# *SRA Life, Earth, and Physical Science Laboratories*
# correlation to
# Indiana's Academic Standards for Science
# 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.

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **The Scientific View of the World** |
| **6.1.1 Explain that some scientific knowledge, such as the length of the year, is very old and yet is still applicable today. Understand, however, that scientific knowledge is never exempt from review and criticism.** |
| **Earth Science Lab, Level A:** Cards 4, 6, 7, 8, 40, 62, 64, 65, 66, 69, 73<br>**Earth Science Lab, Level B:** Cards 4, 6, 7, 8, 40, 62, 64, 65, 66, 69, 73<br><br>**Physical Science Lab, Level A:** Cards 6, 55, 63, 64<br>**Physical Science Lab, Level B:** Cards 6, 55, 63, 64 |

| **Standard 1: The Nature of Science and Technology** |
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| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **Scientific Inquiry** |
| **6.1.2 Give examples of different ways scientists investigate natural phenomena and identify processes all scientists use, such as collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations, in order to make sense of the evidence.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 1: The Nature of Science and Technology** |
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| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **Scientific Inquiry** |
| **6.1.3 Recognize and explain that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 3, *Investigating Arthropods,* pages 85-87<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87<br><br>**Classroom Resource CD-ROM:** Writing Strategy 8, 15 |

| **Standard 1: The Nature of Science and Technology** |
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| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **The Scientific Enterprise** |
| **6.1.4 Give examples of employers who hire scientists, such as colleges and universities, businesses and industries, hospitals, and many government agencies.** |
| **6.1.5 Identify places scientists work, including offices, classrooms, laboratories, farms, factories, and natural field settings ranging from space to the ocean floor.** |
| **This concept is not covered at this level.** |

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| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **The Scientific Enterprise** |
| **6.1.6 Explain that computers have become invaluable in science because they speed up and extend people's ability to collect, store, compile, and analyze data; prepare research reports; and share data and ideas with investigators all over the world.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83<br><br>**Classroom Resource CD-ROM:** Writing Strategy 9, 25 |

| **Standard 1: The Nature of Science and Technology** |
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| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **Technology and Science** |
| **6.1.7 Explain that technology is essential to science for such purposes as access to outer space and other remote locations, sample collections and treatment, measurement, data collection and storage, computation, and communication of information.** |
| **Life Science Lab, Level A:** Cards 5, 59<br>**Life Science Lab, Level B:** Cards 5, 59<br><br>**Earth Science Lab, Level A:** Cards 16, 20, 31, 51, 54, 70, 79, 80, 81, 88<br>**Earth Science Lab, Level B:** Cards 16, 20, 31, 51, 54, 70, 79, 80, 81, 88<br><br>**Physical Science Lab, Level A:** Cards 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 81, 84, 90 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **Technology and Science** |
| **6.1.8 Describe instances showing that technology cannot always provide successful solutions for problems or fulfill every human need.** |
| **Life Science Lab, Level A:** Cards 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 87, 88, 89, 90<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 59, 60, 61, 86<br>**Earth Science Lab, Level B:** Cards 37, 42, 59, 60, 61, 86<br><br>**Physical Science Lab, Level A:** Cards 38, 49<br>**Physical Science Lab, Level B:** Cards 38, 49 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design investigation. They use computers and other technology to collect and analyze data; they explain findings and can relate how they conduct investigations to how the scientific enterprise functions as a whole. Students understand that technology has allowed humans to do many things, yet is cannot always provide solutions to our needs.** |
| **Technology and Science** |
| **6.1.9 Explain how technologies can influence all living things.** |
| **Life Science Lab, Level A:** Cards 49, 59, 64, 69, 83, 84, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 49, 59, 64, 69, 83, 84, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 16, 35, 37, 42, 51, 54, 59, 60, 61, 70, 79, 80, 81, 88<br>**Earth Science Lab, Level B:** Cards 16, 35, 37, 42, 51, 54, 59, 60, 61, 70, 79, 80, 81, 88<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab, Level A:** Cards 33, 35, 38, 70, 71, 72, 73, 76, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 33, 35, 38, 70, 71, 72, 73, 76, 81, 84, 90 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Computation and Estimation** |
| **6.2.1 Find the mean and median of a set of data.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion,* pages 85-87 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Computation and Estimation** |
| **6.2.2 Use technology, such as calculators or computer spreadsheets, in analysis of data.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83 |

| **Standard 2: Scientific Thinking** |
| --- |
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Manipulation and Observation** |
| **6.2.3 Select tools, such as cameras and tape recorders, for capturing information.** |
| This concept is not covered at this level. |

| **Standard 2: Scientific Thinking** |
| --- |
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Manipulation and Observation** |
| **6.2.4 Inspect, disassemble, and reassemble simple mechanical devices and describe what the various parts are for. Estimate what the effect of making a change in one part of a system is likely to have on the system as a whole.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery,* pages 93-95 |

| **Standard 2: Scientific Thinking** |
| --- |
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Communication Skills** |
| **6.2.5 Organize information in simple tables and graphs and identify relationships they reveal. Use tables and graphs as examples of evidence for explanations when writing essays or writing about lab work, fieldwork, etc.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83; Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 2: Scientific Thinking** |
| --- |
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Communication Skills** |
| **6.2.6 Read simple tables and graphs produced by others and describe in words what they show.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83; Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| Standard 2: Scientific Thinking |
|---|
| **Students use a variety of skills and techniques when attempting to answer questions and solve problems. Students describe their observations accurately and clearly using numbers, words, and sketches, and are able to communicate their thinking to others. They compare, contrast, explain, and justify both information and numerical functions.** |
| **Communication Skills** |
| **6.2.7 Locate information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83<br><br>**Classroom Resource CD-ROM:** Writing Strategy 9, 25 |

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| **Students use a variety of skills and techniques when attempting to answer questions and solve problems. Students describe their observations accurately and clearly using numbers, words, and sketches, and are able to communicate their thinking to others. They compare, contrast, explain, and justify both information and numerical functions.** |
| **Communication Skills** |
| **6.2.8 Analyze and interpret a given set of findings, demonstrating that there may be more than one good way to do so.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 22, 24 |

| Standard 2: Scientific Thinking |
|---|
| **Students use computers and other tools to collect information, calculate, and analyze data. They prepare tables and graphs, using these to summarize data and identify relationships.** |
| **Critical Response Skills** |
| **6.2.9 Compare consumer products, such as generic and brand-name products, and consider reasonable personal trade-offs among them on the basis of features, performance, durability, and costs.** |
| **This concept is not covered at this level.** |

