SRA Life, Earth, and Physical Science Laboratories
correlation to
Michigan Curriculum Framework Science Benchmarks
Grades 6-8

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.

Constructing New Scientific Knowledge (C) I.1
All students will ask questions that help them learn about the world.
1. Generate scientific questions about the world based on observation.
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

Constructing New Scientific Knowledge (C) I.1
All students will design and conduct investigations using appropriate methodology and technology.
2. Design and conduct scientific 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

Constructing New Scientific Knowledge (C) I.1
All students will design and conduct investigations using appropriate methodology and technology.
3. Use tools and equipment appropriate to scientific 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

Constructing New Scientific Knowledge (C) I.1
All students will design and conduct investigations using appropriate methodology and technology.
4. Use metric measurement devices to provide consistency in an investigation.
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 **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

Constructing New Scientific Knowledge (C) I.1
All students will learn from books and other sources of information.
5. Use sources of information in support of scientific investigations.
This concept is not covered at this level.

Constructing New Scientific Knowledge (C) I.1
All students will communicate findings of investigations, using appropriate technology.
6. Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches.
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, 21

Reflecting on Scientific Knowledge (R) II.1
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge.
1. Evaluate the strengths and weaknesses of claims, arguments, or data.
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 22, 24

Reflecting on Scientific Knowledge (R) II.1
All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge.
2. Describe limitations in personal knowledge.
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

Reflecting on Scientific Knowledge (R) II.1
All students will show how science is related to other ways of knowing.
3. Show how common themes of science, mathematics, and technology apply in real-world contexts.
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

Reflecting on Scientific Knowledge (R) II.1
All students will show how science and technology affect our society.
4. Describe the advantages and risks of new technologies.
Life Science Lab, Level A: Cards 83, 84, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 83, 84, 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 16, 20, 31, 32, 41, 51, 54, 59, 60, 61, 70, 79, 80, 81, 88 **Earth Science Lab, Level B:** Cards 16, 20, 31, 32, 42, 51, 54, 59, 50, 61, 70, 79, 80, 81, 88 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91 **Physical Science Lab, Level A:** Cards 33, 35, 73, 76, 81, 84, 90 **Physical Science Lab, Level B:** Cards 33, 35, 73, 76, 81, 84, 90

Reflecting on Scientific Knowledge (R) II.1

All students will show how science and technology affect our society.

5. Develop an awareness of and sensitivity to the natural world.

Life Science Lab, Level A: Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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
Life Science Lab, Level B: Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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
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, Level A: Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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
Earth Science Lab, Level B: Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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
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, Level A: Cards 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28,2 9, 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, 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

Reflecting on Scientific Knowledge (R) II.1

All students will show how people of diverse cultures have contributed to and influenced developments in science.

6. Recognize the contributions made in science by cultures and individuals of diverse backgrounds.

Life Science Lab, Level A: Cards 2, 5, 46, 59, 69
Life Science Lab, Level B: Cards 2, 5, 46, 59, 69

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

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

Cells (LC) III.1

All students will apply an understanding of cells to the functioning of multicellular organisms, including how cells grow, develop, ad reproduce.

1. Demonstrate evidence that all parts of living things are made of cells.

Life Science Lab, Level A: Cards 1, 5, 6, 7, 8, 9, 10
Life Science Lab, Level B: Cards 1, 5, 6, 7, 8, 9, 10
Life Science Lab Teacher's Handbook: Hands-On Activity 1, *Examining Cells,* pages 77-79

Cells (LC) III.1
All students will apply an understanding of cells to the functioning of multicellular organisms, including how cells grow, develop, ad reproduce.
2. Explain why and how selected specialized cells are needed by plants and animals.
Life Science Lab, Level A: Cards 6, 7, 9, 16, 17, 18, 19, 20, 21, 44, 47, 58 **Life Science Lab, Level B:** Cards 6, 7, 9, 16, 17, 18, 19, 20, 21, 44, 47, 58 **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

