SRA Life, Earth, and Physical Science Laboratories
correlation to
New Jersey Core Curriculum Content 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 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: A. Habits of Mind
1. Evaluate the strengths and weaknesses of data, claims, and arguments.
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 **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 **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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Strand: A. Habits of Mind
2. Communicate experimental findings to others.
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Strand: A. Habits of Mind

3. Recognize that the results of scientific investigations are seldom exactly the same and that replication is often necessary.

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Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: A. Habits of Mind

4. Recognize that curiosity, skepticism, open-mindedness, and honesty are attributes of scientists.

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Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
1. Identify questions and make predictions that can be addresses by conducting investigations.
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 **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 **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 **Classroom Resource CD-ROM:** Writing Strategy 15

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
2. Design and conduct investigations incorporating the use of a control.
Classroom Resource CD-ROM: Writing Strategy 8, 15, 23

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
3. Collect, organize, and interpret the data that result from experiments.
Classroom Resource CD-ROM: Writing Strategy 15, 16, 22, 24

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: C. Safety

1. Know when and how to use appropriate safety equipment with all classroom materials.

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

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Classroom Resource CD-ROM: Writing Strategy 15

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: C. Safety

2. Understand and practice safety procedures for conducting science investigations.

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

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Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
1. Recognize that scientific theories • **Develop over time** • **Depend on the contributions of many people** • **Reflect the social and political climate of their time.**
Life Science Lab, Level A: Card 5 **Life Science Lab, Level B:** Card 5 **Earth Science Lab, Level A:** Cards 10, 68, 72, 78 **Earth Science Lab, Level B:** Cards 10, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 53, 59 **Physical Science Lab, Level B:** Cards 3, 53, 59

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
2. Know that scientists are men and women of many cultures who often work together to solve scientific and technological problems.
Life Science Lab, Level A: Cards 2, 5, 46, 59 **Life Science Lab, Level B:** Cards 2, 5, 46, 59 **Earth Science Lab, Level A:** Cards 16, 68, 72, 78 **Earth Science Lab, Level B:** Cards 16, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 7, 17, 55 **Physical Science Lab, Level B:** Cards 3, 7, 17, 55

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
3. Describe how different people in different cultures have made and continue to make contributions to science and technology.
Life Science Lab, Level A: Cards 25, 46, 59 **Life Science Lab, Level B:** Cards 25, 46, 59 **Earth Science Lab, Level A:** Cards 16, 68, 72, 78 **Earth Science Lab, Level B:** Cards 16, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 7, 17, 55 **Physical Science Lab, Level B:** Cards 3, 7, 17, 55

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: B. Historical Perspectives
1. Describe the impact of major events and people in the history of science and technology, in conjunction with other world events.
Life Science Lab, Level A: Cards 2, 5, 46, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 2, 5, 46, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Earth Science Lab, Level A:** Cards 10, 16, 20, 31, 37, 51, 54, 68, 70, 72, 78, 79, 80, 81, 88 **Earth Science Lab, Level B:** Cards 10, 16, 20, 31, 37, 51, 54, 68, 70, 72, 78, 79, 80, 81, 88 **Physical Science Lab, Level A:** Cards 3, 7, 17, 33, 35, 55, 76, 81, 84, 90 **Physical Science Lab, Level B:** Cards 3, 7, 17, 33, 35, 55, 76, 81, 84, 90

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: B. Historical Perspectives
2. Describe the development and exponential growth of scientific knowledge and technological innovations.
Life Science Lab, Level A: Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Earth Science Lab, Level A:** Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88 **Earth Science Lab, Level B:** Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88 **Physical Science Lab, Level A:** Cards 33, 35, 76, 81, 84, 90 **Physical Science Lab, Level B:** Cards 33, 35, 76, 81, 84, 90

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: A. Numerical Operations
1. Express quantities using appropriate number formats. • **Decimals** • **Percents** • **Scientific notation.**
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 **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; Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103 **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

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: B. Geometry and Measurement
1. Perform mathematical computation using labeled quantities and express answers in correctly derived units.
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Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: C. Patterns and Algebra
1. Express physical relationships in terms of mathematical equations derived from collected data.
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 **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; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **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

