, 7

Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

Concept 1: Structure and Function in Living Systems
Understand the relationships between structures and functions of organisms.

PO 5. Explain the hierarchy of cells, tissues, organs, and systems.

Life Science Lab, Level A: Card 44
Life Science Lab, Level B: Card 44

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 6, page 14
**Strand 4: Life Science**

Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

### Concept 1: Structure and Function in Living Systems

Understand the relationships between structures and functions of organisms.

**PO 6. Relate the following structures of living organisms to their functions:**

**Animals**
- Respiration—gills, lungs
- Digestion—stomach, intestines
- Circulation—heart, veins, arteries, capillaries
- Locomotion—muscles, skeleton.

**Plants**
- Transpiration—stomata, roots, xylem, phloem
- Absorption—roots, xylem, phloem
- Response to stimulus (phototropism, hydrotropism, geotropism)—roots, xylem, phloem.

**Life Science Lab, Level A:** Cards 16, 17, 18, 20, 24, 47, 48, 50, 51, 53, 54

**Life Science Lab, Level B:** Cards 16, 17, 18, 20, 24, 47, 48, 50, 51, 53, 54

**Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91

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### Concept 3: Populations of Organisms in an Ecosystem

Analyze the relationships among various organisms and their environment.

**PO 1. Explain that sunlight is the major source of energy for most ecosystems.**

**Life Science Lab, Level A:** Cards 16, 17, 76, 89

**Life Science Lab, Level B:** Cards 16, 17, 76, 89

**Earth Science Lab, Level A:** Cards 37, 38, 43, 47, 82

**Earth Science Lab, Level B:** Cards 37, 38, 43, 47, 82

**Physical Science Lab, Level A:** Card 46

**Physical Science Lab, Level B:** Card 46

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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

*Grade 6, page 15*
Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

Concept 3: Populations of Organisms in an Ecosystem
Analyze the relationships among various organisms and their environment.

PO 2. Describe how the following environmental conditions affect the quality of life:
- Water quality
- Climate
- Population density
- Smog.

Life Science Lab, Level A: Cards 84, 87, 88, 89, 90
Life Science Lab, Level B: Cards 84, 86, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 37, 42, 56, 59, 60, 61, 85, 86
Earth Science Lab, Level B: Cards 37, 42, 56, 59, 60, 61, 85, 86

Strand 5: Physical Science
Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in systems, and the processes by which energy is transferred between systems and surroundings.

Concept 3: Transfer of Energy
Understand that energy can be stored and transferred.

PO 1. Identify various ways in which electrical energy is generated using renewable and nonrenewable resources (e.g., wind, dams, fossil fuels, nuclear reactions).

Earth Science Lab, Level A: Cards 35, 90
Earth Science Lab, Level B: Cards 35, 90

Physical Science Lab, Level A: Cards 34, 38, 46, 47, 48, 49
Physical Science Lab, Level B: Cards 34, 38, 46, 47, 48, 49
### Concept 3: Transfer of Energy

**Understand that energy can be stored and transferred.**

**PO 3.** Compare the following ways in which energy may be transformed:
- Mechanical to electrical
- Electrical to thermal.

### Earth Science Lab
- Level A: Card 38
- Level B: Card 38

### Physical Science Lab
- Level A: Cards 37, 41, 68, 69, 72
- Level B: Cards 37, 41, 68, 69, 72


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### Concept 1: Structure of the Earth

Describe the composition and interactions between the structure of the Earth and its atmosphere.

**PO 1.** Describe the properties and the composition of the layers of the atmosphere.

### Earth Science Lab
- Level A: Cards 36, 37
- Level B: Cards 36, 37
Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 2. Explain the composition, properties, and structure of the Earth’s lakes and rivers.

Earth Science Lab, Level A: Cards 82, 83, 84
Earth Science Lab, Level B: Cards 82, 83, 84

Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 3. Explain the composition, properties, and structures of the oceans’ zones and layers.

Earth Science Lab, Level A: Cards 82, 87, 88, 89, 90
Earth Science Lab, Level B: Cards 82, 87, 88, 89, 90
Earth Science Lab Teacher’s Handbook: Hands-On Activity 8, Temperature, Salinity, and Water Density, pages 101-103

Strand 6: Earth and Space Science
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Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 3. Analyze the interactions between the Earth’s atmosphere and the Earth’s bodies of water (water cycle).

Earth Science Lab, Level A: Cards 41, 45, 47, 48, 49, 54, 57, 60, 61
Earth Science Lab, Level B: Cards 41, 45, 47, 48, 49, 54, 57, 60, 61

Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 5. Describe ways scientists explore the Earth’s atmosphere and bodies of water.

Earth Science Lab, Level A: Cards 20, 36, 37, 39, 43, 44, 49, 50, 51, 88
Earth Science Lab, Level B: Cards 20, 36, 37, 39, 43, 44, 49, 50, 51, 88

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
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**Strand 6: Earth and Space Science**

Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, students can make informed decisions about issues affecting the planets on which they live.