| Standard 3: The Physical Setting |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **6.3.1 Compare and contrast the size, composition, and surface features of the planets that comprise the solar system, as well as the objects orbiting them. Explain that the planets, except Pluto, move around the sun in nearly circular orbits.** |
| **Earth Science Lab, Level A:** Cards 63, 67, 68, 69, 70, 71, 72, 73<br>**Earth Science Lab, Level B:** Cards 63, 67, 68, 69, 70, 71, 72, 73 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **6.3.2 Observe and describe that planets change their position relative to the background of stars.** |
| **Earth Science Lab, Level A:** Cards 68, 69, 70, 71, 72<br>**Earth Science Lab, Level B:** Cards 68, 69, 70, 71, 72 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **6.3.3 Explain that Earth is one of several planets that orbit the sun, and that the moon, as wells as many artificial satellites and debris, orbit around Earth.** |
| **Earth Science Lab, Level A:** Cards 62, 63, 68, 69, 70, 71, 72, 73, 80<br>**Earth Science Lab, Level B:** Cards 62, 63, 68, 69, 70, 71, 72, 73, 80 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.4 Explain that we live on a planet which appears at present to be the only body in the solar system capable of supporting life.** |
| **Earth Science Lab, Level A:** Cards 68, 69<br>**Earth Science Lab, Level B:** Cards 68, 69 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.5 Use models or drawings to explain that Earth has different seasons and weather patterns because it turns daily on an axis that is titled relative to the plane of Earth's yearly orbit around the sun. Know that because of this, sunlight falls more intensely on different parts of Earth during the year (the accompanying greater length of days also has an affect) and the difference in heating produces seasons and weather patterns.** |
| **Earth Science Lab, Level A:** Cards 38, 45, 46, 52, 53, 54, 55, 57, 62<br>**Earth Science Lab, Level B:** Cards 38, 45, 46, 52, 53, 54, 55, 57, 62 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.6 Use models or drawings to explain that the phases of the moon are caused by the moon's orbit around Earth, once in about 28 days, changing what part of the moon is lighted by the sun and how much of that part can be seen from Earth, both during the day and night.** |
| **Earth Science Lab, Level A:** Card 64<br>**Earth Science Lab, Level B:** Card 64 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.7 Understand and describe the scales involved in characterizing Earth and its atmosphere. Describe that Earth is mostly rock, that three-fourths of its surface is covered by a relatively thin layer of water, and that the entire planet is surrounded by a relatively thin blanket of air.** |
| **Earth Science Lab, Level A:** Cards 1, 2, 36, 37, 82, 87<br>**Earth Science Lab, Level B:** Cards 1, 2, 36, 37, 82, 87 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.8 Explain that fresh water, limited in supply and uneven in distribution, is essential for life and also for most industrial processes. Understand that this resource can be depleted or polluted, making it unavailable or unsuitable for life.** |
| **Life Science Lab, Level A:** Card 90<br>**Life Science Lab, Level B:** Card 90<br><br>**Earth Science Lab, Level A:** Cards 82, 83, 84, 86, 87<br>**Earth Science Lab, Level B:** Cards 82, 83, 84, 86, 87<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.9 Illustrate that the cycling of water in and out of the atmosphere plays an important role in determining climatic patterns.** |
| **Earth Science Lab, Level A:** Cards 43, 44, 47, 48, 49, 55, 56, 58<br>**Earth Science Lab, Level B:** Cards 43, 44, 47, 48, 49, 55, 56, 58 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.10 Describe the motions of ocean waters, such as tides, and identify their causes.** |
| **Earth Science Lab, Level A:** Cards 66, 87, 90<br>**Earth Science Lab, Level B:** Cards 66, 87, 90<br><br>**Physical Science Lab, Level A:** Card 48<br>**Physical Science Lab, Level B:** Card 48 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.11 Identify and explain the effects of oceans on climate.** |
| **Earth Science Lab, Level A:** Cards 56, 57, 58, 60, 61, 87<br>**Earth Science Lab, Level B:** Cards 56, 57, 58, 60, 61, 87 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.12 Describe ways human beings protect themselves from adverse weather conditions.** |
| **Earth Science Lab, Level A:** Cards 52, 53, 54<br>**Earth Science Lab, Level B:** Cards 52, 53, 54<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 6, *Modeling a Tornado*, pages 93-95 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.13 Identify, explain, and discuss some effects human activities, such as the creation of pollution, have on weather and the atmosphere.** |
| **Life Science Lab, Level A:** Cards 89, 90<br>**Life Science Lab, Level B:** Cards 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 59, 60, 61<br>**Earth Science Lab, Level B:** Cards 37, 42, 59, 60, 61<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.14 Give examples of some minerals that are very rare and some that exist in great quantities. Explain how recycling and the development of substitutes can reduce the rate of depletion of minerals.** |
| **Earth Science Lab, Level A:** Cards 3, 4, 5<br>**Earth Science Lab, Level B:** Cards 3, 4, 5<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.15 Explain that although weathered rock is the basic component of soil, the composition and texture of soil and its fertility and resistance to erosion are greatly influenced by plant roots and debris, bacteria, fungi, worms, insects, and other organisms.** |
| **Earth Science Lab, Level A:** Cards 23, 29<br>**Earth Science Lab, Level B:** Cards 23, 29 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **6.3.16 Explain that human activities, such as reducing the amount of forest cover, increasing the amount and variety of chemicals released into the atmosphere, and farming intensively, have changed the capacity of the environment to support some life forms.** |
| **Life Science Lab, Level A:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 35, 37, 42, 59, 60, 61, 86<br>**Earth Science Lab, Level B:** Cards 35, 37, 42, 59, 60, 61, 86<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **6.3.17. Recognize and describe that energy is a property of many objects and is associated with heat, light, electricity, mechanical motion, and sound.** |
| **Physical Science Lab, Level A:** Cards 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 76, 77, 78, 79<br>**Physical Science Lab, Level B:** Cards 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 76, 77, 78, 79<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **6.3.18 Investigate and describe that when a new material, such as concrete, is made by combining two or more materials, it has properties that are different from the original materials.** |
| **Physical Science Lab, Level A:** Cards 9, 11, 27, 28, 29, 30<br>**Physical Science Lab, Level B:** Cards 9, 11, 27, 28, 29, 30<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **6.3.19 Investigate that materials may be composed of parts that are too small to be seen without magnification.** |
| **Physical Science Lab, Level A:** Cards 3, 4, 10, 11, 21<br>**Physical Science Lab, Level B:** Cards 3, 4, 10, 11, 21 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **6.3.20 Investigate that equal volumes of different substances usually have different masses as well as different densities.** |
| **Physical Science Lab, Level A:** Card 2<br>**Physical Science Lab, Level B:** Card 2 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **6.3.21 Investigate, using a prism for example, that light is made up of a mixture of many different colors of light, even though the light is perceived as almost white.** |
| **Physical Science Lab, Level A:** Cards 85, 87<br>**Physical Science Lab, Level B:** Cards 85, 87 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **6.3.22 Demonstrate that vibrations in materials set up wavelength disturbances, such as sound and earthquakes waves, that spread away from the source.** |
| **Earth Science Lab, Level A:** Card 16<br>**Earth Science Lab, Level B:** Card 16<br><br>**Physical Science Lab, Level A:** Cards 77, 78, 79, 80, 81, 82, 83<br>**Physical Science Lab, Level B:** Cards 77, 78, 79, 80, 81, 82, 83<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **6.3.23 Explain that electrical circuits provide a means of transferring electrical energy from sources such as generators to devices in which heat, light, sound, and chemical changes are produced.** |
| **Physical Science Lab, Level A:** Cards 68, 69, 70, 72, 73, 76<br>**Physical Science Lab, Level B:** Cards 68, 69, 70, 72, 73, 76<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery*, pages 93-95 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.1 Explain that one of the most general distinctions among organisms is between green plants, which use sunlight to make their own food, and animals, which consume energy-rich foods.** |
| **Life Science Lab, Level A:** Cards 2, 3, 6, 7, 16, 17, 25, 76, 77<br>**Life Science Lab, Level B:** Cards 2, 3, 6, 7, 25, 76, 77<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.2 Give examples of organisms that cannot be neatly classified as either plants or animals, such as fungi and bacteria.** |
| **Life Science Lab, Level A:** Cards 11, 12, 13, 14, 15<br>**Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83 |

| Standard 4: The Living Environment |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.3 Describe some of the great variety of body plans and internal structures animals and plants have that contribute to their being able to make or find food and reproduce.** |
| **Life Science Lab, Level A:** Cards 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40<br>**Life Science Lab, Level B:** Cards 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83; Hands-On Activity 3, *Investigating Arthropods*, pages 85-87 |

| Standard 4: The Living Environment |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.4 Recognize and describe that a species comprises all animals that can mate with one another to produce fertile offspring.** |
| **Life Science Lab, Level A:** Card 1<br>**Life Science Lab, Level B:** Card 1 |

| Standard 4: The Living Environment |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.5 Investigate and explain that all living things are composed of cells whose details are usually visible only through a microscope.** |
| **Life Science Lab, Level A:** Cards 1, 5, 6, 7, 8, 9, 10<br>**Life Science Lab, Level B:** Cards 1, 5, 6, 7, 8, 9, 10<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79 |

| Standard 4: The Living Environment |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.6 Distinguish the main differences between plant and animal cells, such as the presence of chlorophyll and cell walls in plant cells and their absence in animal cells.** |
| **Life Science Lab, Level A:** Cards 6, 7, 9<br>**Life Science Lab, Level B:** Cards 6, 7, 9<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Diversity of Life** |
| **6.4.7 Explain that about two-thirds of the mass of a cell is accounted for by water. Understand that water gives cells many of their properties.** |
| **Life Science Lab, Level A:** Cards 5, 6, 7, 8<br>**Life Science Lab, Level B:** Cards 5, 6, 7, 8<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Interdependence of Life and Evolution** |
| **6.4.8 Explain that in all environments, such as freshwater, marine, forest, desert, grassland, mountain, and others, organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter. Note that in any environment, the growth and survival of organisms depend on the physical conditions.** |
| **Life Science Lab, Level A:** Cards 72, 75, 81, 82<br>**Life Science Lab, Level B:** Cards 72, 75, 81, 82<br><br>**Earth Science Lab, Level A:** Card 89<br>**Earth Science Lab, Level B:** Card 89 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Interdependence of Life and Evolution** |
| **6.4.9 Recognize and explain that two types of organisms may interact in a competitive or cooperative relationship, such as producer/consumer, predator/prey, or parasite/host.** |
| **Life Science Lab, Level A:** Cards 73, 74, 75, 76, 77<br>**Life Science Lab, Level B:** Cards 73, 74, 75, 76, 77<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?*, pages 97-99 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Interdependence of Life and Evolution** |
| **6.4.10 Describe how life on Earth depends on energy from the sun.** |
| **Life Science Lab, Level A:** Cards 7, 9, 16, 17, 76, 77<br>**Life Science Lab, Level B:** Cards 7, 9, 16, 17, 76, 77 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Human Identify** |
| **6.4.11 Describe that human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions.** |
| **Life Science Lab, Level A:** Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58<br>**Life Science Lab, Level B:** Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Human Identify** |
| **6.4.12 Explain that human beings have many similarities and differences and that the similarities make it possible for human beings to reproduce and to donate blood and organs to one another.** |
| **Life Science Lab, Level A:** Cards 48, 58, 61<br>**Life Science Lab, Level B:** Cards 48, 58, 61 |

