SRA Life, Earth, and Physical Science Laboratories
correlation to
North Carolina Standard Course of Study: 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.

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.01 Identify and create questions and hypotheses that can be answered through 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 8

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.02 Develop appropriate experimental procedures for: • **Given questions.** • **Student generated questions.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.03 Apply safety procedures in the laboratory and in field studies: • **Recognizing potential hazards.** • **Manipulate materials and equipment.** • **Conduct appropriate procedures.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.04 Analyze variables in scientific investigations: • **Identify dependent and independent.** • **Use of a control.** • **Manipulate.** • **Describe relationships between.** • **Define operationally.**
Life Science Lab Teacher's Handbook: Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **Classroom Resource CD-ROM:** Writing Strategy 23

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.05 Analyze evidence to:

- **Explain observations.**
- **Make inferences and predictions.**
- **Develop the relationship between evidence and explanation.**

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 1, 11, 17, 18

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- **Measurement.**
- **Analysis of data.**
- **Graphing.**
- **Prediction models.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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Classroom Resource CD-ROM: Writing Strategy 20, 22, 24

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.07 Prepare models and/or computer simulations to:

- **Test hypotheses.**
- **Evaluate how data fit.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods*, pages 85-87; Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91; Hands-On Activity 5, *Making Fossils*, pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?*, pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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 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 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

Classroom Resource CD-ROM: Writing Strategy 8, 20, 22

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.08 Use oral and written language to:

- **Communicate findings.**
- **Defend conclusions of 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

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Classroom Resource CD-ROM: Writing Strategy 1-30

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.09 Use technologies and information systems to:

- **Research.**
- **Gather and analyze data.**
- **Visual data.**
- **Disseminate findings to others.**

Classroom Resource CD-ROM: Writing Strategy 9, 16, 22, 24, 25

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- **Scientific test.**
- **Articles.**
- **Events in the popular press.**

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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Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.01 Explore evidence that "technology" has many definitions.

- **Artifact or hardware.**
- **Methodology or technique.**
- **System of production.**
- **Social-technical system.**

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, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 33, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90

Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.02 Use information systems to:

- **Identify scientific needs, human needs, or problems that are subject to technological solution.**
- **Locate resources to obtain and test ideas.**

Life Science Lab, Level A: Cards 69, 83, 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 69, 83, 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 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab, Level B: Cards 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab Teacher's Handbook: 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

Physical Science Lab, Level A: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab Teacher's Handbook: 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

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.03 Evaluate technological designs for: • **Application of scientific principles.** • **Risks and benefits.** • **Constraints of design.** • **Consistent testing protocols.**
This concept is not covered at this level.

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.04 Apply tenets of technological design to make informed consumer decisions about: • **Products.** • **Processes.** • **Systems.**
This concept is not covered at this level.

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.
3.01 Evaluate the forces that shape the lithosphere including: • **Crustal plate movement.** • **Folding and faulting.** • **Deposition.** • **Volcanic activity.** • **Earthquakes.**
Earth Science Lab, Level A: Cards 10, 11, 12, 13, 14, 15, 16, 17, 22, 24, 25, 26, 27, 28 **Earth Science Lab, Level B:** Cards 10, 11, 12, 13, 14, 15, 16, 17, 22, 24, 25, 26, 27, 28 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 2, *Plate Boundaries in Action*, pages 77-79

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.
3.02 Examine earthquakes and volcano patterns.
Earth Science Lab, Level A: Cards 15, 16, 17 **Earth Science Lab, Level B:** Cards 15, 16, 17

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.
3.03 Explain the model for the interior of the earth.
Earth Science Lab, Level A: Card 1 **Earth Science Lab, Level B:** Card 1

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.
3.04 Describe the processes which form and the uses of earth materials. • **Rock cycle.** • **Minerals.** • **Characteristics of rocks.** • **Economic uses of rocks and minerals.** • **Value of gems and precious metals.** • **Common gems, minerals, precious metals and rocks found in N.C.**
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

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.

3.05 Analyze soil properties that can be observed and measured to predict soil quality including:

- **Color.**
- **Horizon profile.**
- **Infiltration.**
- **Soil temperature.**
- **Structure.**
- **Consistency.**
- **Texture.**
- **Particle size.**
- **pH.**
- **Fertility.**
- **Soil moisture.**

Earth Science Lab, Level A: Cards 23, 29
Earth Science Lab, Level B: Cards 23, 29

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.