**Concept 2: Earth’s Processes and Systems**
Understand the processes acting on the Earth and their interaction with the Earth’s systems.

**PO 1.** Explain how water is cycled in nature.

| Earth Science Lab, Level A: Cards | 47, 48, 49, 82, 83, 84 |
| Earth Science Lab, Level B: Cards | 47, 48, 49, 82, 83, 84 |

**PO 2.** Identify the distribution of water within or among the following:
- Atmosphere
- Lithosphere
- Hydrosphere.

| Earth Science Lab, Level A: Cards | 43, 44, 47, 48, 49, 82, 83, 84, 87 |
| Earth Science Lab, Level B: Cards | 43, 44, 47, 48, 49, 82, 83, 84, 87 |

**PO 3.** Analyze the effects that bodies of water have on the climate of a region.

| Earth Science Lab, Level A: Cards | 56, 57, 58, 60, 61 |
| Earth Science Lab, Level B: Cards | 56, 57, 58, 60, 61 |

**PO 4.** Analyze the following factors that affect climate:
- Ocean currents
- Elevation
- Location.

| Earth Science Lab, Level A: Cards | 55, 56, 57, 58 |
| Earth Science Lab, Level B: Cards | 55, 56, 57, 58 |
### Strand 6: Earth and Space Science

Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

### Concept 2: Earth’s Processes and Systems

Understand the processes acting on the Earth and their interaction with the Earth’s systems.

#### PO 5. Analyze the impact of large-scale weather systems on the local weather.

| Earth Science Lab, Level A: | Cards 40, 41, 45, 46, 52, 53, 54, 56, 57, 58, 59, 60, 61 |
| Earth Science Lab, Level B: | Cards 40, 41, 45, 46, 52, 53, 54, 56, 57, 58, 59, 60, 61 |

### PO 6. Create a weather system model that includes:

- The Sun
- The atmosphere
- Bodies of water

| Earth Science Lab, Level A: | Cards 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, 56, 57, 59, 60, 61 |
| Earth Science Lab, Level B: | Cards 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, 56, 57, 59, 60, 61 |
**Strand 1: Inquiry Process**

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

<table>
<thead>
<tr>
<th>Concept 1: Observations, Questions, and Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</td>
</tr>
</tbody>
</table>

**PO 1. Formulate questions based on observations that lead to the development of a hypothesis.**

- **Classroom Resource CD-ROM:** Writing Strategy 8, 15

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<table>
<thead>
<tr>
<th>Concept 1: Observations, Questions, and Hypotheses</th>
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<tr>
<td>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</td>
</tr>
</tbody>
</table>

**PO 2. Select appropriate resources for background information related to a question, for use in the design of a controlled investigation.**

- **Classroom Resource CD-ROM:** Writing Strategy 9, 12, 125, 28

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<table>
<thead>
<tr>
<th>Concept 1: Observations, Questions, and Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</td>
</tr>
</tbody>
</table>

**PO 3. Explain the role of a hypothesis in a scientific inquiry.**

- **Classroom Resource CD-ROM:** Writing Strategy 8, 15
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.


Classroom Resource CD-ROM: Writing Strategy 15, 23

Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 2. Design an investigation to test individual variables using scientific processes.


Earth Science Lab Teacher’s Handbook: Hands-On Activity 8, Temperature, Salinity, and Water Density, pages 101-103


Classroom Resource CD-ROM: Writing Strategy 15, 23

Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 3. Conduct a controlled investigation, utilizing multiple trials, to test a hypothesis using scientific processes.


Earth Science Lab Teacher’s Handbook: Hands-On Activity 8, Temperature, Salinity, and Water Density, pages 101-103


Classroom Resource CD-ROM: Writing Strategy 15, 23
Strand 1: Inquiry Process  
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 2: Scientific Testing (Investigating and Modeling)  
Design and conduct controlled investigations.

<table>
<thead>
<tr>
<th>PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.</th>
</tr>
</thead>
</table>

**Classroom Resource CD-ROM:** Writing Strategy 1, 2, 5, 11, 15
### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

#### Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

**PO 1. Analyze data obtained in a scientific investigation to identify trends.**


**Physical Science Lab Teacher’s Handbook:** Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83

**Classroom Resource CD-ROM:** Writing Strategy 22, 24

**PO 2. Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).**

**Life Science Lab Teacher’s Handbook:** Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103


**Classroom Resource CD-ROM:** Writing Strategy 7, 23

**PO 3. Analyze results of data collection in order to accept or reject the hypothesis.**


**Classroom Resource CD-ROM:** Writing Strategy 22, 24
**Strand 1: Inquiry Process**
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

<table>
<thead>
<tr>
<th>Concept 3: Analysis and Conclusions</th>
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</thead>
<tbody>
<tr>
<td>Analyze and interpret data to explain correlations and results; formulate new questions.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PO 4. Determine the validity and reliability of results of an investigation.</th>
</tr>
</thead>
</table>


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*SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level*  
Grade 7, page 5
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

PO 6. Refine hypotheses based on the results from investigations.