| **Standard 4: The Living Environment** |
|---|
| **Students recognize that plants and animals obtain energy in different ways, and they can describe some of the internal structures of organisms related to this function. They examine the similarities and differences between humans and other species. They use microscopes to observe cells and recognize cells as the building blocks of all life.** |
| **Human Identify** |
| **6.4.13 Give examples of how human beings use technology to match or exceed many of the abilities of other species.** |
| **Life Science Lab, Level A:** Cards 5, 59, 83<br>**Life Science Lab, Level B:** Cards 5, 59, 83<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79<br><br>**Earth Science Lab, Level A:** Cards 16, 20, 51, 54, 79, 80, 81, 88<br>**Earth Science Lab, Level B:** Cards 16, 20, 51, 54, 79, 80, 81, 88<br><br>**Physical Science Lab, Level A:** Cards 79, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 79, 81, 84, 90 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Numbers** |
| **6.5.1Demonstrate that the operations addition and subtraction are inverse and that multiplication and division are inverses of each other.** |
| **This concept is not covered at this level.** |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Numbers** |
| **6.5.2 Evaluate the precision and usefulness of data based on measurements taken.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83; Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 22, 24 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **6.5.3 Explain why shapes on a sphere like Earth cannot be depicted on a flat surface without some distortion.** |
| **Earth Science Lab, Level A:** Cards 18, 19, 20<br>**Earth Science Lab, Level B:** Cards 18, 19, 20<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **6.5.4 Demonstrate how graphs may help to show patterns—such as trends, varying rates of change, gaps, or clusters—which can be used to make predictions.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **6.5.5 Explain the strengths and weaknesses of using an analogy to help describe an event, object, etc.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 20 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **6.5.6 Predict the frequency of the occurrence of future events based on data.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91<br><br>**Classroom Resource CD-ROM:** Writing Strategy 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **6.5.7 Demonstrate how probabilities and ratios can be expressed as fractions, percentages, or odds.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **6.6.1 Understand and explain that from the earliest times until now, people have believed that even through countless different kinds of materials seem to exist in the world, most things can be made of combinations of just a few basic kinds of things. Note that there has not always been agreement, however, on what basic kinds of things are, such as the theory of long ago that the basic substances were earth, water, air, and fire. Understand that this theory seemed to explain many observations about the world, but as we known now, it fails to explain many others.** |
| **Life Science Lab, Level A:** Card 4<br>**Life Science Lab, Level B:** Card 4<br><br>**Physical Science Lab, Level A:** Cards 3, 4, 10, 11, 17, 18, 19, 20<br>**Physical Science Lab, Level B:** Cards 3, 4, 10, 11, 17, 18, 19, 20 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **6.6.2 Understand and describe that scientists are still working out the details of what the basic kinds of matter are on the smallest scale, and of how they combine, or can be made to combine, to make other substances.** |
| **Physical Science Lab, Level A:** Cards 3, 4, 10, 11, 12, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32<br>**Physical Science Lab, Level B:** Cards 3, 4, 10, 11, 12, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **6.6.3 Understand and explain that the experimental and theoretical work done by French scientists Antoine Lavoisier in the decade between the American and French Revolution contributed crucially to the modern science of chemistry.** |
| This concept is not covered at this level. |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Systems** |
| **6.7.1 Describe that a system, such as the human body, is composed of may subsystems.** |
| **Life Science Lab, Level A:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Earth Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Physical Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Models and Scale** |
| **6.7.2 Use models to illustrate processes that happen too shortly, too quickly, or on too small a scale to observe directly, or are too vast to be changed deliberately, or are potentially dangerous.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 20 |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Constancy and Change** |
| **6.7.3 Identify examples of feedback mechanisms within systems that serve to keep changes within specified limits.** |
| **Life Science Lab, Level A:** Cards 47, 48, 49, 51, 55, 57<br>**Life Science Lab, Level B:** Cards 47, 48, 49, 51, 55, 57<br><br>**Physical Science Lab, Level A:** Cards 27, 28, 29, 37, 69, 71<br>**Physical Science Lab, Level B:** Cards 27, 28, 29, 37, 69, 71<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83 |

# *SRA Life, Earth, and Physical Science Laboratories*
# correlation to
# Indiana's Academic Standards for Science
# Grade 7

***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.

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **The Scientific View of the World** |
| **7.1.1 Recognize and explain that when similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often takes further studies to decide.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Scientific Inquiry** |
| **7.1.2 Explain what people expect to observe often affects what they actually do observe and provide an example of a solution to this problem.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

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| **Standard 1: The Nature of Science and Technology** |
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Scientific Inquiry** |
| **7.1.3 Explain why it is important in science to keep honest, clear, and accurate records.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

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| **Standard 1: The Nature of Science and Technology** |
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Scientific Inquiry** |
| **7.1.4 Describe that different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

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| **Standard 1: The Nature of Science and Technology** |
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **The Scientific Enterprise** |
| **7.1.5 Identify some important contributions to the advancement of science, mathematics, and technology that have been made by different people, in different cultures, at different times.** |
| **Life Science Lab, Level A:** Cards 2, 5, 46, 59<br>**Life Science Lab, Level B:** Cards 2, 5, 46, 59<br><br>**Earth Science Lab, Level A:** Cards 10, 68, 72, 78<br>**Earth Science Lab, Level B:** Cards 10, 68, 72, 78<br><br>**Physical Science Lab, Level A:** Cards 3, 7, 17, 55<br>**Physical Science Lab, Level B:** Cards 3, 7, 17, 55 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **The Scientific Enterprise** |
| **7.1.6 Provide examples of people who overcame bias and/or limited opportunities in education and employment to excel in the fields of science.** |
| **Technology and Science** |
| **7.1.7 Explain how engineers, architects, and others who engage in design and technology use scientific knowledge to solve practical problems.** |
| These concepts are not covered at this level. |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Technology and Science** |
| **7.1.8 Explain that technologies often have drawbacks as well as benefits. Consider a technology, such as the use of pesticides, which helps some organisms but may hurt others, either deliberately or inadvertently.** |
| **Life Science Lab, Level A:** Cards 46, 49, 64, 69, 83, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 46, 49, 64, 69, 83, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 16, 20, 31, 37, 42, 59, 60, 61, 79, 80, 81, 86, 88<br>**Earth Science Lab, Level B:** Cards 16, 20, 31, 37, 42, 59, 60, 61, 79, 80, 81, 86, 88<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab, Level A:** Cards 33, 35, 71, 72, 76, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 33, 35, 71, 72, 76, 81, 84, 90 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Technology and Science** |
| **7.1.9 Explain how societies influence what types of technology are developed and used in fields such as agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, and communication.** |
| **Life Science Lab, Level A:** Cards 45, 46, 49, 64, 69, 83, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 45, 46, 49, 64, 69, 83, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 16, 20, 31, 37, 42, 51, 54, 70, 79, 80, 81, 86, 88<br>**Earth Science Lab, Level B:** Cards 16, 20, 31, 37, 42, 51, 54, 70, 79, 80, 81, 86, 88<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab, Level A:** Cards 33, 35, 72, 76, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 33, 35, 72, 76, 81, 84, 90 |

| Standard 1: The Nature of Science and Technology |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Technology and Science** |
| **7.1.10 Identify ways that technology has strongly influenced the course of history and continues to do so.** |
| **Life Science Lab, Level A:** Cards 5, 49, 64, 69<br>**Life Science Lab, Level B:** Cards 5, 49, 64, 69<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 79, 80<br>**Earth Science Lab, Level B:** Cards 37, 42, 79, 80<br><br>**Physical Science Lab, Level A:** Cards 72, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 72, 81, 84, 90 |

| Standard 1: The Nature of Science and Technology |
|---|
| **Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.** |
| **Technology and Science** |
| **7.1.11 Illustrate how numbers can be represented using sequences of only two symbols, such as 1 and 0 or on and off, and how that affects the storage of information in our society.** |
| This concept is not covered at this level. |

| Standard 2: Scientific Thinking |
|---|
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Computation and Estimation** |
| **7.2.1 Find what percentage one number is of another and figure any percentage of any number.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99 |

| Standard 2: Scientific Thinking |
|---|
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Computation and Estimation** |
| **7.2.2 Use formulas to calculate the circumference and areas of rectangles, triangles, and circles, and volumes of rectangular solids.** |
| This concept is not covered at this level. |