Organization of Living Things (LO) III.2
All students will use classification systems to describe groups of living things.
1. Compare and classify organisms into major groups on the basis of their structure.
Life Science Lab, Level A: Cards 2, 3, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 27, 228, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 **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 **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83; Hands-On Activity 3, *Investigating Arthropods*, pages 85-87

Organization of Living Things (LO) III.2
All students will compare and contrast differences in the life cycles of living things.
2. Describe the life cycle of a flowering plant.
Life Science Lab, Level A: Cards 20, 22 **Life Science Lab, Level B:** Cards 20, 22

Organization of Living Things (LO) III.2
All students will investigate and explain how living things obtain and use energy.
3. Describe evidence that plants make and store food.
Life Science Lab, Level A: Cards 7, 16, 17 **Life Science Lab, Level B:** Cards 7, 16, 17

Organization of Living Things (LO) III.2
All students will analyze how parts of living things are adapted to carry out specific functions.
4. Explain how selected systems and processes work together in animals.
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

Heredity (LH) III.3
All students will investigate and explain how characteristics of living things are passed on through generations.
1. Describe how the characteristics of living things are passed on through generations.
Life Science Lab, Level A: Cards 60, 61, 62, 63, 64 **Life Science Lab, Level B:** Cards 60, 61, 62, 63, 64

Heredity (LH) III.3
All students will explain why organisms within a species are different from one another.
2. Describe how heredity and environment may influence/determine characteristics of an organism.
Life Science Lab, Level A: Cards 23, 24, 41, 43, 65, 66 **Life Science Lab, Level B:** Cards 23, 24, 41, 43, 65, 66

Evolution (LE) III.4
All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species.
1. Describe how scientific theory traces possible evolutionary relationships among present and past life forms.
Life Science Lab, Level A: Cards 65, 66, 67, 68 **Life Science Lab, Level B:** Cards 65, 66, 67, 68

Evolution (LE) III.4
All students will compare ways that living organisms are adapted (suited) to survive and reproduce in their environments and explain how species change through time.
2. Explain how new traits might become established in a population and how species become extinct.
Life Science Lab, Level A: Cards 64, 65, 66, 67, 86 **Life Science Lab, Level B:** Cards 64, 65, 66, 67, 86

Ecosystems (LEC) III.5
All students will explain how parts of an ecosystem are related and how they interact.
1. Describe common patterns of relationships among populations.
Life Science Lab, Level A: Cards 70, 71, 72, 73, 74, 75, 76, 77 **Life Science Lab, Level B:** Cards 70, 71, 72, 73, 74, 75, 76, 77

Ecosystems (LEC) III.5
All students will explain how energy is distributed to living things in an ecosystem.
2. Describe how organisms acquire energy directly or indirectly from sunlight.
Life Science Lab, Level A: Cards 7, 16, 17, 76, 77 **Life Science Lab, Level B:** Cards 7, 16, 17, 76, 77

Ecosystems (LEC) III.5
All students will investigate and explain how communities of living things change over a period of time.
3. Predict the effects of changes in one population in a food web or other populations.
Life Science Lab, Level A: Cards 72, 76, 77 **Life Science Lab, Level B:** Cards 72, 76, 77 **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99

Ecosystems (LEC) III.5
All students will investigate and explain how communities of living things change over a period of time.
4. Describe the likely succession of a given ecosystem over time.
Life Science Lab, Level A: Card 80 **Life Science Lab, Level B:** Card 80

Ecosystems (LEC) III.5
All students will analyze how humans and the environment interact.
5. Explain how humans use and benefit from plant and animal materials.
Life Science Lab, Level A: Cards 22, 45, 46, 84, 85 **Life Science Lab, Level B:** Cards 22, 45, 46, 84, 85 **Earth Science Lab, Level A:** Cards 35, 90 **Earth Science Lab, Level B:** Cards 35, 90 **Physical Science Lab, Level A:** Card 38 **Physical Science Lab, Level B:** Card 38