Classroom Resource CD-ROM: Writing Strategy 8, 15

Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 4: Communication
Communicate results of investigations.

PO 7. Formulate new questions based on the results of a previous investigation.


Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 5: Communication
Communicate results of investigations.

PO 1. Choose an appropriate graphic representation for collected data:
- Line graph
- Double bar graph
- Stem and leaf plot
- Histogram.

Life Science Lab Teacher’s Handbook: Hands-On Activity 4, Your Cardiovascular System, pages 89-91

**Strand 1: Inquiry Process**  
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 4: Communication**  
Communicate results of investigations.

**PO 2. Display data collected from a controlled investigation.**


**Classroom Resource CD-ROM:** Writing Strategy 16, 22, 24

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**Strand 1: Inquiry Process**  
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 4: Communication**  
Communicate results of investigations.

**PO 3. Communicate the results of an investigation with appropriate use of qualitative and quantitative information.**


**Classroom Resource CD-ROM:** Writing Strategy 6, 15

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**Strand 1: Inquiry Process**  
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 4: Communication**  
Communicate results of investigations.

**PO 4. Write clear, step-by-step instructions for following procedures (without the use of personal pronouns).**

**Classroom Resource CD-ROM:** Writing Strategy 6, 15

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*SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level*  
*Grade 7, page 7*
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 4: Communication
Communicate results of investigations.

PO 5. Communicate the results and conclusion of the investigation.


Classroom Resource CD-ROM: Writing Strategy 15

Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 1: History of Science as a Human Endeavor
Identify individual, cultural, and technological contributions to scientific knowledge.

PO 1. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Rachel Carson [scientist] supports Strand 4; Luis Alvarez [scientist] and Walter Alvarez [scientist] supports Stand 6; Percival Lowell [scientist] supports Strand 6; Copernicus [scientist] support Strand 6).

Life Science Lab, Level A: Cards 2, 5, 46, 59
Life Science Lab, Level B: Cards 2, 5, 46, 59

Earth Science Lab, Level A: Cards 10, 68, 72, 78
Earth Science Lab, Level B: Cards 10, 68, 72, 78

Physical Science Lab, Level A: Cards 3, 7, 17, 55
Physical Science Lab, Level B: Cards 3, 7, 17, 55

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 7, page 8
### Concept 1: History of Science as a Human Endeavor

#### PO 2. Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., global positioning system, telescopes, seismographs, photography).

| Life Science Lab, Level A | Cards 5, 49, 59, 64, 69, 83 |
| Life Science Lab, Level B | Cards 5, 49, 59, 64, 69, 83 |
| Earth Science Lab, Level A | Cards 16, 20, 31, 70, 72, 79, 80, 81, 88 |
| Earth Science Lab, Level B | Cards 16, 20, 31, 70, 72, 79, 80, 81, 88 |
| Physical Science Lab, Level A | Cards 33, 34, 35, 76, 81, 82, 90 |
| Physical Science Lab, Level B | Cards 33, 34, 35, 76, 81, 82, 90 |

#### PO 3. Analyze the impact of a major scientific development occurring within the past decade.

| Life Science Lab, Level A | Cards 64, 69, 83 |
| Life Science Lab, Level B | Cards 64, 69, 83 |
| Earth Science Lab, Level A | Cards 20, 72, 79 |
| Earth Science Lab, Level B | Cards 20, 72, 79 |
| Physical Science Lab, Level A | Cards 33, 34, 81, 84 |
| Physical Science Lab, Level B | Cards 33, 34, 81, 84 |

#### PO 4. Analyze the use of technology in science-related careers.

This concept is not covered at this level.
<table>
<thead>
<tr>
<th>Strand 2: History and Nature of Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.</td>
</tr>
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<table>
<thead>
<tr>
<th>Concept 2: Nature of Scientific Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand how science is a process for generating knowledge.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PO 1. Describe how science is an ongoing process that changes in response to new information and discoveries.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science Lab, Level A: Cards 5, 64, 69</td>
</tr>
<tr>
<td>Life Science Lab, Level B: Cards 5, 64, 69</td>
</tr>
<tr>
<td>Earth Science Lab, Level A: Cards 10, 20, 31, 68, 72, 78, 79</td>
</tr>
<tr>
<td>Earth Science Lab, Level B: Cards 10, 20, 31, 68, 72, 78, 79</td>
</tr>
<tr>
<td>Physical Science Lab, Level A: Cards 3, 7, 17, 33, 35, 53, 55, 81, 84</td>
</tr>
<tr>
<td>Physical Science Lab, Level B: Cards 3, 7, 17, 33, 35, 53, 55, 81, 84</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PO 2. Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science Lab, Level A: Cards 1, 49, 64, 69</td>
</tr>
<tr>
<td>Life Science Lab, Level B: Cards 1, 49, 64, 69</td>
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<td>Earth Science Lab, Level A: Cards 10, 68, 72, 78</td>
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Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 3. Apply the following scientific processes to other problem solving or decision making situations:
- Observing
- Questioning
- Communicating
- Comparing
- Measuring
- Classifying
- Predicting
- Organizing data
- Inferring
- Generating hypotheses
- Identifying variables.