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
1. Represent and describe mathematical relationships among variables using graphs and tables.
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Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
2. Analyze experimental data sets using measures of central tendency. • **Mean** • **Mode** • **Median.**
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 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
3. Construct and use a graph of experimental data to draw a line of best fit and identify a linear relationship between variables.
Life Science Lab Teacher's Handbook: Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
4. Use computer spreadsheets, graphing and database applications to assist in quantitative analysis of data.
Life Science Lab Teacher's Handbook: Hands-On Activity 2, *Culturing Bacteria*, pages 81-83

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: A. Science and Technology
1. Distinguish between things that occur in nature and those that have been designed to solve human problems.
Life Science Lab, Level A: Cards 5, 59, 83 **Life Science Lab, Level B:** Cards 5, 59, 83 **Earth Science Lab, Level A:** Cards 20, 31, 79, 80, 81, 88 **Earth Science Lab, Level B:** Cards 20, 31, 79, 80, 81, 88 **Physical Science Lab, Level A:** Cards 3, 33, 34, 35, 63, 64, 68, 69, 70, 71, 72, 73, 76, 81, 83, 84, 90 **Physical Science Lab, Level B:** Cards 3, 33, 34, 35, 63, 64, 68, 69, 70, 71, 72, 73, 76, 81, 83, 84, 90

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: B. Nature of Technology
1. Demonstrate how measuring instruments are used to gather information in order to design things that work properly.
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Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: C. Technological Design
1. Select a technological problem and describe the criteria and constraints that are addressed in solving the problem.
This concept is not covered at this level.

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: C. Technological Design
2. Identify the basic components of a technological system: • **Input** • **Process** • **Output** • **Feedback.**
This concept is not covered at this level.

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: A. Matter, Energy, and Organizations in Living Systems
1. Explain how systems of the human body are interrelated and regulate the body's internal environment.
Life Science Lab, Level A: Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: A. Matter, Energy, and Organizations in Living Systems
2. Identify and describe the structure and function of cells and cell parts.
Life Science Lab, Level A: Cards 5, 6, 7, 8, 9, 10 **Life Science Lab, Level B:** Cards 5, 6, 7, 8, 9, 10 **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: B. Diversity and Biological Evolution
1. Describe and give examples of the major categories of organisms and of the characteristics shared by organisms.
Life Science Lab, Level A: Cards 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 **Life Science Lab, Level B:** Cards 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 **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 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: B. Diversity and Biological Evolution
2. Compare and contrast acquired and inherited characteristics in human and other species.
Life Science Lab, Level A: Cards 23, 24, 41, 43, 83 **Life Science Lab, Level B:** Cards 23, 24, 41, 43, 83

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: C. Reproduction and Heredity
1. Describe life cycles of humans and other organisms.
Life Science Lab, Level A: Cards 20, 22, 42 **Life Science Lab, Level B:** Cards 20, 22, 42

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
1. Recognize that about 100 different elements have been identified and most materials on Earth are made of a few of them.
Physical Science Lab, Level A: Cards 10, 11, 17 **Physical Science Lab, Level B:** Cards 10, 11, 17

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
2. Show that equal volumes of different substances usually have different masses.
Physical Science Lab, Level A: Card 2 **Physical Science Lab, Level B:** Card 2

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
3. Describe the properties of mixtures and solutions, including concentration and saturation.
Physical Science Lab, Level A: Cards 12, 13 **Physical Science Lab, Level B:** Cards 12, 13

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
4. Describe characteristics physical properties such as boiling point, melting point, and solubility, and recognize that the property is independent of the amount of sample.
Physical Science Lab, Level A: Cards 1, 5, 6, 7, 10, 11, 42 **Physical Science Lab, Level B:** Cards 1, 5, 6, 7, 10, 11, 42

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: B. Chemical Reactions
1. Recognize evidence of a chemical change.
Physical Science Lab, Level A: Cards 9, 27, 28, 29, 30 **Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: A. Motion and Forces
1. Recognize that an object at rest will remain at rest and an object moving in a straight line at a steady speed will continue to move in a straight line at a steady speed unless a net (unbalanced) forces acts on it.
Physical Science Lab, Level A: Cards 53, 55 **Physical Science Lab, Level B:** Cards 53, 55