| Standard 2: Scientific Thinking |
|---|
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Computation and Estimation** |
| **7.2.3 Decide what degree of precision is adequate, based on the degree of precision of the original data, and round off the result of calculator operations to significant figures that reasonably reflect those of the inputs.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| Standard 2: Scientific Thinking |
| --- |
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Computation and Estimation** |
| **7.2.4 Express numbers like 100, 1,000, and 1,000,000 as powers of 10.** |
| This concept is not covered at this level. |

| Standard 2: Scientific Thinking |
| --- |
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Computation and Estimation** |
| **7.2.5 Estimate probabilities of outcomes in familiar situations, on the basis of history or the number of possible outcomes.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| Standard 2: Scientific Thinking |
| --- |
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Manipulations and Observation** |
| **7.2.6 Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, or temperatures, and choose appropriate units.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Communication Skills** |
| **7.2.7 Incorporate circle charts, bar and line graphs, diagrams, scatterplots, and symbols into writing, such as lab or research reports, to serve as evidence for claims and/or conclusions.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 1-30 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.** |
| **Critical Response Skills** |
| **7.2.8 Question claims based on vague attributes, such as "Leading doctors say…," or on statements made by celebrities or others outside the area or their particular expertise.** |
| This concept is not covered at this level. |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **7.3.1 Recognize and describe that the sun is a medium-sized star located near the edge of a disk-shaped galaxy of stars and that the universe contains many billions of galaxies and each galaxy contains many billions of stars.** |
| **Earth Science Lab, Level A:** Cards 67, 68, 75, 76, 77<br>**Earth Science Lab, Level B:** Cards 67, 68, 75, 76, 77 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **7.3.2 Recognize and describe that the sun is many thousands of times closer to Earth than any other star, allowing light from the sun to reach Earth in a few minutes. Note that this may be compared to time spans of longer than a year for all other stars.** |
| **Earth Science Lab, Level A:** Cards 67, 68, 74, 75<br>**Earth Science Lab, Level B:** Cards 67, 68, 74, 75 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.3 Describe how climates sometimes have changed abruptly in the past as a result of changes in Earth's crust, such as volcanic eruptions or impacts of huge rocks from space.** |
| **Earth Science Lab, Level A:** Cards 15, 17, 60, 61, 73<br>**Earth Science Lab, Level B:** Cards 15, 17, 60, 61, 73 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.4 Explain how heat flow and movement of material within Earth causes earthquakes and volcanic eruptions and creates mountains and ocean basins.** |
| **Earth Science Lab, Level A:** Cards 2, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 88<br>**Earth Science Lab, Level B:** Cards 2, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 88 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.5 Recognize and explain that heat energy carried by ocean currents has a strong influence on climate around the world.** |
| **Earth Science Lab, Level A:** Cards 41, 57, 58, 87<br>**Earth Science Lab, Level B:** Cards 41, 57, 58, 87 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.6 Describe how gas and dust from large volcanoes can change the atmosphere.** |
| **Earth Science Lab, Level A:** Card 17<br>**Earth Science Lab, Level B:** Card 17 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.7 Give examples of some changes in Earth's surface that are abrupt, such as earthquakes and volcanic eruptions, and some changes that happen very slowly, such as uplift and wearing down of mountains and the action of glaciers.** |
| **Earth Science Lab, Level A:** Cards 10, 11, 12, 13, 14, 15, 16, 17, 22, 24, 25, 26, 27, 28, 88<br>**Earth Science Lab, Level B:** Cards 10, 11, 12, 13, 14, 15, 16, 17, 22, 24, 25, 26, 27, 28, 88<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 2, *Plate Boundaries in Action*, pages 77-79 |

| **Standard 3: The Physical Setting** |
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| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.8 Describe how sediments of sand and smaller particles, sometimes containing the remains of organisms, are gradually buried and are cemented together by dissolved minerals to form solid rock again.** |
| **Earth Science Lab, Level A:** Cards 7, 9<br>**Earth Science Lab, Level B:** Cards 7, 9 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.9 Explain that sedimentary rock, when buried deep enough, may be reformed by pressure and heat, perhaps melting and recrystallizing into different kinds of rock. Describe that these reformed rock layers may be forced up again to become land surface and even mountains, and subsequently erode.** |
| **Earth Science Lab, Level A:** Cards 6, 7, 8, 9, 17, 21, 24, 25, 26, 27, 28<br>**Earth Science Lab, Level B:** Cards 6, 7, 8, 9, 17, 21, 24, 25, 26, 27, 28 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **7.3.10 Explain how the thousands of layers of sedimentary rock can confirm the long history of the changing surface of Earth and the changing life forms whose remains are found in successive layers, although the youngest layers are not always found on top, because of folding, breaking, and uplifting of layers.** |
| **Life Science Lab, Level A:** Card 67<br>**Life Science Lab, Level B:** Card 67<br><br>**Earth Science Lab, Level A:** Cards 7, 9, 14, 30, 34<br>**Earth Science Lab, Level B:** Cards 7, 9, 14, 30, 34 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.11 Explain that the sun loses energy by emitting light. Note that only a tiny fraction of that light reaches Earth. Understand that the sun's energy arrives as light with a wide range of wavelengths, consisting of visible light and infrared and ultraviolet radiation.** |
| **Earth Science Lab, Level A:** Card 67<br>**Earth Science Lab, Level B:** Card 67<br><br>**Physical Science Lab, Level A:** Cards 82, 83, 85<br>**Physical Science Lab, Level B:** Cards 82, 83, 85 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.12 Investigate how the temperature and acidity of a solution influences reaction rates, such as those resulting in food spoilage.** |
| **Physical Science Lab, Level A:** Cards 9, 27, 28, 29, 30<br>**Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.13 Explain that many substances dissolve in water. Understand that the presence of these substances often affects the rates of reactions that are occurring in the water as compared to the same reactions occurring in the water in the absence of the substances.** |
| **Physical Science Lab, Level A:** Cards 12, 29<br>**Physical Science Lab, Level B:** Cards 12, 29 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.14 Explain that energy in the form of heat is almost always one of the products of an energy transformation, such as in the examples of exploding stars, biological growth, the operation of machines, and the motion of people.** |
| **Life Science Lab, Level A:** Cards 1, 9, 17, 44, 45, 46<br>**Life Science Lab, Level B:** Cards 1, 9, 17, 44, 45, 46<br><br>**Earth Science Lab, Level A:** Cards 38, 76<br>**Earth Science Lab, Level B:** Cards 38, 76<br><br>**Physical Science Lab, Level A:** Cards 28, 34, 37, 38, 41, 42, 45, 46, 49, 58, 66, 67, 71, 73, 83, 85<br>**Physical Science Lab, Level B:** Cards 28, 34, 37, 38, 41, 42, 45, 46, 49, 58, 66, 67, 71, 73, 83, 85 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.15 Describe how electrical energy can be produced from a variety of energy sources and can be transformed into almost any other form of energy, such as light or heat.** |
| **Physical Science Lab, Level A:** Cards 34, 38, 42, 46, 47, 48, 49, 68, 69, 70, 72, 73<br>**Physical Science Lab, Level B:** Cards 34, 38, 42, 46, 47, 48, 49, 68, 69, 70, 72, 73 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **7.3.16 Recognize and explain that different ways of obtaining, transforming, and distributing energy have different environmental consequences.** |
| **Life Science Lab, Level A:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 59, 60, 61, 86<br>**Earth Science Lab, Level B:** Cards 37, 42, 59, 60, 61, 86<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab, Level A:** Cards 38, 46, 47, 48, 49<br>**Physical Science Lab, Level B:** Cards 38, 46, 47, 48, 49 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **7.3.17 Investigate that an unbalanced force, acting on an object, changes its speed or path of motion or both, and know that if the force always acts toward the same center as the object moves, the object's path may curve into an orbit around the center.** |
| **Physical Science Lab, Level A:** Cards 54, 55, 56, 58, 59<br>**Physical Science Lab, Level B:** Cards 54, 55, 56, 58, 59<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 4, *Reducing Friction,* pages 89-91 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **7.3.18 Describe that light waves, sound waves, and other waves move at different speeds in different materials.** |
| **Earth Science Lab, Level A:** Card 16<br>**Earth Science Lab, Level B:** Card 16<br><br>**Physical Science Lab, Level A:** Cards 77, 78, 79, 80, 81, 82, 83, 85, 86, 87, 88<br>**Physical Science Lab, Level B:** Cards 77, 78, 79, 80, 81, 82, 83, 85, 86, 87, 88<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **7.3.19 Explain that human eyes respond to a narrow range of wavelengths of the electromagnetic spectrum.** |
| **Physical Science Lab, Level A:** Cards 82, 85, 89<br>**Physical Science Lab, Level B:** Cards 82, 85, 89 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **7.3.20 Describe that something can be "seen" when light waves emitted or reflected by it enter the eye just as something can be "heard" when sound waves from it enter the ear.** |
| **Physical Science Lab, Level A:** Card 89<br>**Physical Science Lab, Level B:** Card 89 |