Strand 3: Science in Personal and Social Perspectives
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Analyze environmental risks (e.g., pollution, destruction of habitat) caused by human interaction with biological or geological systems.

Life Science Lab, Level A: Cards 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 84, 85, 86, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 37, 42, 59, 60, 61, 86
Earth Science Lab, Level B: Cards 37, 42, 59, 60, 61, 86
Earth Science Lab Teacher’s Handbook: Hands-On Activity 5, What is in the Air?, pages 89-91
Strand 3: Science in Personal and Social Perspectives
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 3. Propose possible solutions to address the environmental risks in biological and geological systems.

Life Science Lab, Level A: Cards 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 84, 85, 86, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 37, 42, 59, 60, 61, 86
Earth Science Lab, Level B: Cards 37, 42, 59, 60, 61, 86

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Concept 2: Science and Technology in Society
Develop viable solutions to a need or problem.

PO 4. Design and construct a solution to an identified need or problem using simple classroom materials.

PO 4. Describe a technological discovery that influences technology.

This concept is not covered at this level.
<table>
<thead>
<tr>
<th>Strain 4: Life Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.</td>
</tr>
</tbody>
</table>

**Concept 3: Populations of Organisms in an Ecosystem**

Analyze the relationships among various organisms and their environment.

**PO 1.** Compare food chains in a specified ecosystem and their corresponding food web.

- **Life Science Lab, Level A:** Cards 76, 77
- **Life Science Lab, Level B:** Cards 76, 77

**PO 2.** Explain how organisms obtain and use resources to develop and thrive in:
- **Niches**
- **Predator/prey relationships.**

- **Life Science Lab, Level A:** Cards 73, 74, 75
- **Life Science Lab, Level B:** Cards 73, 74, 75

**PO 3.** Analyze the interactions of living organisms with their ecosystems:
- **Limiting factors**
- **Carrying capacity.**

- **Life Science Lab, Level A:** Card 72
- **Life Science Lab, Level B:** Card 72

**PO 4.** Evaluate data related to problems associated with population growth (e.g., overgrazing, forest management, invasion of non-native species) and the possible solutions.

- **Life Science Lab, Level A:** Cards 72, 86
- **Life Science Lab, Level B:** Cards 72, 86
### Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

#### Concept 3: Populations of Organisms in an Ecosystem
Analyze the relationships among various organisms and their environment.

- **PO 5.** Predict how environmental factors (floods, droughts, temperature changes) affect survival rates in living organisms.

<table>
<thead>
<tr>
<th>Equipment Level A</th>
<th>Equipment Level B</th>
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</thead>
<tbody>
<tr>
<td>Cards 72, 80, 86</td>
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</tbody>
</table>

**Earth Science Lab**

<table>
<thead>
<tr>
<th>Equipment Level A</th>
<th>Equipment Level B</th>
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</thead>
<tbody>
<tr>
<td>Cards 15, 16, 53, 54, 60, 61</td>
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</tr>
</tbody>
</table>


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### Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

#### Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

- **PO 1.** Classify rocks and minerals by the following observable properties:
  - Grain
  - Color
  - Texture
  - Hardness.

<table>
<thead>
<tr>
<th>Equipment Level A</th>
<th>Equipment Level B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cards 3, 4, 5, 6, 7, 8, 9</td>
<td>Cards 3, 4, 5, 6, 7, 8, 9</td>
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**Earth Science Lab Teacher’s Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75
Earth and Space Science

Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 1: Structure of the Earth

Describe the composition and interactions between the structure of the Earth and its atmosphere.

PO 2. Describe the properties and the composition of the following major layers of the Earth:

- Crust
- Mantle
- Core.

Earth Science Lab, Level A: Cards 1, 2
Earth Science Lab, Level B: Cards 1, 2

PO 3. Explain the following processes involved in the formation of the Earth’s structure:

- Erosion
- Deposition
- Plate tectonics
- Volcanism.

Earth Science Lab, Level A: Cards 10, 11, 12, 13, 14, 15, 16, 17, 24, 25, 26, 27, 28
Earth Science Lab, Level B: Cards 10, 11, 12, 13, 14, 15, 16, 17, 24, 25, 26, 27, 28
Earth Science Lab Teacher’s Handbook: Hands-On Activity 2, Plate Boundaries in Action, pages 77-79

PO 4. Describe how the rock and fossil record show that environmental conditions have changed over geological and recent time.

Earth Science Lab, Level A: Cards 7, 30, 31, 32, 33, 34
Earth Science Lab, Level B: Cards 7, 30, 31, 32, 33, 34
Strand 6: Earth and Space Science
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Concept 2: Earth’s Processes and Systems
Understand the processes acting on the Earth and their interaction with the Earth’s systems.