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: A. Motion and Forces
2. Recognize that motion can be retarded by forces such as friction and air resistance.
Physical Science Lab, Level A: Card 58 **Physical Science Lab, Level B:** Card 58 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 4, *Reducing Friction,* pages 89-91

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: A. Motion and Forces
3. Recognize that everything on or near the earth is pulled toward the earth's center by gravitational force.
Physical Science Lab, Level A: Cards 57, 59 **Physical Science Lab, Level B:** Cards 57, 59

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
1. Recognize that heat flows through materials or across space from warmer objects to cooler ones.
Physical Science Lab, Level A: Cards 42, 43, 44 **Physical Science Lab, Level B:** Cards 42, 43, 44

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
2. Show that vibrations in materials can generate waves that can transfer energy from one place to another.
Earth Science Lab, Level A: Cards 15, 16 **Earth Science Lab, Level B:** Cards 15, 16 **Physical Science Lab, Level A:** Cards 77, 78, 79, 80, 82, 83, 84, 85 **Physical Science Lab, Level B:** Cards 77, 78, 79, 80, 82, 83, 84, 85 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 6, *Making Sound,* pages 97-99

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
3. Design an electric circuit to investigate the behavior of a system.
Physical Science Lab, Level A: Cards 68, 69, 70, 71, 72, 73 **Physical Science Lab, Level B:** Cards 68, 69, 70, 71, 72, 73 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making a Potato Battery*, pages 93-95

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
1. Observe that most rocks and soils are made of several substances or minerals.
Earth Science Lab, Level A: Cards 3, 4, 5, 6, 7, 8, 9 **Earth Science Lab, Level B:** Cards 3, 4, 5, 6, 7, 8, 9 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
2. Observe that the properties of soil vary from place to place and will affect the soil's ability to support life.
Earth Science Lab, Level A: Cards 23, 29 **Earth Science Lab, Level B:** Cards 23, 29

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
3. Recognize that fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.
Life Science Lab, Level A: Card 67 **Life Science Lab, Level B:** Card 67 **Life Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making Fossils*, pages 93-95 **Earth Science Lab, Level A:** Cards 32, 33, 34 **Earth Science Lab, Level B:** Cards 32, 33, 34

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: B. Atmosphere and Water
1. Describe the composition, circulation, and distribution of the world's oceans, estuaries, and marine environments.
Earth Science Lab, Level A: Cards 82, 83, 84, 85, 86, 87, 88, 89, 90 **Earth Science Lab, Level B:** Cards 82, 83, 84, 85, 86, 87, 88, 89, 90 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: B. Atmosphere and Water
2. Describe and illustrate the water cycle.
Earth Science Lab, Level A: Card 47 **Earth Science Lab, Level B:** Card 47

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: C. Process that Shape the Earth
1. Summarize the process involved in the rock cycle and describe the characteristics of the rocks involved.
Earth Science Lab, Level A: Cards 6, 7, 8, 9 **Earth Science Lab, Level B:** Cards 6, 7, 8, 9

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: D. How We Study the Earth
1. Utilize various tools such as map projections and topographical maps to interpret features of Earth's surface.
Earth Science Lab, Level A: Cards 18, 19, 20 **Earth Science Lab, Level B:** Cards 18, 19, 20 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: A. Earth, Moon, Sun System
1. Explain how the motions of the Earth, sun, and moon, define units of time including days, months, and years.
Earth Science Lab, Level A: Cards 62, 64 **Earth Science Lab, Level B:** Cards 62, 64

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: A. Earth, Moon, Sun System
2. Recognize that changes in the Earth's position relative to the sun produces differing amounts of daylight seasonally.
Earth Science Lab, Level A: Card 62 **Earth Science Lab, Level B:** Card 62

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: B. Solar System
1. Using models, demonstrate an understanding of the scale of the solar system that shows distance and size relationships among the sun and planets.
Earth Science Lab, Level A: Cards 67, 68, 69, 70, 71, 72, 73, 74 **Earth Science Lab, Level B:** Cards 67, 68, 69, 70, 71, 72, 73, 74 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System*, pages 97-99

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: B. Solar System
2. Recognize that the sun's gravitational pull holds the planets in their orbits and that the planets' gravitational pull holds their moons in their orbits.
Earth Science Lab, Level A: Card 68 **Earth Science Lab, Level B:** Card 68 **Physical Science Lab, Level A:** Card 59 **Physical Science Lab, Level B:** Card 59