3.06 Evaluate ways in which human activities have affected Earth's pedosphere and the measures taken to control the impact:

- **Vegetative cover.**
- **Agriculture.**
- **Land use.**
- **Nutrient balance.**
- **Soil as a vector.**

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

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.

3.07 Assess the use of technology and information systems in monitoring lithosphere phenomenon.

Earth Science Lab, Level A: Cards 15, 16, 19, 20, 31, 37, 39, 50, 51
Earth Science Lab, Level B: Cards 15, 16, 19, 20, 31, 37, 39, 50, 51
Earth Science Lab Teacher's Handbook: Hands-On Activity 3, *Interpreting a Topographic Map,* pages 81-83; Hands-On Activity 5, *What is in the Air?,* pages 89-91

Competency Goal 3: The learner will build an understanding of the geological cycles, processes, and agents which shape the lithosphere.

3.08 Conclude that the good health of environments and organisms requires:

- **Monitoring of the pedosphere.**
- **Taking steps to maintain soil quality.**
- **Stewardship.**

Life Science Lab, Level A: Cards 83, 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 83, 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, 37, 42, 51, 59, 60, 61, 80, 85, 86
Earth Science Lab, Level B: Cards 29, 37, 42, 51, 59, 60, 61, 80, 85, 86

Physical Science Lab, Level A: Cards 49, 81
Physical Science Lab, Level B: Cards 49, 81

Competency Goal 4: The learner will investigate the cycling of matter.
4.01 Describe the flow of energy and matter in natural systems: • **Energy flows through ecosystems in one direction, from the sun through producers to consumers to decomposers.** • **Matter is transferred from one organism to another and between organisms and their environments.** • **Water, nitrogen, carbon dioxide, and oxygen are substances cycled between the living and non-living environments.**
Life Science Lab, Level A: Cards 74, 75, 76, 77, 78, 79 **Life Science Lab, Level B:** Cards 74, 75, 76, 77, 78, 79 **Life Science Lab Teacher's Handbook:** Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99 **Earth Science Lab, Level A:** Card 47 **Earth Science Lab, Level B:** Card 47

Competency Goal 4: The learner will investigate the cycling of matter.
4.02 Evaluate the significant role of decomposers.
Life Science Lab, Level A: Cards 13, 76 **Life Science Lab, Level B:** Cards 13, 76

Competency Goal 4: The learner will investigate the cycling of matter.
4.03 Examine evidence that green plants make food. • **Photosynthesis is a process carried on by green plants and other organisms containing chlorophyll.** • **During photosynthesis, light energy is converted into storied energy which the plant, in turn, uses to carry out its life processes.**
Life Science Lab, Level A: Cards 16, 17, 76 **Life Science Lab, Level B:** Cards 16, 17, 76

Competency Goal 4: The learner will investigate the cycling of matter.
4.04 Evaluate the significance of photosynthesis to other organisms: • **The major source of atmospheric oxygen is photosynthesis.** • **Carbon dioxide is removed from the atmosphere and oxygen is released during photosynthesis.** • **Green plants are the producers of food that is used directly or indirectly by consumers.**
Life Science Lab, Level A: Cards 16, 17, 76 **Life Science Lab, Level B:** Cards 16, 17, 76 **Earth Science Lab, Level A:** Card 36 **Earth Science Lab, Level B:** Card 36

Competency Goal 4: The learner will investigate the cycling of matter.
4.05 Evaluate designed systems for ability to enable growth of certain plants and animals.
Life Science Lab, Level A: Cards 70, 85, 86, 88 **Life Science Lab, Level B:** Cards 70, 85, 86, 88 **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria,* pages 81-83

Competency Goal 5: The learner will build an understanding of the Solar System.
5.01 Analyze the components and cycles of the solar system including: • **Sun.** • **Planets and moons.** • **Asteroids and meteors.** • **Comets.** • **Phases.** • **Seasons.** • **Day/year.** • **Eclipses.**
Earth Science Lab, Level A: Cards 62, 63, 64, 65, 67, 68, 69, 70, 71, 72, 73 **Earth Science Lab, Level B:** Cards 62, 63, 64, 65, 67, 68, 69, 70, 71, 72, 73

Competency Goal 5: The learner will build an understanding of the Solar System.
5.02 Compare and contrast the Earth to other planets in terms of: • **Size.** • **Composition.** • **Relative distance from the sun.** • **Ability to support life.**
Earth Science Lab, Level A: Cards 68, 69, 70, 71, 72, 74 **Earth Science Lab, Level B:** Cards 68, 69, 70, 71, 72, 74 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System*, pages 97-99