PO 1. Explain the rock cycle.
Earth Science Lab, Level A: Card 9
Earth Science Lab, Level B: Card 9

PO 2. Distinguish the components and characteristics of the rock cycle for the following types of rocks:
- Igneous
- Metamorphic
- Sedimentary.
Earth Science Lab, Level A: Cards 6, 7, 8, 9
Earth Science Lab, Level B: Cards 6, 7, 8, 9

PO 3. Analyze the evidence that lithospheric plate movements occur.
Earth Science Lab, Level A: Cards 10, 11, 12, 13, 14, 15, 16, 17
Earth Science Lab, Level B: Cards 10, 11, 12, 13, 14, 15, 16, 17

PO 4. Explain lithospheric plate movement as a result of convection.
Earth Science Lab, Level A: Cards 10, 11, 12, 13
Earth Science Lab, Level B: Cards 10, 11, 12, 13
Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 2: Earth’s Processes and Systems
Understand the processes acting on the Earth and their interaction with the Earth’s systems.

PO 5. Relate plate boundary movements to their resulting landforms, including:
- Mountains
- Faults
- Rift valleys
- Trenches
- Volcanoes.

Earth Science Lab, Level A: Cards 11, 12, 13, 14, 15, 16, 17, 88
Earth Science Lab, Level B: Cards 11, 12, 13, 14, 15, 16, 17, 88
Earth Science Lab Teacher’s Handbook: Hands-On Activity 2, Plate Boundaries in Action, pages 77-79

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Concept 2: Earth’s Processes and Systems
Understand the processes acting on the Earth and their interaction with the Earth’s systems.

PO 6. Describe how earthquakes are measured.

Earth Science Lab, Level A: Cards 15, 16
Earth Science Lab, Level B: Cards 15, 16

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Strand 6: Earth and Space Science
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Concept 3: Earth in the Solar System
Understand the relationships of the Earth and other objects in the solar system.

PO 1. Explain the phases of the Moon in terms of the relative positions of the Earth, Sun, and Moon.

Earth Science Lab, Level A: Card 64
Earth Science Lab, Level B: Card 64

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Strand 6: Earth and Space Science
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Concept 3: Earth in the Solar System
Understand the relationships of the Earth and other objects in the solar system.

PO 2. Construct a model for the relative positions of the Earth, Sun, and Moon as they relate to corresponding eclipses.

Earth Science Lab, Level A: Card 65
Earth Science Lab, Level B: Card 65
Strand 6: Earth and Space Science
Earth and Space Science provides the foundation for students to develop an understanding of the Earth, its history, composition, and formative processes, and an understanding of the solar system and the universe. Students study the regularities of the interrelated systems of the natural world. In doing so, they develop understanding of the basic laws, theories, and models that explain the world (NSES, 1995). By studying the Earth from both a historical and current time frame, student can make informed decisions about issues affecting the planets on which they live.

Concept 3: Earth in the Solar System
Understand the relationships of the Earth and other objects in the solar system.

PO 3. Explain the interrelationship between the Earth’s tides and the Moon.
Earth Science Lab, Level A: Card 66
Earth Science Lab, Level B: Card 66

Physical Science Lab, Level A: Card 48
Physical Science Lab, Level B: Card 48

PO 4. Explain the seasons in the Northern and Southern Hemisphere in terms of the tilt of the Earth’s axis relative to the Earth’s revolution around the Sun.
Earth Science Lab, Level A: Card 62
Earth Science Lab, Level B: Card 62

PO 5. Identify the following major constellations visible (seasonally) from the Northern Hemisphere:
- Orion
- Ursa Major (Great Bear)
- Cygnus
- Scorpion
- Cassiopeia.
Earth Science Lab, Level A: Card 75
Earth Science Lab, Level B: Card 75

PO 6. Explain the relationship among common objects in the solar system, galaxy, and the universe.
Earth Science Lab, Level A: Cards 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78
Earth Science Lab, Level B: Cards 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78

*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level
Grade 7, page 18
**SRA Life, Earth, and Physical Science Laboratories**
correlation to
Arizona Science Standard Articulated by Grade Level
Grade 8

*SRA Life, Earth, and Physical Science Laboratories* provide core science content in an alternate reading format. Each *SRA Science Lab* contains 180 Science Cards covering key science concepts and vocabulary. Each lab covers 90 different science topics presented at two different reading levels to meet varied student abilities. The *Teacher’s Handbook* includes hands-on inquiry activities as well as vocabulary building exercises. The *Classroom Resource CD-ROM* includes Writing Strategies in Science along with tests and vocabulary games.