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: C. Stars
1. Observe and record short-term and long-term changes in the positions of the constellations in the night sky.
Earth Science Lab, Level A: Card 75 **Earth Science Lab, Level B:** Card 75

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: C. Stars
2. Observe that the planets appear to change their position against the background of stars.
Earth Science Lab, Level A: Cards 68, 69, 70, 71, 72 **Earth Science Lab, Level B:** Cards 68, 69, 70, 71, 72

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: D. Galaxies and Universe
1. Recognize that images of celestial objects can be magnified and seen in greater detail when observed using binoculars and light telescopes.
Earth Science Lab, Level A: Cards 79, 81 **Earth Science Lab, Level B:** Cards 79, 81

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: D. Galaxies and Universe
2. Observe and record short-term changes in the night sky.
Earth Science Lab, Level A: Cards 62, 64, 65 **Earth Science Lab, Level B:** Cards 62, 64, 65

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: A. Natural Systems and Interactions
1. Explain how organisms interact with other components of an ecosystem.
Life Science Lab, Level A: Cards 70, 71, 72, 73, 74, 75, 76, 77, 81, 82 **Life Science Lab, Level B:** Cards 70, 71, 72, 73, 74, 75, 76, 77, 81, 82 **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: A. Natural Systems and Interactions
2. Describe the natural processes that occur over time in places where direct human impact is minimal.
Life Science Lab, Level A: Cards 78, 79, 80 **Life Science Lab, Level B:** Cards 78, 79, 80

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: B. Human Interactions and Impact
1. Describe the effect of human activities on various ecosystems.
Life Science Lab, Level A: Cards 84, 85, 86, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 84, 85, 86, 87, 88, 89, 90 **Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab, Level A:** Cards 29, 35, 37, 42, 59, 60, 61, 85, 86 **Earth Science Lab, Level B:** Cards 29, 35, 37, 42, 59, 60, 61, 85, 86 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91 **Physical Science Lab, Level A:** Card 38 **Physical Science Lab, Level B:** Card 38

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: B. Human Interactions and Impact
2. Evaluate the impact of personal activities on the local environment.
Life Science Lab, Level A: Cards 84, 86, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 84, 86, 87, 88, 89, 8 0 **Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab, Level A:** Cards 35, 37, 42, 59, 60, 61, 86 **Earth Science Lab, Level B:** Cards 35, 37, 42, 59, 60, 61, 86 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91

SRA Life, Earth, and Physical Science Laboratories
correlation to
New Jersey Core Curriculum Content Standards for Science
Grades 7-8

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 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: A. Habits of Mind
1. Evaluate the strengths and weaknesses of data, claims, and arguments.
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 **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 **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 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: A. Habits of Mind
2. Communicate experimental findings to others.
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 **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 **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 **Classroom Resource CD-ROM:** Writing Strategy 1, 2, 5, 11, 12, 15

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: A. Habits of Mind

3. Recognize that the results of scientific investigations are seldom exactly the same and that replication is often necessary.

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

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

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 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: A. Habits of Mind

4. Recognize that curiosity, skepticism, open-mindedness, and honesty are attributes of scientists.

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

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

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 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
1. Identify questions and make predictions that can be addresses by conducting investigations.
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 **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 **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 **Classroom Resource CD-ROM:** Writing Strategy 15

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
2. Design and conduct investigations incorporating the use of a control.
Classroom Resource CD-ROM: Writing Strategy 8, 15, 23

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:
Strand: B. Inquiry and Problem Solving
3. Collect, organize, and interpret the data that result from experiments.
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 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 5, *What is in the Air?,* pages 89-91; Hands-On Activity 7, *Sizes in the Solar System,* pages 97-99; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **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 Activity3, *Energy Conversion,* pages 85-87; Hands-On Activity 4, *Reducing Friction,* pages 89-91; Hands-On Activity 6, *Making Sound,* pages 97-99 **Classroom Resource CD-ROM:** Writing Strategy 16, 22, 24

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: C. Safety

1. Know when and how to use appropriate safety equipment with all classroom materials.

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

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

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

Classroom Resource CD-ROM: Writing Strategy 15

Standard 5.1 (SCIENTIFC PROCESSES) All students will develop problem-solving, decision-making, and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. By the end of Grade 4, students will:

Strand: C. Safety

2. Understand and practice safety procedures for conducting science investigations.

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

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

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 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
1. Recognize that scientific theories • **Develop over time** • **Depend on the contributions of many people** • **Reflect the social and political climate of their time.**
Life Science Lab, Level A: Card 5 **Life Science Lab, Level B:** Card 5 **Earth Science Lab, Level A:** Cards 10, 68, 72, 78 **Earth Science Lab, Level B:** Cards 10, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 53, 59 **Physical Science Lab, Level B:** Cards 3, 53, 59

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
2. Know that scientists are men and women of many cultures who often work together to solve scientific and technological problems.
Life Science Lab, Level A: Cards 2, 5, 46, 59 **Life Science Lab, Level B:** Cards 2, 5, 46, 59 **Earth Science Lab, Level A:** Cards 16, 68, 72, 78 **Earth Science Lab, Level B:** Cards 16, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 7, 17, 55 **Physical Science Lab, Level B:** Cards 3, 7, 17, 55

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.
Strand: A. Cultural Contributions
3. Describe how different people in different cultures have made and continue to make contributions to science and technology.
Life Science Lab, Level A: Cards 25, 46, 59 **Life Science Lab, Level B:** Cards 25, 46, 59 **Earth Science Lab, Level A:** Cards 16, 68, 72, 78 **Earth Science Lab, Level B:** Cards 16, 68, 72, 78 **Physical Science Lab, Level A:** Cards 3, 7, 17, 55 **Physical Science Lab, Level B:** Cards 3, 7, 17, 55

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.

Strand: B. Historical Perspectives

1. Describe the impact of major events and people in the history of science and technology, in conjunction with other world events.

Life Science Lab, Level A: Cards 2, 5, 46, 49, 59, 64, 69, 83, 87, 88, 89, 90
Life Science Lab, Level B: Cards 2, 5, 46, 49, 59, 64, 69, 83, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 10, 16, 20, 31, 37, 51, 54, 68, 70, 72, 78, 79, 80, 81, 88
Earth Science Lab, Level B: Cards 10, 16, 20, 31, 37, 51, 54, 68, 70, 72, 78, 79, 80, 81, 88

Physical Science Lab, Level A: Cards 3, 7, 17, 33, 35, 55, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 3, 7, 17, 33, 35, 55, 76, 81, 84, 90

Standard 5.2 (SCIENCE AND SOCIETY) All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.

Strand: B. Historical Perspectives

2. Describe the development and exponential growth of scientific knowledge and technological innovations.

Life Science Lab, Level A: Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90
Life Science Lab, Level B: Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90

Earth Science Lab, Level A: Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88
Earth Science Lab, Level B: Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88

Physical Science Lab, Level A: Cards 33, 35, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 33, 35, 76, 81, 84, 90

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.

Strand: A. Numerical Operations

1. Express quantities using appropriate number formats.

- **Decimals**
- **Percents**
- **Scientific notation.**

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

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; Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103

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

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: B. Geometry and Measurement
1. Perform mathematical computation using labeled quantities and express answers in correctly derived units.
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; Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **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; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **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

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: C. Patterns and Algebra
1. Express physical relationships in terms of mathematical equations derived from collected data.
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 **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; Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **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

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
1. Represent and describe mathematical relationships among variables using graphs and tables.
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 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale,* pages 73-75; Hands-On Activity 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 **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 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
2. Analyze experimental data sets using measures of central tendency. • **Mean** • **Mode** • **Median.**
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 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
3. Construct and use a graph of experimental data to draw a line of best fit and identify a linear relationship between variables.
Life Science Lab Teacher's Handbook: Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83

Standard 5.3 (MATHEMATICAL APPLICATIONS) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.
Strand: D. Data Analysis and Probability
4. Use computer spreadsheets, graphing and database applications to assist in quantitative analysis of data.
Life Science Lab Teacher's Handbook: Hands-On Activity 2, *Culturing Bacteria*, pages 81-83