Ecosystems (LEC) III.5
All students will analyze how humans and the environment interact.
6. Describe ways in which humans alter the environment.
Life Science Lab, Level A: Cards 84, 86, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 84, 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 37, 42, 59, 60, 61, 86 **Earth Science Lab, Level B:** Cards 37, 42, 59, 60, 61, 86 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?,* pages 89-91

Matter and Energy (PME) IV.1
All students will measure and describe the things around us.
1. Describe and compare objects in terms of mass, volume, and density.
Physical Science Lab, Level A: Card 2 **Physical Science Lab, Level B:** Card 2

Matter and Energy (PME) IV.1
All students will measure and describe the things around us.
2. Explain when length, mass, weight, density, area, volume or temperature are appropriate to describe the properties of an object or substance.
Physical Science Lab, Level A: Cards 1, 2 **Physical Science Lab, Level B:** Cards 1, 2

Matter and Energy (PME) IV.1
All students will explain what the world around us is made of.
3. Classify substances as elements, compounds, or mixtures and justify classifications in terms of atoms and molecules.
Physical Science Lab, Level A: Cards 3, 4, 10, 11, 12, 13 **Physical Science Lab, Level B:** Cards 3, 4, 10, 11, 12, 13

Matter and Energy (PME) IV.1
All students will explain what the world around us is made of.
4. Describe the arrangement and motion of molecules in solids, liquids, and gases.
Physical Science Lab, Level A: Cards 5, 6, 42 **Physical Science Lab, Level B:** Cards 5, 6, 42

Matter and Energy (PME) IV.1
All students will explain how electricity [and magnetism; see PMO] interact with matter.
5. Construct simple circuits and explain how they work in terms of the flow of current.
Physical Science Lab, Level A: Cards 68, 69, 72 **Physical Science Lab, Level B:** Cards 68, 69, 72

Matter and Energy (PME) IV.1
All students will explain how electricity [and magnetism; see PMO] interact with matter.
6. Investigate electrical devices and explain how they work, using instructions and appropriate safety precautions.
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

Changes in Matter (PCM) IV.2
All students will investigate, describe and analyze ways in which matter changes.
1. Describe common changes in matter: evaporation, condensation, sublimation, thermal expansion, and contraction.
Earth Science Lab, Level A: Cards 47, 48, 49 **Earth Science Lab, Level B:** Cards 47, 48, 49 **Physical Science Lab, Level A:** Cards 6, 42 **Physical Science Lab, Level B:** Cards 6, 42

Changes in Matter (PCM) IV.2
All students will investigate, describe and analyze ways in which matter changes.
2. Describe common chemical changes in terms of properties of reactants and products.
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

Changes in Matter (PCM) IV.2
All students will explain how visible changes in matter are related to atoms and molecules.
3. Explain physical changes in terms of the arrangement and motion of atoms and molecules.
Physical Science Lab, Level A: Cards 6, 7, 42 **Physical Science Lab, Level B:** Cards 6, 7, 42

Changes in Matter (PCM) IV.2
All students will investigate, describe and analyze ways in which matter changes.
4. Describe common energy transformations in everyday situations.
Physical Science Lab, Level A: Cards 34, 36, 37, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 76, 77, 78, 79, 82, 83 **Physical Science Lab, Level B:** Cards 34, 36, 37, 39, 40, 41, 42, 45, 46, 47, 48, 49, 66, 67, 76, 77, 78, 79, 82, 83 **Physical Science Lab Teacher's Handbook:** Hands-On Activity , *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

Motion of Objects (PMO) IV.3
All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.
1. Qualitatively describe and compare motion in two dimensions.
Physical Science Lab, Level A: Cards 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 **Physical Science Lab, Level B:** Cards 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 4, *Reducing Friction*, pages 89-91