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<tr>
<th><strong>PO 1. Formulate questions based on observations that lead to the development of a hypothesis.</strong></th>
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| **Classroom Resource CD-ROM:** Writing Strategy 8, 15 |

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<tr>
<th><strong>PO 2. Use appropriate research information, not limited to a single source, to use in the development of a testable hypothesis.</strong></th>
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</table>

| **Classroom Resource CD-ROM:** Writing Strategy 9, 12, 125, 28 |

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<tr>
<th><strong>PO 3. Generate a hypothesis that can be tested.</strong></th>
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| **Classroom Resource CD-ROM:** Writing Strategy 8, 15 |
### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 2: Scientific Testing (Investigating and Modeling)

#### PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.


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### Classroom Resource CD-ROM: Writing Strategy 15, 23

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### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 2: Scientific Testing (Investigating and Modeling)

#### PO 2. Design a controlled investigation to support or reject a hypothesis.


---

### Classroom Resource CD-ROM: Writing Strategy 15, 23

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### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 2: Scientific Testing (Investigating and Modeling)

#### PO 3. Conduct a controlled investigation to support or reject a hypothesis.


---

### Classroom Resource CD-ROM: Writing Strategy 15, 23
### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

### Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

**PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).**


**Classroom Resource CD-ROM:** Writing Strategy 1, 2, 5, 11, 15

### PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.


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<td>Analyze and interpret data to explain correlations and results; formulate new questions.</td>
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<td><strong>Physical Science Lab Teacher’s Handbook:</strong> Hands-On Activity 2, <em>Chemical Reaction Rates</em>, pages 81-83</td>
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<td><strong>PO 2. Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).</strong></td>
<td><strong>Life Science Lab Teacher’s Handbook:</strong> Hands-On Activity 7, <em>The Effects of Acid Rain</em>, pages 101-103</td>
</tr>
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<td><strong>Classroom Resource CD-ROM:</strong> Writing Strategy 7, 23</td>
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<td>Analyze and interpret data to explain correlations and results; formulate new questions.</td>
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<td><strong>PO 3. Interpret data that show a variety of possible relationships between the two variables, including:</strong></td>
<td><strong>Positive relationship</strong></td>
</tr>
<tr>
<td><strong>Negative relationship</strong></td>
<td><strong>No relationship.</strong></td>
</tr>
<tr>
<td><strong>Life Science Lab Teacher’s Handbook:</strong> Hands-On Activity 7, <em>The Effects of Acid Rain</em>, pages 101-103</td>
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<td><strong>Earth Science Lab Teacher’s Handbook:</strong> Hands-On Activity 8, <em>Temperature, Salinity, and Water Density</em>, pages 101-103</td>
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*SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level Grade 8, page 4*
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

PO 5. Explain how evidence supports the validity and reliability of a conclusion.


Strand 1: Inquiry Process

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 3: Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

PO 6. Identify the potential investigational error that may occur (e.g., flawed investigational design, inaccurate measurement, computational errors, unethical reporting).


Strand 1: Inquiry Process

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 3: Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

PO 7. Critique scientific reports from periodicals, television, or other media.

This concept is not covered at this level.

Strand 1: Inquiry Process

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 3: Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

PO 8. Formulate new questions based on the results of a previous investigation.


### Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

<table>
<thead>
<tr>
<th>Concept 4: Communication</th>
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<tr>
<td>Communicate results of investigations.</td>
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#### Life Science Lab Teacher’s Handbook
- Hands-On Activity 1, *Examining Cells*, pages 77-79
- Hands-On Activity 2, *Culturing Bacteria*, pages 81-83
- Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91
- Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

#### Earth Science Lab Teacher’s Handbook
- Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75
- Hands-On Activity 5, *What is in the Air?*, pages 89-91
- Hands-On Activity 6, *Modeling a Tornado*, pages 93-95

#### Physical Science Lab Teacher’s Handbook
- Hands-On Activity 5, *Making a Potato Battery*, pages 93-95

#### Classroom Resource CD-ROM
- Writing Strategy 1, 2, 5, 11, 12, 15, 16, 22

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**PO 1. Communicate the results of an investigation.**

- Choose an appropriate graphic representation for collected data:
  - Line graph
  - Double bar graph
  - Stem and leaf plot
  - Histogram.

#### Life Science Lab Teacher’s Handbook
- Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91

#### Earth Science Lab Teacher’s Handbook
Strand 1: Inquiry Process
Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Concept 4: Communication
Communicate results of investigations.

PO 3. Present analyses and conclusions in clear, concise formats.


Classroom Resource CD-ROM: Writing Strategy 15
**Strand 1: Inquiry Process**

Inquiry Process establishes the basis for students’ learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

**Concept 4: Communication**

Communicate results of investigations.

**PO 5. Communicate the results and conclusion of the investigation.**


**Classroom Resource CD-ROM:** Writing Strategy 15

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**Strand 2: History and Nature of Science**

Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

**Concept 1: History of Science as a Human Endeavor**

Identify individual, cultural, and technological contributions to scientific knowledge.

**PO 1. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Watson and Crick [scientists] supports Strand 4; Rosalind Franklin [scientist] supports Stand 4; Charles Darwin [scientist] supports Strand 4; George Washington Carver [scientist, inventor] support Strand 4; Joseph Priestley [scientist] supports Strand 5; Sir Frances Bacon [philosopher] supports Strand 5; Isaac Newton [scientist] supports Strand 5).**

**Life Science Lab, Level A:** Cards 2, 5, 46, 59

**Life Science Lab, Level B:** Cards 2, 5, 46, 59

**Earth Science Lab, Level A:** Cards 10, 68, 72, 78

**Earth Science Lab, Level B:** Cards 10, 68, 72, 78

**Physical Science Lab, Level A:** Cards 3, 7, 17, 55

**Physical Science Lab, Level B:** Cards 3, 7, 17, 55

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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

Grade 8, page 9
Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 1: History of Science as a Human Endeavor
Identify individual, cultural, and technological contributions to scientific knowledge.