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: A. Science and Technology
1. Compare and contrast science with technology, illustrating similarities and differences between these two human endeavors.
Life Science Lab, Level A: Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 5, 49, 59, 64, 69, 83, 87, 88, 89, 90 **Earth Science Lab, Level A:** Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88 **Earth Science Lab, Level B:** Cards 16, 20, 31, 37, 51, 54, 70, 79, 80, 81, 88 **Physical Science Lab, Level A:** Cards 33, 35, 69, 70, 71, 72, 73, 76, 81, 84, 90 **Physical Science Lab, Level B:** Cards 33, 35, 69, 70, 71, 72, 73, 76, 81, 84, 90

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: B. Nature of Technology
1. Analyze a product or system to determine the problem it was designed to solve, the design constraints, trade-offs and risks involved in using the product or system, how the product or system might fail, and how the product or system might be improved.
This concept is not covered at this level.

Standard 5.4 (NATURE AND PROCESS OF TECHNOLOGY All students will understand the interrelationships between science and technology and develop a conceptual understanding of the nature and process of technology.
Strand: C. Technological Design
1. Recognize how feedback loops are used to control systems.
This concept is not covered at this level.

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: A. Matter, Energy, and Organizations in Living Systems
1. Explain how the products of respiration and photosynthesis are recycled.
Life Science Lab, Level A: Cards 7, 16, 17, 76 **Life Science Lab, Level B:** Cards 7, 16, 17, 76 **Physical Science Lab, Level A:** Card 38 **Physical Science Lab, Level B:** Card 38

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: A. Matter, Energy, and Organizations in Living Systems
2. Recognize that complex multicellular organisms, including humans, are composed of and defined by interactions of the following: • **Cells** • **Tissues** • **Organs** • **Systems.**
Life Science Lab, Level A: Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab Teacher's Handbook:** Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: B. Diversity and Biological Evolution
1. Compare and contrast kinds of organisms using their internal and external characteristics.
Life Science Lab, Level A: Cards 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 **Life Science Lab, Level B:** Cards 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 **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 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: B. Diversity and Biological Evolution
2. Discuss how changing environmental conditions can result in evolution or extinction of a species.
Life Science Lab, Level A: Cards 67, 86 **Life Science Lab, Level B:** Cards 67, 86 **Earth Science Lab, Level A:** Cards 32, 33, 34 **Earth Science Lab, Level B:** Cards 32, 33, 34

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: B. Diversity and Biological Evolution
3. Recognize that individual organisms with certain traits are more likely to survive and have offspring.
Life Science Lab, Level A: Cards 23, 24, 41, 43, 65, 66, 67 **Life Science Lab, Level B:** Cards 23, 24, 41, 43, 65, 66, 67

Standard 5.5 (CHARACTERISTICS OF LIFE) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.
Strand: C. Reproduction and Heredity
1. Describe how the sorting and recombining of genetic material results in the potential for variation among offspring of humans and other species.
Life Science Lab, Level A: Cards 61, 62, 63, 64 **Life Science Lab, Level B:** Cards 61, 62, 63, 64

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
1. Know that all matter is composed of atoms that may join together to form molecules.
Physical Science Lab, Level A: Cards 3, 4 **Physical Science Lab, Level B:** Cards 3, 4

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
2. Recognize that the phase of matter is determined by the arrangement and motion of atoms and molecules and that the motion of these particles is related to the energy of the system.
Physical Science Lab, Level A: Cards 5, 6, 7, 42 **Physical Science Lab, Level B:** Cards 5, 6, 7, 42

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
3. Know that there are groups of elements that have similar properties, including highly reactive metals, less reactive metals, highly reactive non-metals, and some almost completely non-reactive gases.
Physical Science Lab, Level A: Cards 17, 18, 19, 20 **Physical Science Lab, Level B:** Cards 17, 18, 19, 20

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: A. Structure and Properties of Matter
4. Recognize that a mixture often can be separated into the original substances using one or more of their characteristic physical properties.
Physical Science Lab, Level A: Cards 12, 13 **Physical Science Lab, Level B:** Cards 12, 13