Competency Goal 5: The learner will build an understanding of the Solar System.
5.03 Relate the influence of the sun and the moon's orbit to the gravitational effects produced on Earth. • **Solar storms.** • **Tides.**
Earth Science Lab, Level A: Cards 60, 61, 66 **Earth Science Lab, Level B:** Cards 60, 61, 66

Competency Goal 5: The learner will build an understanding of the Solar System.
5.04 Describe space explorations and the understandings gained from them including: • **N.A.S.A.** • **Technologies used to explore space.** • **Apollo mission to the moon.** • **Space Shuttle.** • **International Space Station.** • **Future goals.**
Earth Science Lab, Level A: Cards 79, 80, 81 **Earth Science Lab, Level B:** Cards 79, 80, 81

Competency Goal 5: The learner will build an understanding of the Solar System.
5.05 Describe the setting of the solar system in the universe including: • **Galaxy.** • **Size.** • **The uniqueness of Earth.**
Earth Science Lab, Level A: Cards 68, 69, 74, 77, 78 **Earth Science Lab, Level B:** Cards 68, 69, 74, 77, 78 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 7, *Sizes in the Solar System*, pages 97-99

Competency Goal 5: The learner will build an understanding of the Solar System.
5.06 Analyze the spin-off benefits generated by space exploration technology including: • **Medical.** • **Materials.** • **Transportation.** • **Processes.** • **Future research.**
Earth Science Lab, Level A: Cards 20, 79, 80, 81 **Earth Science Lab, Level B:** Cards 20, 79, 80, 81 **Physical Science Lab, Level A:** Card 35 **Physical Science Lab, Level B:** Card 35

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.01 Determine how convection and radiation transfer energy.
Physical Science Lab, Level A: Cards 43, 46 **Physical Science Lab, Level B:** Cards 43, 46

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.02 Analyze heat flow through materials or across space from various warm objects to cooler objects until both objects are at equilibrium.
Physical Science Lab, Level A: Cards 42, 43 **Physical Science Lab, Level B:** Cards 42, 43

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.03 Analyze sound as an example that vibrating materials generate waves that transfer energy: • **Frequency.** • **Amplitude.** • **Loudness.** • **How sound travels through different material.** • **Form and function of the human ear.**
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

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.04 Evaluate data for qualitative and quantitative relationships associated with energy transfer and/or transformation.
Physical Science Lab, Level A: Cards 37, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49 **Physical Science Lab, Level B:** Cards 37, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 3, *Energy Conversion*, pages 85-87

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.05 Analyze the physical interactions of light and matter: • **Absorption.** • **Scattering.** • **Color perception.** • **Form and function of the human eye.**
Physical Science Lab, Level A: Cards 85, 86, 87, 88, 89, 90 **Physical Science Lab, Level B:** Cards 85, 86, 87, 88, 89, 90

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.06 Analyze response to heat to determine the suitability of materials for use in technological design: • **Conduction.** • **Expansion.** • **Contraction.**
Physical Science Lab, Level A: Cards 20, 35 **Physical Science Lab, Level B:** Cards 20, 35

Competency Goal 6: The learner will conduct investigations and examine models and devices to build an understanding of the characteristics of energy transfer and/or transformations.
6.07 Analyze the Law of Conservation of Energy: • **Conclude that energy cannot be created or destroyed, but only changed from one form into another.** • **Conclude that the amount of energy always stays the same, although within the process of some energy is always converted to heat.** • **Some systems transform energy with less loss of heat than others.**
Physical Science Lab, Level A: Cards 28, 37 **Physical Science Lab, Level B:** Cards 28, 37

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.01 Describe ways in which organisms interact with each other and with non-living parts of the environment: • **Coexistence/Cooperation/Competition.** • **Symbiosis.** • **Mutual dependence.**
Life Science Lab, Level A: Cards 74, 75 **Life Science Lab, Level B:** Cards 74, 75

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.02 Investigate factors that determine the growth and survival or organisms including: • **Light.** • **Temperature range.** • **Mineral availability.** • **Soil/rock type.** • **Water.** • **Energy.**
Life Science Lab, Level A: Cards 70, 71, 73, 75 **Life Science Lab, Level B:** Cards 70, 71, 73, 75

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.03 Explain how changes in habitat may affect organisms.
Life Science Lab, Level A: Cards 65, 66, 67, 72, 84, 85, 86, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 65, 66, 67, 72, 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 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

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.04 Evaluate data related to human population growth, along with problems and solutions. • **Waste disposal.** • **Food supplies.** • **Resource availability.** • **Transportation.** • **Socio-economic patterns.**
Life Science Lab, Level A: Cards 85, 87, 88, 89, 90 **Life Science Lab, Level B:** Cards 85, 87, 88, 89, 90