| **Standard 4: The Living Environment** |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its base at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Diversity of Life** |
| **7.4.1 Explain that similarities among organisms are found in external and internal anatomical features, including specific characteristics at the cellular level, such as the number of chromosomes. Understand that these similarities are used to classify organisms since they may be used to infer the degree of relatedness among organisms.** |
| **Life Science Lab, Level A:** Cards 1, 2, 3, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40<br>**Life Science Lab, Level B:** Cards 1, 2, 3, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40<br>**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 3, *Investigating Arthropods,* pages 85-87 |

| **Standard 4: The Living Environment** |
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| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its base at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Diversity of Life** |
| **7.4.2 Describe that all organisms, including the human species, are part of and depend on two main interconnected global food webs, the ocean food web and the land food web.** |
| **Life Science Lab, Level A:** Cards 16, 17, 76, 77<br>**Life Science Lab, Level B:** Cards 16, 17, 76, 77<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab, Level A:** Card 89<br>**Earth Science Lab, Level B:** Card 89 |

| **Standard 4: The Living Environment** |
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| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its base at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Diversity of Life** |
| **7.4.3 Explain how, in sexual reproduction, a single specialized cell from a female merges with a specialized cell from a male and this fertilized eggs carries genetic information from each parent and multiplies to form the complete organism.** |
| **Life Science Lab, Level A:** Cards 58, 61, 62, 63<br>**Life Science Lab, Level B:** Cards 58, 61, 62, 63 |

| Standard 4: The Living Environment |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Diversity of Life** |
| **7.4.4 Explain that cells continually divide to make more cells for growth and repair and that various organs and tissues function to serve the needs of cells for food, air, and waste removal.** |
| **Life Science Lab, Level A:** Cards 10, 47, 48, 50, 51, 52, 60<br>**Life Science Lab, Level B:** Cards 10, 47, 48, 50, 51, 52, 60 |

| Standard 4: The Living Environment |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Diversity of Life** |
| **7.4.5 Explain that the basic functions of organisms, such as extracting energy from food and getting rid of wastes, are carried out within the cell and understand that the way in which cells function is similar in all organisms.** |
| **Life Science Lab, Level A:** Cards 5, 6, 7, 8, 9, 10<br>**Life Science Lab, Level B:** Cards 5, 6, 7, 8, 9, 10<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79 |

| Standard 4: The Living Environment |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Interdependence of Life and Evolution** |
| **7.4.6 Explain how food provides the fuel and the building material for all organisms.** |
| **Life Science Lab, Level A:** Cards 1, 9, 46, 76, 77<br>**Life Science Lab, Level B:** Cards 1, 9, 46, 76, 77 |

| Standard 4: The Living Environment |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Interdependence of Life and Evolution** |
| **7.4.7 Describe how plants use the energy from light to make sugars from carbon dioxide and water to produce food that can be used immediately or stored for later use.** |
| **Life Science Lab, Level A:** Cards 7, 9, 16, 17, 76<br>**Life Science Lab, Level B:** Cards 7, 9, 16, 17, 76 |

| Standard 4: The Living Environment |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Interdependence of Life and Evolution** |
| **7.4.8 Describe how organisms that eat plants break down the plant structures to produce the materials and energy that they need to survive, and in turn, how they are consumed by other organisms.** |
| **Life Science Lab, Level A:** Cards 13, 76, 77<br>**Life Science Lab, Level B:** Cards 13, 76, 77 |

| Standard 4: The Living Environment |
| --- |
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Interdependence of Life and Evolution** |
| **7.4.9 Understand and explain that as any population of organisms grows, it is held in check by one or more environmental factors. These factors could result in depletion of food or nesting sites and/or increased loss to increased numbers of predators or parasites. Give examples of some consequences of this.** |
| **Life Science Lab, Level A:** Cards 72, 73, 74, 75<br>**Life Science Lab, Level B:** Cards 72, 73, 74, 75 |

| Standard 4: The Living Environment |
| --- |
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Human Identify** |
| **7.4.10 Describe how technologies having to do with food production, sanitation, and disease prevention have dramatically changed how people live and work and have resulted in changes in factors that affect the growth of human population.** |
| **Life Science Lab, Level A:** Cards 11, 12, 13, 14, 15, 45, 46, 47, 49, 51<br>**Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15, 45, 46, 47, 49, 51 |

| Standard 4: The Living Environment |
| --- |
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Human Identify** |
| **7.4.11 Explain that the amount of food energy (calories) a person requires varies with body weight, age, sex, activity level, and natural body efficiency. Understand that regular exercise is important to maintain a healthy heart/lung system, good muscle tone, and strong bone structure.** |
| **Life Science Lab, Level A:** Cards 45, 46<br>**Life Science Lab, Level B:** Cards 45, 46 |

| Standard 4: The Living Environment |
| --- |
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Human Identify** |
| **7.4.12 Explain that viruses, bacteria, fungi, and parasites may infect the human body and interfere with normal body functions. Recognize that a person can catch a cold many times because there are many varieties of cold viruses that cause similar symptoms.** |
| **Life Science Lab, Level A:** Cards 11, 12, 13, 14, 15, 49<br>**Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15, 49 |

| **Standard 4: The Living Environment** |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Human Identify** |
| **7.4.13 Explain that white blood cells engulf invaders or produce antibodies that attack invaders or mark the invaders for killing by other while blood cells. Know that the antibodies produced will remain and fight off subsequent invaders of the same kind.** |
| **Life Science Lab, Level A:** Card 48<br>**Life Science Lab, Level B:** Card 48 |

| **Standard 4: The Living Environment** |
|---|
| **Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its bass at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.** |
| **Human Identify** |
| **7.4.14 Explain that the environment may contain dangerous levels of substances that are harmful to human begins. Understand, therefore, that the good health of individuals requires monitoring the soil, air, and water as well as taking steps to keep them safe.** |
| **Life Science Lab, Level A:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 84, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 59, 86<br>**Earth Science Lab, Level B:** Cards 37, 42, 59, 86<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Numbers** |
| **7.5.1 Demonstrate how a number line can be extended on the other side of zero to represent negative numbers and give examples of instances where it is useful.** |
| **Shapes and Symbolic Relationships** |
| **7.5.2 Illustrate how line can be parallel, perpendicular, or oblique.** |
| These concepts are not covered at this level |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **7.5.3 Demonstrate how the scale chosen for a graph or drawing determines its interpretation.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99 |