PO 2. Evaluate the effects of the following major scientific milestones on society:
- Mendelian Genetics
- Newton’s Laws.

| Life Science Lab, Level A: Cards 63, 64 |
| Life Science Lab, Level B: Cards 63, 64 |
| Physical Science Lab, Level A: Card 55 |
| Physical Science Lab, Level B: Card 55 |

PO 3. Evaluate the impact of a major scientific development within the past decade.

| Life Science Lab, Level A: Cards 64, 69, 83 |
| Life Science Lab, Level B: Cards 64, 69, 83 |
| Earth Science Lab, Level A: Cards 20, 72, 79 |
| Earth Science Lab, Level B: Cards 20, 72, 79 |
| Physical Science Lab, Level A: Cards 33, 35, 81, 84 |
| Physical Science Lab, Level B: Cards 33, 35, 81, 84 |

PO 4. Evaluate career opportunities related to life and physical sciences.
This concept is not covered at this level.
Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 1. Apply the following scientific processes to other problem solving or decision making situations:
- Observing
- Questioning
- Communicating
- Comparing
- Measuring
- Classifying
- Predicting
- Organizing data
- Inferring
- Generating hypotheses
- Identifying variables.


Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 2. Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.

| Life Science Lab, Level A | Cards 1, 49, 64, 69 |
| Life Science Lab, Level B | Cards 1, 49, 64, 69 |

| Earth Science Lab, Level A | Cards 10, 68, 72, 78 |
| Earth Science Lab, Level B | Cards 10, 68, 72, 78 |

| Physical Science Lab, Level A | Cards 3, 81, 84 |
| Physical Science Lab, Level B | Cards 3, 81, 84 |

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level Grade 8, page 11
Strand 2: History and Nature of Science
Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the conclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

Concept 2: Nature of Scientific Knowledge
Understand how science is a process for generating knowledge.

PO 3. Defend the principles that accurate record keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.


Strand 3: Science in Personal and Social Perspectives
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Analyze the risk factors associated with natural, human induced, and/or biological hazards, including:
   - Waste disposal of industrial chemicals
   - Greenhouse gases.

Life Science Lab, Level A: Cards 84, 87, 88, 89, 90
Life Science Lab, Level B: Cards 84, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 37, 42, 59, 61, 86
Earth Science Lab, Level B: Cards 37, 42, 59, 61, 86
Earth Science Lab Teacher’s Handbook: Hands-On Activity 5, What is in the Air?, pages 89-91
Strand 3: Science in Personal and Social Perspectives
Science in personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the world—as living creatures, consumers, decision makers, problem solvers, managers, and planners.

Concept 1: Changes in Environments
Describe the interactions between human populations, natural hazards, and the environment.

PO 2. Analyze possible solutions to address the environmental risks associated with chemical and biological systems.

Life Science Lab, Level A: Cards 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 84, 85, 86, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 29, 35, 37, 42, 59, 60, 61, 85, 86
Earth Science Lab, Level B: Cards 29, 35, 37, 42, 59, 60, 61, 85, 86
Earth Science Lab Teacher’s Handbook: Hands-On Activity 5, What is in the Air?, pages 89-91

Physical Science Lab, Level A: Cards 34, 49
Physical Science Lab, Level B: Cards 34, 49

Concept 2: Science and Technology in Society
Develop viable solutions to a need or problem.

PO 1. Propose viable methods of responding to an identified need or problem.
PO 2. Compare possible solutions to best address an identified need of problem.
PO 3. Design and construct a solution to an identified need or problem using simple classroom materials.
PO 4. Compare risks and benefits of the following technological advances:
   • Radiation treatments
   • Genetic engineering
   • Airbags.

This concept is not covered at this level.

Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

Concept 2: Reproduction and Heredity
Understand the basic principles of heredity.

PO 1. Explain the purposes of cell division:
   • Growth and repair
   • Reproduction.

Life Science Lab, Level A: Cards 10, 60, 61
Life Science Lab, Level B: Cards 10, 60, 61

SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 8, page 13
### Strand 4: Life Science
Life Science expands students’ biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

#### Concept 2: Reproduction and Heredity
Understand the basic principles of heredity.

**PO 2. Explain the basic principles of heredity using the human examples of:**
- Eye color
- Widow’s peak
- Blood type.

| Life Science Lab, Level A: Cards 62, 63 |
| Life Science Lab, Level B: Cards 62, 63 |

#### Concept 4: Diversity, Adaptation, and Behavior
Identify structural and behavioral adaptations.

**PO 1. Explain how an organism’s behavior allows it to survive in an environment.**

| Life Science Lab, Level A: Cards 23, 24, 41, 43, 73, 83 |
| Life Science Lab, Level B: Cards 23, 24, 41, 43, 73, 83 |

**PO 2. Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment.**

| Life Science Lab, Level A: Card 44 |
| Life Science Lab, Level B: Card 44 |
### Concept 4: Diversity, Adaptation, and Behavior

**PO 3.** Determine characteristics of organisms that could change over several generations.

**Life Science Lab, Level A:** Cards 64, 65, 66

**Life Science Lab, Level B:** Cards 64, 65, 66

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**PO 4.** Compare the symbiotic and competitive relationships in organisms within an ecosystem (e.g., lichen, mistletoe/tree, clownfish/sea anemone, native/non-native species).