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.05 Examine evidence that overpopulation by any species impacts the environment.
Life Science Lab, Level A: Cards 72, 86 **Life Science Lab, Level B:** Cards 72, 86

Competency Goal 7: The learner will conduct investigations and use technologies and informational systems to build an understanding of population dynamics.
7.06 Investigate processes which, operating over long periods of time, have resulted in the diversity of plant and animal life present today. • **Natural selection.** • **Adaptation.**
Life Science Lab, Level A: Cards 23, 41, 65, 66, 67, 68 **Life Science Lab, Level B:** Cards 23, 41, 65, 66, 67, 68

SRA Life, Earth, and Physical Science Laboratories
correlation to
North Carolina Standard Course of Study: Science
Grade 7

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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.01 Identify and create questions and hypotheses that can be answered through 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 8

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.02 Develop appropriate experimental procedures for: • **Given questions.** • **Student generated questions.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.03 Apply safety procedures in the laboratory and in field studies: • **Recognizing potential hazards.** • **Manipulate materials and equipment.** • **Conduct appropriate procedures.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.04 Analyze variables in scientific investigations: • **Identify dependent and independent.** • **Use of a control.** • **Manipulate.** • **Describe relationships between.** • **Define operationally.**
Life Science Lab Teacher's Handbook: Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **Classroom Resource CD-ROM:** Writing Strategy 23

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.05 Analyze evidence to:

- **Explain observations.**
- **Make inferences and predictions.**
- **Develop the relationship between evidence and explanation.**

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, 11, 17, 18

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- **Measurement.**
- **Analysis of data.**
- **Graphing.**
- **Prediction models.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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Classroom Resource CD-ROM: Writing Strategy 20, 22, 24

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.07 Prepare models and/or computer simulations to:

- **Test hypotheses.**
- **Evaluate how data fit.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods*, pages 85-87; Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91; Hands-On Activity 5, *Making Fossils*, pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?*, pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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 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 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

Classroom Resource CD-ROM: Writing Strategy 8, 20, 22

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.08 Use oral and written language to:

- **Communicate findings.**
- **Defend conclusions of 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

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Classroom Resource CD-ROM: Writing Strategy 1-30

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.09 Use technologies and information systems to:

- **Research.**
- **Gather and analyze data.**
- **Visual data.**
- **Disseminate findings to others.**

Classroom Resource CD-ROM: Writing Strategy 9, 16, 22, 24, 25

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- **Scientific test.**
- **Articles.**
- **Events in the popular press.**

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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Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.01 Explore evidence that "technology" has many definitions.

- **Artifact or hardware.**
- **Methodology or technique.**
- **System of production.**
- **Social-technical system.**

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, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 33, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90

Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.02 Use information systems to:

- **Identify scientific needs, human needs, or problems that are subject to technological solution.**
- **Locate resources to obtain and test ideas.**

Life Science Lab, Level A: Cards 69, 83, 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 69, 83, 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 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab, Level B: Cards 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab Teacher's Handbook: 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

Physical Science Lab, Level A: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab Teacher's Handbook: 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

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.03 Evaluate technological designs or: • **Application of scientific principles.** • **Risks and benefits.** • **Constraints of design.** • **Consistent testing protocols.**
This concept is not covered at this level.

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.04 Apply tenets of technological design to make informed consumer decisions about: • **Products.** • **Processes.** • **Systems.**
This concept is not covered at this level.

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.01 Explain the composition, properties, and structure of the atmosphere: • **Mixture of gases.** • **Stratified layers.** • **Each layer has distinct properties.** • **As altitude increases, air pressure decreases.** • **Equilibrium.**
Earth Science Lab, Level A: Cards 36, 38, 39, 40, 41 **Earth Science Lab, Level B:** Cards 36, 38, 39, 40, 41

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.02 Describe properties that can be observed and measured to predict air quality: • **Particulate matter.** • **Ozone.**
Earth Science Lab, Level A: Cards 37, 42 **Earth Science Lab, Level B:** Cards 37, 42 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.03 Conclude that the good health of environments and organisms requires: • **The monitoring of air quality.** • **Taking steps to maintain healthy air quality.** • **Stewardship.**
Life Science Lab, Level A: Card 89 **Life Science Lab, Level B:** Card 89 **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, 59 **Earth Science Lab, Level B:** Cards 42, 59 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 5, *What is in the Air?*, pages 89-91

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.