| **Standard 5: The Mathematical World** |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, shapes in three dimensions, statistical relationships, and use of logical reasoning in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **7.5.4 Describe that the larger the sample, the more accurately it represents the whole. Understand, however, that any sample can be poorly chosen and this will make it unrepresentative of the whole.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells*, pages 77-79; Hands-On Activity 2, *Culturing Bacteria*, pages 81-83<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **7.6.1 Understand and explain that throughout history, people have created explanations for disease. Note that some held that disease had spiritual causes, but that the most persistent biological theory over the centuries was that illness resulted from an imbalance in the body fluids. Realize that the introduction of germ theory by Louis Pasteur and others in the nineteenth century led to the modern understanding of how many diseases are caused by microorganisms, such as bacteria, viruses, yeasts, and parasites.** |
| **7.6.2 Understand and explain that Louis Pasteur wanted to find out what caused milk and wine to spoil. Note that he demonstrated that spoilage and fermentation occur when microorganisms enter from the air, multiply rapidly, and produce waste products, with some desirable results, such as carbon dioxide in bread dough, and some undesirable, such as acetic acid in wine. Understand that after showing that spoilage could be avoided by keeping germs out or by destroying them with heat, Pasteur investigated animal diseases and showed that microorganisms were involved in many of them. Also note that other investigators later showed that specific kinds of germs caused specific diseases.** |
| These concepts are not covered at this level. |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **7.6.3 Understand and explain that Louis Pasteur found that infection by disease organisms (germs) caused the body to build up an immunity against subsequent infection by the same organisms. Realize that Pasteur then demonstrated more widely what Edward Jenner had shown for smallpox without understanding the underlying mechanism: that it was possible to produce vaccines that would induce the body to build immunity to a disease without actually causing the disease itself.** |
| **Life Science Lab, Level A:** Cards 11, 12, 49<br>**Life Science Lab, Level B:** Cards 11, 12, 49 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **7.6.4 Understand and describe that changes in health practices have resulted from the acceptance of the germ theory of disease. Realize that before germ theory, illness was treated by appeals to supernatural powers or by attempts to adjust body fluids through induced vomiting or bleeding. Note that the modern approach emphasizes sanitation, the safe handling of food and water, the pasteurization of milk, quarantine, and aseptic surgical techniques to keep germs out of the body; vaccinations to strengthen the body's immune system against subsequent infection by the same kind of microorganisms; and antibiotics and other chemicals and processes to destroy microorganisms.** |
| **Life Science Lab, Level A:** Cards 11, 12, 49<br>**Life Science Lab, Level B:** Cards 11, 12, 49 |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Systems** |
| **7.7.1 Explain that the output from one part of a system, which can include material, energy, or information, can become the input to other parts and this feedback can serve to control what goes on in the system as a whole.** |
| **Life Science Lab, Level A:** Cards 9, 10, 13, 50, 51, 52, 58, 62, 63, 65, 66, 72, 73, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 9, 10, 13, 50, 51, 52, 58, 62, 63, 65, 66, 72, 73, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90<br><br>**Earth Science Lab, Level A:** Cards 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 22, 23, 24, 25, 26, 27, 28, 35, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 59, 60, 61, 62, 66, 67, 68, 76, 78, 82, 83, 84, 86, 87, 88, 89, 90<br>**Earth Science Lab, Level B:** Cards 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 22, 23, 24, 25, 26, 27, 28, 35, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 59, 60, 61, 62, 66, 67, 68, 76, 78, 82, 83, 84, 86, 87, 88, 89, 90<br><br>**Physical Science Lab, Level A:** Cards 6, 7, 8, 9, 27, 28, 29, 30, 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 68, 69, 70, 79, 80, 81, 84, 85, 87, 88, 89<br>**Physical Science Lab, Level B:** Cards 6, 7, 8, 9, 27, 28, 29, 30, 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 68, 69, 70, 79, 80, 81, 84, 85, 87, 88, 89 |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Models and Scale** |
| **7.7.2 Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 7: Common Themes** |
|---|
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Constancy and Change** |
| **7.7.3 Describe how physical and biological systems tend to change until they reach equilibrium and remain that way unless their surroundings change.** |
| **Life Science Lab, Level A:** Cards 8, 44, 47, 51, 57, 72, 80, 81, 82<br>**Life Science Lab, Level B:** Cards 8, 44, 47, 51, 57, 72, 80, 81, 82<br><br>**Earth Science Lab, Level A:** Cards 11, 12, 13, 15, 17, 38, 39, 40, 41<br>**Earth Science Lab, Level B:** Cards 11, 12, 13, 15, 17, 38, 39, 40, 41<br><br>**Physical Science Lab, Level A:** Cards 7, 42, 43, 44, 53, 56, 75<br>**Physical Science Lab, Level B:** Cards 7, 42, 43, 44, 53, 56, 75 |

| |
|---|
| **Standard 7: Common Themes** |
| **Students use mental and physical models to conceptualize processes. They recognize that many systems have feedback mechanisms that limit changes.** |
| **Constancy and Change** |
| **7.7.4 Use symbolic equations to show how the quantity of something changes over time or in response to changes in other quantities.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99<br><br>**Earth Science Lab, Level A:** Cards 19, 31, 74<br>**Earth Science Lab, Level B:** Cards 19, 31, 74<br><br>**Physical Science Lab, Level A:** Cards 6, 7, 28, 51, 52, 57, 62, 65, 69, 72<br>**Physical Science Lab, Level B:** Cards 6, 7, 28, 51, 52, 57, 62, 65, 69, 72 |

# *SRA Life, Earth, and Physical Science Laboratories*
# correlation to
# Indiana's Academic Standards for Science
# 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.

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **The Scientific View of the World** |
| **8.1.1 Recognize that and describe how scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.** |
| **Life Science Lab, Level A:** Cards 2, 5, 49, 64, 69<br>**Life Science Lab, Level B:** Cards 2, 5, 49, 64, 69<br><br>**Earth Science Lab, Level A:** Cards 10, 20, 31, 51, 54, 68, 72, 78<br>**Earth Science Lab, Level B:** Cards 10, 20, 31, 51, 54, 68, 72, 78<br><br>**Physical Science Lab, Level A:** Cards 3, 53, 59, 76<br>**Physical Science Lab, Level B:** Cards 3, 53, 59, 76 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **The Scientific View of the World** |
| **8.1.2. Recognize and explain that some matters cannot be examined usefully in a scientific way.** |
| This concept is not covered at this level. |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **Scientific Inquiry** |
| **8.1.3 Recognize and describe that if more than one variable changes at the same time in an experiment, the outcome of the experiment may not be attributable to any one of the variables.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83<br><br>**Classroom Resource CD-ROM:** Writing Strategy 23 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **The Scientific Enterprise** |
| **8.1.4 Explain why accurate record keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **The Scientific Enterprise** |
| **8.1.5 Explain why research involving human subjects requires that potential subjects be fully informed about the risks and benefits associated with the research and that they have the right to refuse to participate.** |
| **Technology and Science** |
| **8.1.6 Identify the constraints that must be taken into account as a new design is developed, such as gravity and the properties of the materials to be used.** |
| These concepts are not covered at this level. |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **Technology and Science** |
| **8.1.7 Explain why technology issues are rarely simple and one-sided because contending groups may have different values and priorities.** |
| **Life Science Lab, Level A:** Cards 49, 64, 69, 84, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 49, 64, 69, 84, 86, 87, 88, 89, 90<br><br>**Earth Science Lab, Level A:** Cards 10, 16, 31, 37, 70, 79, 80, 81, 88<br>**Earth Science Lab, Level B:** Cards 10, 16, 31, 37, 70, 79, 80, 81, 88<br><br>**Physical Science Lab, Level A:** Cards 33, 38, 46, 47, 48, 49, 76, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 33, 38, 46, 47, 48, 49, 76, 81, 84, 90 |

| **Standard 1: The Nature of Science and Technology** |
|---|
| **Students design and carry out increasingly sophisticated investigations. They understand the reason for isolating and controlling variables in an investigation. They realize that scientific knowledge is subject to change as new evidence arises. They examine issues in the design and use of technology, including constraints, safeguards, and trade-offs.** |
| **Technology and Science** |
| **8.1.8 Explain that humans help share the future by generating knowledge, developing new technologies, and communicating ideas to others.** |
| **Life Science Lab, Level A:** Cards 49, 64, 69, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 49, 64, 69, 86, 87, 88, 89, 90<br><br>**Earth Science Lab, Level A:** Cards 10, 16, 31, 37, 51, 54, 70, 79, 80, 81, 88<br>**Earth Science Lab, Level B:** Cards 10, 16, 31, 37, 51, 54, 70, 79, 80, 81, 88<br><br>**Physical Science Lab, Level A:** Cards 33, 35, 38, 46, 47, 48, 49, 76, 81, 84, 90<br>**Physical Science Lab, Level B:** Cards 33, 35, 38, 46, 47, 48, 49, 76, 81, 84, 90 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Computation and Estimation** |
| **8.2.1 Estimate distances and travel times from maps and the actual size of objects from scale drawings.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79<br><br>**Earth Science Lab, Level A:** Cards 18, 19, 20, 74<br>**Earth Science Lab, Level B:** Cards 18, 19, 20, 74<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Computation and Estimation** |
| **8.2.2 Determine in what units, such as seconds, meters, grams, etc., an answer should be expressed based on the units of the inputs to the calculation.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Manipulations and Observation** |
| **8.2.3 Use proportional reasoning to solve problems.** |
| **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99 |

| Standard 2: Scientific Thinking |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Manipulations and Observation** |
| **8.2.4 Use technological devices, such as calculators and computers, to perform calculations.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83 |

| Standard 2: Scientific Thinking |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Manipulations and Observation** |
| **8.2.5 Use computers to store and retrieve information in topical, alphabetical, numerical, and keyword files and create simple files of students' own devising.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83 |

| Standard 2: Scientific Thinking |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Communication Skills** |
| **8.2.6 Write, clear, step-by-step instructions (procedural summaries) for conducting investigations, operating something, or following a procedure.** |
| **Classroom Resource CD-ROM:** Writing Strategy 1, 6, 15 |

| Standard 2: Scientific Thinking |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Communication Skills** |
| **8.2.7 Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Communication Skills** |
| **8.2.8 Use tables, charts, and graphs in making arguments and claims in, for example, oral and written presentations about lab or fieldwork.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99<br><br>**Classroom Resource CD-ROM:** Writing Strategy 16, 22, 24 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Critical Response Skills** |
| **8.2.9 Explain why arguments are invalid if based on very small samples of data, biased samples, or samples for which there was no control sample.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79; Hands-On Activity 2, *Culturing Bacteria,* pages 81-83<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91 |