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: B. Chemical Reactions
1. Show that substances can chemically react with each other to form new substances having properties different from those of the original substance.
Physical Science Lab, Level A: Cards 9, 27, 28, 29, 30 **Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: B. Chemical Reactions
2. Show that in most chemical reactions energy is transferred into or out of a system.
Physical Science Lab, Level A: Cards 9, 27, 28, 29, 30 **Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: B. Chemical Reactions
3. Demonstrate that regardless how substances within a simple closed system interact, the total mass of the system remains the same.
Physical Science Lab, Level A: Cards 9, 27, 28, 29, 30 **Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Standard 5.6 (Chemistry) All students will gain an understanding of the structure and behavior of matter.
Strand: B. Chemical Reactions
4. Illustrate how atoms are rearranged when substances react, but that the total number of atoms and the total mass of the products remain the same as the original substances.
Physical Science Lab, Level A: Cards 9, 27, 28, 29, 30 **Physical Science Lab, Level B:** Cards 9, 27, 28, 29, 30 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: A. Motion and Forces
1. Use quantitative data to show that when more than one force acts on an object at the same time, the forces reinforce or cancel each other producing a net (unbalanced) force that will change speed and/or direction of the object.
Physical Science Lab, Level A: Cards 53, 54, 55, 56, 57, 58, 59 **Physical Science Lab, Level B:** Cards 53, 54, 55, 56, 57, 58, 59 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 4, *Reducing Friction,* pages 89-91

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: A. Motion and Forces
2. Recognize that every object exerts a 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 **Physical Science Lab, Level B:** Cards 57, 59

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
1. Recognize that the sun is a major source of the Earth's energy and that solar energy includes visible, infrared and ultraviolet radiation.
Life Science Lab, Level A: Cards 17, 76 **Life Science Lab, Level B:** Cards 17, 76 **Earth Science Lab, Level A:** Cards 38, 55, 58 **Earth Science Lab, Level B:** Cards 38, 55, 58 **Physical Science Lab, Level A:** Cards 46, 82, 83, 85 **Physical Science Lab, Level B:** Cards 46, 82, 83, 85

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
2. Describe the nature of various forms of energy, including heat, light, sound, chemical, mechanical, and electrical and trace energy transformations from one form to another.
Physical Science Lab, Level A: Cards 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 68, 69, 74, 77, 78, 79, 80, 82, 83 **Physical Science Lab, Level B:** Cards 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 68, 69, 74, 77, 78, 79, 80, 82, 83 **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 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
3. Describe how heat can be conducted through materials or transferred across space by radiation and know that is the material is a fluid, convection currents may aid the transfer of heat.
Earth Science Lab, Level A: Cards 10, 38, 87 **Earth Science Lab, Level B:** Cards 10, 38, 87 **Physical Science Lab, Level A:** Cards 42, 43, 44, 46 **Physical Science Lab, Level B:** Cards 42, 43, 44, 46

Standard 5.7 (PHYSICS) All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.
Strand: B. Energy Transformations
4. Show that light is reflected, refracted, or absorbed when it interacts with matter and that color may appear as a result of this interaction.
Physical Science Lab, Level A: Cards 85, 86, 87, 88, 89 **Physical Science Lab, Level B:** Cards 85, 86, 87, 88, 89

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
1. Observe that most rocks and soils are made of several substances or minerals.
Earth Science Lab, Level A: Cards 3, 4, 5, 6, 7, 8, 9 **Earth Science Lab, Level B:** Cards 3, 4, 5, 6, 7, 8, 9 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 1, *Identifying Minerals with the Mohs Scale*, pages 73-75

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
2. Observe that the properties of soil vary from place to place and will affect the soil's ability to support life.
Earth Science Lab, Level A: Cards 23, 29 **Earth Science Lab, Level B:** Cards 23, 29

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: A. Earth's Properties and Materials
3. Recognize that fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.
Life Science Lab, Level A: Cards 67, 68 **Life Science Lab, Level B:** Cards 67, 68 **Life Science Lab Teacher's Handbook:** Hands-On Activity 5, *Making Fossils*, pages 93-95 **Earth Science Lab, Level A:** Cards 32, 33, 34 **Earth Science Lab, Level B:** Cards 32, 33, 34

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: B. Atmosphere and Water
1. Describe conditions in the atmosphere that lead to weather systems and how these systems are represented on weather maps.
Earth Science Lab, Level A: Cards 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54 **Earth Science Lab, Level B:** Cards 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 6, *Modeling a Tornado*, pages 93-95