3.04 Evaluate how humans impact air quality including:

- **Air quality standards.**
- **Point and non-point sources of air pollution in North Carolina.**
- **Financial and economic trade-offs.**
- **Local air quality issues.**

Life Science Lab, Level A: Card 89
Life Science Lab, Level B: Card 89
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, 59
Earth Science Lab, Level B: Cards 42, 59
Earth Science Lab Teacher's Handbook: Hands-On Activity 5, *What is in the Air?,* pages 89-91

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.

3.05 Examine evidence that atmospheric properties can be studied to predict atmospheric conditions and weather hazards.

- **Humidity.**
- **Temperature.**
- **Wind speed and direction.**
- **Air pressure.**
- **Precipitation.**
- **Tornadoes.**
- **Hurricanes.**
- **Floods.**
- **Storms.**

Earth Science Lab, Level A: Cards 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 56, 57
Earth Science Lab, Level B: Cards 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 56, 57
Earth Science Lab Teacher's Handbook: Hands-On Activity 6, *Modeling a Tornado,* pages 93-95

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.

3.06 Assess the use of technology in studying atmospheric phenomena and weather hazards.

- **Satellites.**
- **Weather maps.**
- **Predicting.**
- **Recording.**
- **Communicating information about conditions.**

Earth Science Lab, Level A: Cards 50, 51
Earth Science Lab, Level B: Cards 50, 51

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.01 Analyze how human body systems interact to provide for the needs of the human organism: • **Musculoskeletal.** • **Cardiovascular.** • **Endocrine and Nervous.** • **Digestive and Circulatory.** • **Excretory.** • **Reproductive.** • **Respiratory.** • **Immune.** • **Nervous system.**
Life Science Lab, Level A: Cards 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 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

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.02 Describe how systems within the human body are defined by the functions it performs.
Life Science Lab, Level A: Cards 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 45, 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

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.03 Explain how the structure of an organ is adapted to perform specific functions within one or more systems. • **Liver.** • **Heart.** • **Lung.** • **Brain.** • **Stomach.** • **Kidney.**
Life Science Lab, Level A: Cards 47, 48, 50, 51, 52, 54, 57 **Life Science Lab, Level B:** Cards 47, 48, 50, 51, 52, 54, 57

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.04 Evaluate how systems in the human body help regulate the internal environment.
Life Science Lab, Level A: Cards 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 45, 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

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.05 Analyze how an imbalance in homeostasis may result from a disruption in any human system.
Life Science Lab, Level A: Cards 49, 57 **Life Science Lab, Level B:** Cards 49, 57

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.06 Describe growth and development of the human organism.
Life Science Lab, Level A: Cards 45, 58, 61 **Life Science Lab, Level B:** Cards 45, 58,61

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.07 Explain the effects of environmental influences on human embryo development and human health including: • **Smoking.** • **Alcohol.** • **Drugs.** • **Diet.**
Life Science Lab, Level A: Cards 45, 46 **Life Science Lab, Level B:** Cards 45, 46

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.
4.08 Explain how understanding human body systems can help make informed decisions regarding health.
Life Science Lab, Level A: Cards 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58 **Life Science Lab, Level B:** Cards 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

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.01 Explain the significance of genes to inherited characteristics: • **Genes are the units of information.** • **Parents transmit genes to their offspring.** • **Some medical conditions and diseases are genetic.**
Life Science Lab, Level A: Cards 61, 62, 63, 64, 65 **Life Science Lab, Level B:** Cards 61, 62, 63, 64, 65

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.02 Explain the significance of reproduction. • **Sorting and recombination of parents' genetic traits.** • **Potential variation among offspring.**
Life Science Lab, Level A: Cards 62, 63, 64 **Life Science Lab, Level B:** Cards 62, 63, 64

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.03 Identify examples and patterns of human genetic traits: • **Dominant and recessive.** • **Incomplete dominance.**
Life Science Lab, Level A: Cards 62, 63 **Life Science Lab, Level B:** Cards 62, 63

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.04 Analyze the role of probability in the study of heredity: • **Role of each parent in transfer of genetic traits.** • **Analysis of pedigrees.**
Life Science Lab, Level A: Cards 62, 63, 64 **Life Science Lab, Level B:** Cards 62, 63, 64

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.05 Summarize the genetic transmittance of disease.
Life Science Lab, Level A: Cards 62, 63, 64, 65 **Life Science Lab, Level B:** Cards 62, 63, 64, 65