| **Standard 2: Scientific Thinking** |
|---|
| **Students use computers to organize and compare information. They perform calculations and determine the appropriate units for the answers. They weigh the evidence for or against an argument, as well as the logic of the conclusions.** |
| **Critical Response Skills** |
| **8.2.10 Identify and criticize the reasoning in arguments in which fact and opinion are intermingled or the conclusions do not follow logically from the evidence given, an analogy is not apt, no mention is made of whether the control group is very much like the experimental group, or all members of a group are implied to have nearly identical characteristics that differ from those of other groups.** |
| **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 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99<br>**Classroom Resource CD-ROM:** Writing Strategy 30 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **The Universe** |
| **8.3.1 Explain that large numbers of chunks of rock orbit the sun and some of this rock interacts with Earth.** |
| **Earth Science Lab, Level A:** Card 73<br>**Earth Science Lab, Level B:** Card 73 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.2 Explain that the slow movement of material within Earth results from heat flowing out of the deep interior and the action of gravitational forces on regions of different density.** |
| **Earth Science Lab, Level A:** Cards 1, 11, 12, 17, 88<br>**Earth Science Lab, Level B:** Cards 1, 11, 12, 17, 88 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.3 Explain that the solid crust of Earth, including both the continents and the ocean basins, consists of separate plates that ride on a denser, hot, gradually deformable layer of earth. Understand that the crust sections move very slowly, pressing against one another in some places, pulling apart in other places. Further understand that ocean-floor plates may slide under continental plates, sinking deep into Earth, and that the surface layers of these plates may fold, forming mountain ranges.** |
| **Earth Science Lab, Level A:** Cards 2, 10, 11, 12, 13, 14, 88<br>**Earth Science Lab, Level B:** Cards 2, 10, 11, 12, 13, 14, 88<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 2, *Plate Boundaries in Action*, pages 77-79 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.4 Explain that earthquakes often occur along the boundaries between colliding plates, and molten rock from below creates pressure that is released by volcanic eruptions, helping to build up mountains. Understand that under the ocean basins, molten rock may well up between separating plates to create new ocean floor. Further understand that volcanic activity along the ocean floor may form undersea mountains, which can thrust above the ocean's surface to become islands.** |
| **Earth Science Lab, Level A:** Cards 15, 16, 17, 88<br>**Earth Science Lab, Level B:** Cards 15, 16, 17, 88 |

| **Standard 3: The Physical Setting** |
| --- |
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.5 Explain that everything on or anywhere near Earth is pulled toward Earth's center by a gravitational force.** |
| **Earth Science Lab, Level A:** Cards 57, 59<br>**Earth Science Lab, Level B:** Cards 57, 59 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.6 Understand and explain that the benefits of Earth's resources, such as fresh water, air, soil, and trees, are finite and can be reduced by using them wastefully or by deliberately or accidentally destroying them.** |
| **Life Science Lab, Level A:** Cards 84, 85, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 84, 85, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 29, 35, 37, 42, 59, 60, 61, 85, 86<br>**Earth Science Lab, Level B:** Cards 29, 35, 37, 42, 59, 60, 61, 85, 86<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91<br><br>**Physical Science Lab, Level A:** Cards 38, 46, 47, 48, 49<br>**Physical Science Lab, Level B:** Cards 38, 46, 47, 48, 49 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Earth and the Processes That Shape It** |
| **8.3.7 Explain that the atmosphere and the oceans have a limited capacity to absorb wastes and recycle materials naturally.** |
| **Life Science Lab, Level A:** Cards 89, 90<br>**Life Science Lab, Level B:** Cards 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 37, 42, 59, 60, 61, 86<br>**Earth Science Lab, Level B:** Cards 37, 42, 59, 60, 61, 86<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.8 Explain that all matter is made up of atoms which are far too small to see directly through an optical microscope. Understand that the atoms of any element are similar but are different from atoms of other elements. Further understand that atoms may stick together in well-defined molecules or may be packed together in large arrays. Also understand that different arrangements of atoms into groups comprise all substances.** |
| **Physical Science Lab, Level A:** Cards 3, 4, 10, 11, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 31, 32<br>**Physical Science Lab, Level B:** Cards 3, 4, 10, 11, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 31, 32 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.9 Demonstrate, using drawings and models, the movement of atoms in a solid, liquid, and gaseous state. Explain that atoms and molecules are perpetually in motion.** |
| **Physical Science Lab, Level A:** Cards 5, 6, 7, 8, 42<br>**Physical Science Lab, Level B:** Cards 5, 6, 7, 8, 42 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.10 Explain that increased temperatures means that atoms have a greater average energy of motion and that most gases expand when heated.** |
| **Physical Science Lab, Level A:** Cards 6, 7, 8, 9, 42<br>**Physical Science Lab, Level B:** Cards 6, 7, 8, 9, 42 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.11 Describe how groups of elements can be classified based on similar properties, including highly reactive metals, less reactive metals, highly reactive nonmetals, less reactive nonmetals, and some almost completely nonreactive gases.** |
| **Physical Science Lab, Level A:** Cards 17, 18, 19, 20<br>**Physical Science Lab, Level B:** Cards 17, 18, 19, 20 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.12 Explain that no matter how substances within a closed system interact with one another, or how they combine or break apart, the total mass of the system remains the same. Understand that the atomic theory explains the conservation of matter: if the number of atoms stays the same no matter how they are arranged, then their total mass stays the same.** |
| **Physical Science Lab, Level A:** Cards 9, 21, 27, 28, 29, 30<br>**Physical Science Lab, Level B:** Cards 9, 21, 27, 28, 29, 30<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.13 Explain that energy cannot be created or destroyed but can only change from one form into another.** |
| **Physical Science Lab, Level A:** Cards 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 70, 77, 78, 79, 80, 82, 83<br>**Physical Science Lab, Level B:** Cards 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 70, 77, 78, 79, 80, 82, 83<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.14 Describe how heat can be transferred through materials by the collision of atoms, or across space by radiation, or if the material is fluid, by convection currents that are set up in it that aid the transfer of heat.** |
| **Earth Science Lab, Level A:** Cards 10, 11, 12, 38, 87<br>**Earth Science Lab, Level B:** Cards 10, 11, 12, 38, 87<br><br>**Physical Science Lab, Level A:** Cards 43, 44, 46, 83<br>**Physical Science Lab, Level B:** Cards 43, 44, 46, 83 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Matter and Energy** |
| **8.3.15 Identify different forms of energy that exist in nature.** |
| **Physical Science Lab, Level A:** Cards 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 70, 77, 78, 79, 80, 82, 83<br>**Physical Science Lab, Level B:** Cards 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 70, 77, 78, 79, 80, 82, 83<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **8.3.16 Explain that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.** |
| **Physical Science Lab, Level A:** Cards 57, 59<br>**Physical Science Lab, Level B:** Cards 57, 59 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **8.3.17 Explain that the sun's gravitational pull holds Earth and the other planets in their orbits, just as the planets' gravitational pull keeps their moons in orbit around them.** |
| **Physical Science Lab, Level A:** Card 59<br>**Physical Science Lab, Level B:** Card 59 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **8.3.18 Investigate and explain that electric currents and magnets can exert force on each other.** |
| **Physical Science Lab, Level A:** Cards 74, 75, 76<br>**Physical Science Lab, Level B:** Cards 74, 75, 76 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **8.3.19 Investigate and compare series and parallel circuits.** |
| **Physical Science Lab, Level A:** Card 68<br>**Physical Science Lab, Level B:** Card 68 |

| **Standard 3: The Physical Setting** |
|---|
| **Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.** |
| **Forces of Nature** |
| **8.3.20 Compare the differences in power consumption in different electrical devices.** |
| **Physical Science Lab, Level A:** Cards 69, 72, 73<br>**Physical Science Lab, Level B:** Cards 69, 72, 73 |

| **Standard 4: The Living Environment** |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Diversity of Life** |
| **8.4.1 Differentiate between inherited traits, such as hair color or flower color, and acquired skills, such as manners.** |
| **Life Science Lab, Level A:** Cards 23, 24, 36, 41, 43, 83<br>**Life Science Lab, Level B:** Cards 23, 24, 36, 41, 43, 83 |

| **Standard 4: The Living Environment** |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Diversity of Life** |
| **8.4.2 Describe that in some organisms, such as yeasts or bacteria, all genes come from a single parent, while those that have sexes, typically half of the genes come from each parent.** |
| **Life Science Lab, Level A:** Cards 10, 11, 12, 60<br>**Life Science Lab, Level B:** Cards 10, 11, 12, 60 |

| **Standard 4: The Living Environment** |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Diversity of Life** |
| **8.4.3 Recognize and describe that new varieties of cultivated plants, such as corn and apples, and domestic animals, such as dogs and horses, have resulted from selective breeding for particular traits.** |
| **Life Science Lab, Level A:** Card 69<br>**Life Science Lab, Level B:** Card 69 |

| **Standard 4: The Living Environment** |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Interdependence of Life and Evolution** |
| **8.4.4 Describe how matter is transferred from one organism to another repeatedly and between organisms and their physical environment.** |
| **Life Science Lab, Level A:** Cards 13, 73, 74, 75, 76, 77<br>**Life Science Lab, Level B:** Cards 13, 73, 74, 75, 76, 77<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99 |