Motion of Objects (PMO) IV.3
All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.
2. Relate motion of objects to unbalanced forces in two dimensions.
Physical Science Lab, Level A: Cards 54, 55, 56, 58, 59 **Physical Science Lab, Level B:** Cards 54, 55, 56, 58, 59 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 4, *Reducing Friction*, pages 89-91

Motion of Objects (PMO) IV.3
All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.
3. Describe the non-contact forces exerted by magnets, electrically charged objects, and gravity.
Physical Science Lab, Level A: Cards 57, 59, 66, 67, 74, 75, 76 **Physical Science Lab, Level B:** Cards 57, 59, 66, 67, 74, 75, 76

Motion of Objects (PMO) IV.3
All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.
4. Use electric currents to create magnetic fields, and explain applications of this principle.
Physical Science Lab, Level A: Cards 66, 76 **Physical Science Lab, Level B:** Cards 66, 76

Motion of Objects (PMO) IV.3
All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.
5. Design strategies for moving objects by application of forces, including the use of simple machines.
Physical Science Lab, Level A: Cards 63, 64 **Physical Science Lab, Level B:** Cards 63, 64

Waves and Vibrations (PWV) IV.4
All students will describe sounds and sound waves.
1. Explain how sound travels through different media.
Physical Science Lab, Level A: Cards 77, 78, 79, 80, 81 **Physical Science Lab, Level B:** Cards 77, 78, 79, 80, 81 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 6, *Making Sound,* pages 97-99

Waves and Vibrations (PWV) IV.4
All students will describe sounds and sound waves.
2. Explain how echoes occur and how they are used.
Physical Science Lab, Level A: Card 81 **Physical Science Lab, Level B:** Card 81

Waves and Vibrations (PWV) IV.4
All students will explain shadows, color, and other light phenomena.
3. Explain how light is required to see objects.
Physical Science Lab, Level A: Cards 85, 89 **Physical Science Lab, Level B:** Cards 85, 89

Waves and Vibrations (PWV) IV.4
All students will explain shadows, color, and other light phenomena.
4. Describe ways in which light interacts with matter.
Physical Science Lab, Level A: Cards 85, 86, 87, 88, 89 **Physical Science Lab, Level B:** Cards 85, 86, 87, 88, 89

Waves and Vibrations (PWV) IV.4
All students will measure and describe vibrations and waves.
5. Describe the motion of vibrating objects.
Earth Science Lab, Level A: Card 16 **Earth Science Lab, Level B:** Card 16 **Physical Science Lab, Level A:** Cards 77, 78, 79, 80 **Physical Science Lab, Level B:** Cards 77, 78, 79, 80 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 6, *Making Sound,* pages 97-99

Geosphere (EG) V.1
All students will describe the earth's surface.
1. Describe and identify surface features using maps.
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

Geosphere (EG) V.1
All students will describe and explain how the earth's features change over time.
2. Explain how rocks are formed.
Earth Science Lab, Level A: Cards 6, 7, 8, 9 **Earth Science Lab, Level B:** Cards 6, 7, 8, 9

Geosphere (EG) V.1
All students will describe and explain how the earth's features change over time.
3. Explain how rocks are broken down, how soil is formed and how surface features change.
Earth Science Lab, Level A: Cards 15, 17, 22, 23, 24, 25, 26, 27, 28, 29 **Earth Science Lab, Level B:** Cards 15, 17, 22, 23, 24, 25, 26, 27, 28, 29

Geosphere (EG) V.1
All students will describe and explain how the earth's features change over time.
4. Explain how rocks and fossils are used to understand the age and geological history of the earth.
Life Science Lab, Level A: Card 67 **Life Science Lab, Level B:** Card 67 **Earth Science Lab, Level A:** Cards 30, 31, 32, 33, 34 **Earth Science Lab, Level B:** Cards 30, 31, 32, 33, 34