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.
5.06 Evaluate evidence that human characteristics are a product of: • **Inheritance.** • **Environmental factors, and** • **Lifestyle choices.**
Life Science Lab, Level A: Cards 61, 62, 63, 64, 69 **Life Science Lab, Level B:** Cards 61, 62, 63, 64, 69

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.01 Demonstrate ways that simple machines can change force.
Physical Science Lab, Level A: Cards 63, 64 **Physical Science Lab, Level B:** Cards 63, 64

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.02 Analyze simple machines for mechanical advantage and efficiency.
Physical Science Lab, Level A: Cards 63, 64 **Physical Science Lab, Level B:** Cards 63, 64

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.03 Evaluate motion in terms of Newton's Laws: • **The force of friction retards motion.** • **For every action there is an equal and opposite reaction.** • **An object's motion is the result of the combined effect of all forces acting on the object.** • **A moving object that is not subjected to a force will continue to move at a constant speed in a straight line.** • **An object at rest will remain at rest.**
Physical Science Lab, Level A: Cards 55, 56 **Physical Science Lab, Level B:** Cards 55, 56

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.04 Analyze that an object's motion is always judged relative to some other object or point.
Physical Science Lab, Level A: Cards 50, 51, 52, 53 **Physical Science Lab, Level B:** Cards 50, 51, 52, 53

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.05 Describe and measure quantities that characterize moving objects and their interactions within a system: • **Time.** • **Distance.** • **Mass.** • **Force.** • **Velocity.** • **Center of mass.** • **Acceleration.**
Physical Science Lab, Level A: Cards 50, 51, 52, 53, 54, 57 **Physical Science Lab, Level B:** Cards 50, 51, 52, 53, 54, 57

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of motion and forces.
6.06 Investigate and analyze the real world interactions of balanced and unbalanced forces; • **Sports and recreation.** • **Transportation.** • **The human body.**
Physical Science Lab, Level A: Cards 50, 51, 52, 53, 54, 57 **Physical Science Lab, Level B:** Cards 50, 51, 52, 53, 54, 57

SRA Life, Earth, and Physical Science Laboratories
correlation to
North Carolina Standard Course of Study: Science
Grade 8

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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.01 Identify and create questions and hypotheses that can be answered through 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 8

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.02 Develop appropriate experimental procedures for: • **Given questions.** • **Student generated questions.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.03 Apply safety procedures in the laboratory and in field studies: • **Recognizing potential hazards.** • **Manipulate materials and equipment.** • **Conduct appropriate procedures.**
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

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.
1.04 Analyze variables in scientific investigations: • **Identify dependent and independent.** • **Use of a control.** • **Manipulate.** • **Describe relationships between.** • **Define operationally.**
Life Science Lab Teacher's Handbook: Hands-On Activity 7, *The Effects of Acid Rain,* pages 101-103 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density,* pages 101-103 **Classroom Resource CD-ROM:** Writing Strategy 23

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.05 Analyze evidence to:

- **Explain observations.**
- **Make inferences and predictions.**
- **Develop the relationship between evidence and explanation.**

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, 11, 17, 18

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- **Measurement.**
- **Analysis of data.**
- **Graphing.**
- **Prediction models.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods,* pages 85-87; Hands-On Activity 4, *Your Cardiovascular System,* pages 89-91; Hands-On Activity 5, *Making Fossils,* pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?,* pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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 5, *Making a Potato Battery,* pages 93-95; Hands-On Activity 6, *Making Sound,* pages 97-99

Classroom Resource CD-ROM: Writing Strategy 20, 22, 24

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.07 Prepare models and/or computer simulations to:

- **Test hypotheses.**
- **Evaluate how data fit.**

Life Science Lab Teacher's Handbook: Hands-On Activity 3, *Investigating Arthropods*, pages 85-87; Hands-On Activity 4, *Your Cardiovascular System*, pages 89-91; Hands-On Activity 5, *Making Fossils*, pages 93-95; Hands-On Activity 6, *How Much Does Energy Cost?*, pages 97-99; Hands-On Activity 7, *The Effects of Acid Rain*, pages 101-103

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 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 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

Classroom Resource CD-ROM: Writing Strategy 8, 20, 22

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.08 Use oral and written language to:

- **Communicate findings.**
- **Defend conclusions of 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

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Classroom Resource CD-ROM: Writing Strategy 1-30

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.09 Use technologies and information systems to:

- **Research.**
- **Gather and analyze data.**
- **Visual data.**
- **Disseminate findings to others.**

Classroom Resource CD-ROM: Writing Strategy 9, 16, 22, 24, 25

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- **Scientific test.**
- **Articles.**
- **Events in the popular press.**

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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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

Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.01 Explore evidence that "technology" has many definitions.