| **Standard 4: The Living Environment** |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Interdependence of Life and Evolution** |
| **8.4.5 Explain that energy can be transferred from one form to another in living things.** |
| **Life Science Lab, Level A:** Cards 9, 13, 16, 17, 45, 46, 73, 74, 75, 76, 77<br>**Life Science Lab, Level B:** Cards 9, 13, 16, 17, 45, 46, 73, 74, 75, 76, 77<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99 |

| Standard 4: The Living Environment |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Interdependence of Life and Evolution** |
| **8.4.6 Describe how animals get their energy from oxidizing their food and releasing some of this energy as heat.** |
| **Life Science Lab, Level A:** Cards 9, 34, 45, 46, 50, 76, 77<br>**Life Science Lab, Level B:** Cards 9, 34, 45, 46, 50, 76, 77 |

| Standard 4: The Living Environment |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Interdependence of Life and Evolution** |
| **8.4.7 Recognize and explain that small genetic differences between parents and offspring can accumulate in successive generations so that descendents are very different from their ancestors.** |
| **Life Science Lab, Level A:** Cards 64, 65, 66, 67, 68<br>**Life Science Lab, Level B:** Cards 64, 65, 66, 67, 68 |

| Standard 4: The Living Environment |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Interdependence of Life and Evolution** |
| **8.4.8 Describe how environmental conditions affect the survival of individual organisms and how entire species may prosper in spite of the poor survivability or bad fortune of individuals.** |
| **Life Science Lab, Level A:** Cards 70, 71, 72, 80, 84, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 70, 71, 72, 80, 84, 86, 87, 88, 89, 90 |

| Standard 4: The Living Environment |
|---|
| **Students trace the flow of matter and energy through ecosystems. They understand that the total amount of matter remains constant and that almost all food energy has its origin in sunlight.** |
| **Human Identity** |
| **8.4.9 Recognize and describe that fossil evidence is consistent with the idea that human beings evolved from earlier species.** |
| This concept is not covered at this level. |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Numbers** |
| **8.5.1 Understand and explain that a number must be written with an appropriate number of significant figures (determined by the measurements from which the number is derived).** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75; Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83; Hands-On Activity 7, *Sizes in the Solar System*, pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases*, pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates*, pages 81-83; Hands-On Activity 3, *Energy Conversion*, pages 85-87; Hands-On Activity 4, *Reducing Friction*, pages 89-91; Hands-On Activity 6, *Making Sound*, pages 97-99 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **8.5.2 Show that an equation containing a variable may be true for just one value of the variable.** |
| This concept is not covered at this level. |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **8.5.3 Demonstrate that mathematical statements can be used to describe how one quantity changes when another changes.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **8.5.4 Illustrate how graphs can show a variety of possible relationships between two variables,** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91<br><br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Shapes and Symbolic Relationships** |
| **8.5.5 Illustrate that it takes two numbers to locate a point on a map or any other two-dimensional surface.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91<br><br>**Earth Science Lab, Level A:** Cards 18, 19, 20<br>**Earth Science Lab, Level B:** Cards 18, 19, 20<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **8.5.6 Explain that a single example can never prove that something is always true, but it could prove that something is not always true.** |
| This concept is not covered at this level. |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **8.5.7 Recognize and describe the danger of making over-generalizations when inventing a general rule based on a few observations.** |
| **Classroom Resource CD-ROM:** Writing Strategy 14, 17, 18 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **8.5.8 Explain how estimates can be based on data from similar conditions in the past or on the assumption that all the possibilities are known.** |
| **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83; Hands-On Activity 7, *Sizes in the Solar System*, pages 97-99 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **8.5.9 Compare the mean, median, and mode of a data set.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87 |

| Standard 5: The Mathematical World |
|---|
| **Students apply mathematics in scientific contexts. They use mathematical ideas, such as symbols, geometrical relationships, statistical relationships, and the use of key words and rules in logical reasoning, in the representation and synthesis of data.** |
| **Reasoning and Uncertainty** |
| **8.5.10 Explain how the comparison of data from two groups involves comparing both their middles and the spreads.** |
| **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83; Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91<br><br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87 |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **8.6.1 Understand and explain that Antoine Lavoisier's work was based on the idea that when materials react with each other, many changes can take place, but that un every case the total amount of matter afterward is the same as before. Note that Lavoisier successfully tested the concept of conservation of matter by conducting a series of experiments in which he carefully measured the masses of all the substances involved in various chemical reactions, including the gases used and those given off.** |
| **8.6.2 Understand and describe that the accidental discovery that minerals containing uranium darken photographic film, as light does, led to the discover of radioactivity.** |
| **8.6.3 Understand that and describe how in their laboratory in France, Marie Currie and her husband, Pierre Currie, isolated two new elements that were the source of most of the radioactivity of uranium ore. Note that they named one radium because it gave off powerful invisible rays, and the other polonium in honor of Madame Curie's country of birth, Poland. Also note that Marie Curie was the first scientists ever to win the Nobel Prize in two different fields, in physics, shared with her husband, and later in chemistry.** |
| These concepts are not covered at this level. |

| **Standard 6: Historical Perspectives** |
|---|
| **Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.** |
| **8.6.4 Describe how the discovery of radioactivity as a source of Earth's heat energy made it possible to understand how Earth can be several billion years old and still have a hot interior.** |
| **Earth Science Lab, Level A:** Card 31<br>**Earth Science Lab, Level B:** Card 31 |

**Standard 7: Common Themes**

**Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.**

**Systems**

**8.7.1 Explain that a system usually has some properties that are different from those of its parts but appear because of the interaction of those parts.**

**Life Science Lab, Level A:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Life Science Lab, Level B:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103

**Earth Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Earth Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103

**Physical Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Physical Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90
**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99

| **Standard 7: Common Themes** |
|---|
| **Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.** |
| **Systems** |
| **8.7.2 Explain that even in some very simple systems, it may not always be possible to predict accurately the result of changing some part or connection.** |
| **Life Science Lab, Level A:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Life Science Lab, Level B:** Cards 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103<br><br>**Earth Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Earth Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 2, *Plate Boundaries in Action,* pages 77-79; Hands-On Activity 4, *Using Sound Waves,* pages 85-87; Hands-On Activity 6, *Modeling a Tornado,* pages 93-95; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103<br><br>**Physical Science Lab, Level A:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Physical Science Lab, Level B:** Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90<br>**Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79; Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83; Hands-On Activity 3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99 |

| **Standard 7: Common Themes** |
|---|
| **Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.** |
| **Models** |
| **8.7.3 Use technology to assist in graphing and with simulations that compute and display results of changing factors in models.** |
| **8.7.4 Explain that as the complexity of any system increases, gaining an understanding of it depends on summaries, such as averages and ranges, and on descriptions of typical examples of that system.** |
| These concepts are not covered at this level. |

| Standard 7: Common Themes |
| --- |
| **Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.** |
| **Constancy and Change** |
| **8.7.5 Observe and describe that a system may stay the same because nothing is happening or because things are happening that counteract one another.** |
| **Life Science Lab, Level A:** Cards 47, 48, 51, 55, 57, 72, 80<br>**Life Science Lab, Level B:** Cards 47, 48, 51, 55, 57, 72, 80<br><br>**Earth Science Lab, Level A:** Cards 11, 12, 13, 15, 17, 38, 62, 64, 66, 84<br>**Earth Science Lab, Level B:** Cards 11, 12, 13, 15, 17, 38, 62, 64, 66, 84<br><br>**Physical Science Lab, Level A:** Cards 8, 9, 13, 40, 43, 44, 53, 56<br>**Physical Science Lab, Level B:** Cards 8, 9, 13, 40, 43, 44, 53, 56 |

| Standard 7: Common Themes |
| --- |
| **Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.** |
| **Constancy and Change** |
| **8.7.6 Recognize that and describe how symmetry may determine properties of many objects, such as molecules, crystals, organisms, and designed structures.** |
| **Life Science Lab, Level A:** Card 26<br>**Life Science Lab, Level B:** Card 26<br><br>**Physical Science Lab, Level A:** Card 4<br>**Physical Science Lab, Level B:** Card 4 |

| Standard 7: Common Themes |
| --- |
| **Students analyze the parts and interactions of systems to understand internal and external relationships. They investigate traits of change, cyclic changes, and changes that counterbalance one another. They use mental and physical models to reflect upon and interpret the limitations of such models.** |
| **Constancy and Change** |
| **8.7.7 Illustrate how things, such as seasons or body temperature, occur in cycles.** |
| **Life Science Lab, Level A:** Cards 17, 42, 76, 77, 78, 79<br>**Life Science Lab, Level B:** Cards 17, 42, 76, 77, 78, 79<br><br>**Earth Science Lab, Level A:** Cards 9, 47, 62, 64, 65, 66<br>**Earth Science Lab, Level B:** Cards 9, 47, 62, 64, 65, 66 |