Geosphere (EG) V.1
All students will analyze effects of technology on the earth's surface and resources.
5. Explain how technology changes the surface of the earth.
Life Science Lab, Level A: Cards 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 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 22, 20, 43, 59, 60, 61, 86 **Earth Science Lab, Level B:** Cards 22, 29, 43, 59, 60, 61, 86

Hydrosphere (EH) V.2
All students will describe the characteristics of water and demonstrate where water is found on earth.
1. Use maps of the earth to locate water in its various forms and describe conditions under which they exist.
Earth Science Lab, Level A: Cards 47, 82, 83, 84, 87 **Earth Science Lab, Level B:** Cards 47, 82, 83, 84, 87

Hydrosphere (EH) V.2
All students will describe how water moves.
2. Describe how surface water in Michigan reaches the oceans and returns.
Earth Science Lab, Level A: Cards 47, 82, 83, 84, 87 **Earth Science Lab, Level B:** Cards 47, 82, 83, 84, 87

Hydrosphere (EH) V.2
All students will analyze the interaction of human activities with the hydrosphere.
3. Explain how water exists below the earth's surface and how it is replenished.
Earth Science Lab, Level A: Cards 82, 83, 84 **Earth Science Lab, Level B:** Cards 82, 83, 84

Hydrosphere (EH) V.2
All students will analyze the interaction of human activities with the hydrosphere.
4. Describe the origins of pollution in the hydrosphere.
Life Science Lab, Level A: Card 90 **Life Science Lab, Level B:** Card 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 42, 86 **Earth Science Lab, Level B:** Cards 42, 86

Atmosphere and Weather (EAW) V.3
All students will investigate and describe what makes up weather and how it changes from day to day, from season to season, and over long periods of time.
1. Explain patterns of changing weather and how they are measured.
Life Science Lab, Level A: Card 90 **Life Science Lab, Level B:** Card 90 **Earth Science Lab, Level A:** Cards 42, 59, 60, 61, 86 **Earth Science Lab, Level B:** Cards 42, 59, 60, 61, 86

Atmosphere and Weather (EAW) V.3
All students will explain what causes different kinds of weather.
2. Describe the composition and characteristics of the atmosphere.
Earth Science Lab, Level A: Cards 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 **Earth Science Lab, Level B:** Cards 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91

Atmosphere and Weather (EAW) V.3
All students will explain what causes different kinds of weather.
3. Explain the behavior of water in the atmosphere.
Earth Science Lab, Level A: Cards 47, 48, 49, 52, 53, 54, 56 **Earth Science Lab, Level B:** Cards 47, 48, 49, 52, 53, 54, 56

Atmosphere and Weather (EAW) V.3
All students will analyze the relationships between human activities and the atmosphere.
4. Describe health effects of polluted air.
Life Science Lab, Level A: Cards 51, 89 **Life Science Lab, Level B:** Cards 51, 89 **Earth Science Lab, Level A:** Cards 38, 42 **Earth Science Lab, Level B:** Cards 38, 42

Solar System, Galaxy and Universe (ES) V.4
All students will compare and contrast our planet and sun to other planets and star systems.
1. Compare the earth to other planets and moons in terms of supporting life.
Earth Science Lab, Level A: Cards 63, 69, 70, 71, 72 **Earth Science Lab, Level B:** Cards 63, 69, 70, 71, 72

Solar System, Galaxy and Universe (ES) V.4
All students will describe and explain how objects in the solar system move.
2. Describe, compare, and explain the motions of solar system objects.
Earth Science Lab, Level A: Cards 62, 64, 65, 68, 69, 70, 71, 72, 73 **Earth Science Lab, Level B:** Cards 62, 64, 65, 68, 69, 70, 71, 72, 73

Solar System, Galaxy and Universe (ES) V.4
All students will describe and explain how objects in the solar system move.
3. Describe and explain common observations of the night skies.
Earth Science Lab, Level A: Cards 64, 65, 69, 70, 71, 73, 75 **Earth Science Lab, Level B:** Cards 64, 65, 69, 70, 71, 73, 75