- **Artifact or hardware.**
- **Methodology or technique.**
- **System of production.**
- **Social-technical system.**

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, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 33, 34, 35, 45, 46, 47, 48, 49, 63, 64, 68, 69, 70, 72, 73, 76, 81, 84, 90

Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.02 Use information systems to:

- **Identify scientific needs, human needs, or problems that are subject to technological solution.**
- **Locate resources to obtain and test ideas.**

Life Science Lab, Level A: Cards 69, 83, 84, 85, 86, 87, 88, 89, 90
Life Science Lab, Level B: Cards 69, 83, 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 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab, Level B: Cards 19, 20, 31, 35, 37, 42, 50, 51, 59, 61, 79, 80, 81, 85, 86, 90
Earth Science Lab Teacher's Handbook: 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

Physical Science Lab, Level A: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab, Level B: Cards 34, 35, 38, 46, 47, 48, 49, 63, 64, 71, 72, 76, 81, 84, 90
Physical Science Lab Teacher's Handbook: 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

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.03 Evaluate technological designs or: • **Application of scientific principles.** • **Risks and benefits.** • **Constraints of design.** • **Consistent testing protocols.**
This concept is not covered at this level.

Competency Goal 2: The learner will demonstrate an understanding of technological design.
2.04 Apply tenets of technological design to make informed consumer decisions about: • **Products.** • **Processes.** • **Systems.**
This concept is not covered at this level.

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.01 Analyze the unique properties of water including: • **Universal solvent.** • **Cohesion and adhesion.** • **Polarity.** • **Density and buoyancy.** • **Specific heat.**
Physical Science Lab, Level A: Cards 2, 5, 6, 13, 60, 61 **Physical Science Lab, Level B:** Cards 2, 5, 6, 13, 60, 61

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.02 Explain the structure of the hydrosphere including: • **Water distribution on earth.** • **Local river basin.** • **Local water availability.**
Life Science Lab, Level A: Card 90 **Life Science Lab, Level B:** Card 90 **Earth Science Lab, Level A:** Cards 82, 83, 84, 87, 90 **Earth Science Lab, Level B:** Cards 82, 83, 84, 87, 90 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.03 evaluate evidence that Earth's oceans are a reservoir of nutrients, minerals, dissolved gases, and life forms: • **Estuaries.** • **Marine ecosystems.** • **Upwelling.** • **Behavior of gases in the marine environment.** • **Value and sustainability of marine resources.** • **Deep ocean technology and understandings gained.**
Life Science Lab, Level A: Card 82 **Life Science Lab, Level B:** Card 82 **Earth Science Lab, Level A:** Cards 82, 87, 88, 89, 90 **Earth Science Lab, Level B:** Cards 82, 87, 88, 89, 90 **Earth Science Lab Teacher's Handbook:** Hands-On Activity 8, *Temperature, Salinity, and Water Density*, pages 101-103

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.04 Describe how terrestrial and aquatic food webs are interconnected.
Life Science Lab, Level A: Cards 76, 77, 81, 82 **Life Science Lab, Level B:** Cards 76, 77, 81, 82 **Earth Science Lab, Level A:** Card 89 **Earth Science Lab, Level B:** Card 89

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.05 analyze hydrospheric data over time to predict the health of a water system including: • **Temperature.** • **Dissolved oxygen.** • **pH.** • **Nitrates.** • **Turbidity.** • **Bio-indicators.**
Life Science Lab, Level A: Cards 82, 90 **Life Science Lab, Level B:** Cards 82, 90 **Earth Science Lab, Level A:** Cards 59, 60, 61, 86 **Earth Science Lab, Level B:** Cards 59, 60, 61, 86

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.06 Evaluate technologies and information systems used to monitor the hydrosphere.
Life Science Lab, Level A: Card 90 **Life Science Lab, Level B:** Card 90 **Earth Science Lab, Level A:** Cards 51, 85, 86 **Earth Science Lab, Level B:** Cards 51, 85, 86

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.07 Describe how humans affect the quality of water: • **Point and non-point sources of water pollution in North Carolina.** • **Possible effects of excess nutrients in North Carolina waters.** • **Economic trade-offs.** • **Local water issues.**
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 85, 86 **Earth Science Lab, Level B:** Cards 85, 86