**Life Science Lab, Level A:** Cards 74, 75

**Life Science Lab, Level B:** Cards 74, 75

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**PO 5.** Analyze the following behavioral cycles of organisms:
- Hibernation
- Migration
- Dormancy (plants).

**Life Science Lab, Level A:** Cards 24, 43, 83

**Life Science Lab, Level B:** Cards 24, 43, 83

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**PO 6.** Describe the following factors that allow for the survival of living organisms:
- Protective coloration
- Beak design
- Seed dispersal
- Pollination.

**Life Science Lab, Level A:** Cards 20, 21, 23, 41, 73

**Life Science Lab, Level B:** Cards 20, 21, 23, 41, 73

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*SRA Life, Earth, and Physical Science Laboratories* correlation to Arizona Science Standard Articulated by Grade Level

*Grade 8, page 15*
Strand 5: Physical Science
Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in systems, and the processes by which energy is transferred between systems and surroundings.

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<tr>
<th>Concept 1: Properties and Changes of Properties in Matter</th>
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<tbody>
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<td>Understand physical and chemical properties of matter.</td>
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<tr>
<td><strong>PO 1. Identify different kinds of matter based on the following physical properties:</strong></td>
</tr>
<tr>
<td>• States</td>
</tr>
<tr>
<td>• Density</td>
</tr>
<tr>
<td>• Boiling point</td>
</tr>
<tr>
<td>• Melting point</td>
</tr>
<tr>
<td>• Solubility.</td>
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Physical Science Lab, Level A: Cards 1, 2, 5, 6
Physical Science Lab, Level B: Cards 1, 2, 5, 6

### Strand 5: Physical Science
Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in systems, and the processes by which energy is transferred between systems and surroundings.

#### Concept 1: Properties and Changes of Properties in Matter
Understand physical and chemical properties of matter.

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<th>Description</th>
<th>Physical Science Lab, Level A</th>
<th>Physical Science Lab, Level B</th>
</tr>
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<tbody>
<tr>
<td>4</td>
<td>Classify matter in terms of elements, compounds, or mixtures.</td>
<td>Cards 10, 11, 12, 13</td>
<td>Cards 10, 11, 12, 13</td>
</tr>
<tr>
<td>5</td>
<td>Classify mixtures as being homogeneous or heterogeneous.</td>
<td>Card 12</td>
<td>Card 12</td>
</tr>
<tr>
<td>6</td>
<td>Explain the systematic organization of the periodic table.</td>
<td>Cards 17, 18, 19, 20</td>
<td>Cards 17, 18, 19, 20</td>
</tr>
<tr>
<td>7</td>
<td>Investigate how the transfer of energy can affect the physical and chemical properties of matter.</td>
<td>Cards 6, 7, 8, 9, 27, 28</td>
<td>Cards 6, 7, 8, 9, 27, 28</td>
</tr>
</tbody>
</table>

*Note: SRA Life, Earth, and Physical Science Laboratories correlation to Arizona Science Standard Articulated by Grade Level
Grade 8, page 17*
**Strand 5: Physical Science**

Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in systems, and the processes by which energy is transferred between systems and surroundings.

**Concept 2: Motion and Forces**

Understand the relationship between force and motion.

**PO 1.** Demonstrate velocity as the rate of change of position over time.

**Physical Science Lab, Level A:** Card 51  
**Physical Science Lab, Level B:** Card 51

**PO 2.** Identify the conditions under which an object will continue in its state of motion (Newton’s 1st Law of Motion).

**Physical Science Lab, Level A:** Card 55  
**Physical Science Lab, Level B:** Card 55

**PO 3.** Describe how the acceleration of a body is dependent on its mass and the net applied force (Newton’s 2nd Law of Motion).

**Physical Science Lab, Level A:** Card 55  
**Physical Science Lab, Level B:** Card 55

**PO 4.** Describe forces as interactions between bodies (Newton’s 3rd Law of Motion).

**Physical Science Lab, Level A:** Card 55  
**Physical Science Lab, Level B:** Card 55
Strand 5: Physical Science
Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in systems, and the processes by which energy is transferred between systems and surroundings.

Concept 2: Motion and Forces
Understand the relationship between force and motion.

PO 5. Create a graph devised from measurements of moving objects and their interactions, including:
- position-time graphs
- velocity-time graphs.

Physical Science Lab, Level A: Cards 51, 52
Physical Science Lab, Level B: Cards 51, 52