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: C. Process that Shape the Earth
1. Explain how Earth's landforms and materials are created through constructive and destructive processes.
Earth Science Lab, Level A: Cards 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 24, 25, 26, 27, 28 **Earth Science Lab, Level B:** Cards 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 24, 25, 26, 27, 28 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 2, *Plate Boundaries in Action*, pages 77-79

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: C. Process that Shape the Earth
2. Show how successive layers of sedimentary rock and the fossils contained in them can be used to confirm the age, history, changing life forms, and geology of Earth.
Earth Science Lab, Level A: Cards 30, 32, 33, 34 **Earth Science Lab, Level B:** Cards 30, 32, 33, 34

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: D. How We Study the Earth
1. Utilize data gathered from emerging technologies (e.g., geographic information system (GIS) and global positioning systems (GPS) to create representations and describe processes of change on the Earth's surface.
Life Science Lab, Level A: Card 83 **Life Science Lab, Level B:** Card 83 **Earth Science Lab, Level A:** Cards 18, 19, 20, 21 **Earth Science Lab, Level B:** Cards 18, 19, 20, 21 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 3, *Interpreting a Topographic Map*, pages 81-83

Standard 5.8 (EARTH SCIENCE) All students will gain an understanding of the structure, dynamics, and geographical systems of the Earth.
Strand: D. How We Study the Earth
2. Explain how technology designed to investigate features of the Earth's surface impacts how scientists study the Earth.
Earth Science Lab, Level A: Cards 16, 20, 31 **Earth Science Lab, Level B:** Cards 16, 20, 31

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: A. Earth, Moon, Sun System
1. Investigate the Earth, moon, and sun as a system and explain how the motion of these bodies results in the phases of the moon and eclipses.
Earth Science Lab, Level A: Cards 62, 63, 64, 65, 66 **Earth Science Lab, Level B:** Cards 62, 63, 64, 65, 66

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: A. Earth, Moon, Sun System
2. Explain how the regular and predictable motions of the Earth and moon produce tides.
Earth Science Lab, Level A: Cards 46, 90 **Earth Science Lab, Level B:** Cards 46, 90 **Physical Science Lab, Level A:** Card 48 **Physical Science Lab, Level B:** Card 48

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: A. Earth, Moon, Sun System
3. Explain how the tilt, rotation, and orbital pattern of the Earth relative to the sun produces seasons and weather patterns.
Earth Science Lab, Level A: Card 62 **Earth Science Lab, Level B:** Card 62

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: B. Solar System
1. Describe the physical characteristics of the planets and other objects within the solar system and compare Earth to the rest of the planets.
Earth Science Lab, Level A: Cards 68, 69, 70, 71, 72, 73 **Earth Science Lab, Level B:** Cards 68, 69, 70, 71, 72, 73

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: C. Stars
1. Understand that the sun is a star and that it shares characteristics with other stars.
Earth Science Lab, Level A: Cards 67, 75, 76 **Earth Science Lab, Level B:** Cards 67, 75, 76

Standard 5.9 (ASTRONOMY AND SPACE SCIENCE) All students will gain an understanding of the origin, evolution, and structure of the universe.
Strand: D. Galaxies and Universe
1. Know that the universe consists of many billions of galaxies, each including billions of stars.
Earth Science Lab, Level A: Cards 75, 77, 78 **Earth Science Lab, Level B:** Cards 75, 77, 78

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: A. Natural Systems and Interactions
1. Investigate the impact of catastrophic events such as forest fires, floods, and hurricanes on the environment of New Jersey.
Life Science Lab, Level A: Cards 67, 80 **Life Science Lab, Level B:** Cards 67, 80 **Earth Science Lab, Level A:** Cards 15, 17, 52, 53, 54, 73 **Earth Science Lab, Level B:** Cards 15, 17, 52, 53, 54, 73

Standard 5.10 (ENVIRONMENTAL STUDIES) ALL students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.
Strand: B. Human Interactions and Impact
1. Compare and contrast practices that affect the use and management of natural resources.
Life Science Lab, Level A: Cards 84, 85, 86, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 84, 85, 86, 87, 88, 89, 90 **Life Science Lab Teacher's Handbook:** Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab, Level A:** Cards 29, 35, 37, 42, 85, 86, 90 **Earth Science Lab, Level B:** Cards 29, 35, 37, 42, 85, 86, 90 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91