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.
3.08 Recognize that the good health of environments and organisms requires: • **Monitoring the hydrosphere.** • **Water quality standards.** • **Methods of water treatment.** • **Maintaining safe water quality.** • **Stewardship.**
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 85, 86 **Earth Science Lab, Level B:** Cards 85, 86

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.
4.01 Understand that both naturally occurring and synthetic substances are chemicals.
Physical Science Lab, Level A: Cards 17, 18, 19, 20, 31, 32, 35 **Physical Science Lab, Level B:** Cards 17, 18, 19, 20, 31, 32, 35

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.
4.02 Evaluate evidence that elements combine in a multitude of ways to produce compounds that account for all living and nonliving substances.
Physical Science Lab, Level A: Cards 9, 10, 11, 31, 32 **Physical Science Lab, Level B:** Cards 9, 10, 11, 31, 32

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.
4.03 Explain how the periodic table is a model for: • **Classifying elements.** • **Identifying the properties of elements.**
Physical Science Lab, Level A: Cards 10, 11, 14, 15, 16, 17, 18, 19, 20, 21 **Physical Science Lab, Level B:** Cards 10, 11, 14, 15, 16, 17, 18, 19, 20, 21 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.
4.04 Describe the suitability of materials for use in technological design: • **Electrical conductivity.** • **Density.** • **Magnetism.** • **Solubility.** • **Malleability.**
Physical Science Lab, Level A: Cards 2, 13, 14, 15, 16, 18, 19, 20, 33, 34, 35 **Physical Science Lab, Level B:** Cards 2, 13, 14, 15, 16, 18, 19, 20, 33, 34, 35 **Physical Science Lab Teacher's Handbook:** Hands-On Activity 1, *Measuring pH of Acids and Bases,* pages 77-79

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.05 Identify substances based on characteristic physical properties:

- **Density.**
- **Boiling/melting points.**
- **Solubility.**
- **Chemical reactivity.**
- **Specific heat.**

Physical Science Lab, Level A: Cards 1, 2, 5, 6, 7, 13, 27, 28
Physical Science Lab, Level B: Cards 1, 2, 5, 6, 7, 13, 27, 28
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

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.06 Describe and measure quantities related to chemical/physical changes within a system:

- **Temperature.**
- **Volume.**
- **Mass.**
- **Precipitate.**
- **Gas production.**

Physical Science Lab, Level A: Cards 5, 6, 7, 8, 9, 27, 28, 29
Physical Science Lab, Level B: Cards 5, 6, 7, 8, 9, 27, 28, 29
Physical Science Lab Teacher's Handbook: Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.07 Identify evidence supporting the law of conservation of matter:

- **During an ordinary chemical reaction matter cannot be created or destroyed.**
- **In a chemical reaction, the total mass of the reactants equals the total mass of the products.**

Physical Science Lab, Level A: Cards 9, 27, 28, 29
Physical Science Lab, Level B: Cards 9, 27, 28, 29
Physical Science Lab Teacher's Handbook: Hands-On Activity 2, *Chemical Reaction Rates,* pages 81-83

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.08 Identify evidence that some chemicals may contribute to human health conditions including:

- **Cancer.**
- **Autoimmune disease.**
- **Birth defects.**
- **Heart disease.**
- **Diabetes.**
- **Learning and behavioral disorders.**
- **Kidney disease.**
- **Asthma.**

Life Science Lab, Level A: Cards 47, 49, 50, 57
Life Science Lab, Level B: Cards 47, 49, 50, 57

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.09 Describe factors that determine the effects a chemical has on a living organism including:

- **Exposure.**
- **Potency.**
- **Dose and the resultant concentration of chemical in the organism.**
- **Individual susceptibility.**
- **Possible means to eliminate or reduce effects.**

Life Science Lab, Level A: Cards 84, 87, 88, 89, 90
Life Science Lab, Level B: Cards 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 42, 59, 61, 86
Earth Science Lab, Level B: Cards 42, 59, 61, 86
Earth Science Lab Teacher's Handbook: Hands-On Activity 5, *What is in the Air?,* pages 89-91

Competency Goal 4: The learner will conduct investigations and utilize technologies and information systems to build an understanding of chemistry.

4.10 Describe risks and benefits of chemicals including:

- **Medicines.**
- **Food preservatives.**
- **Crop yield.**
- **Sanitation.**

Life Science Lab, Level A: Cards 84, 87, 89, 90
Life Science Lab, Level B: Cards 84, 87, 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 42, 59, 61, 86
Earth Science Lab, Level B: Cards 42, 59, 61, 86
Earth Science Lab Teacher's Handbook: Hands-On Activity 5, *What is in the Air?,* pages 89-91

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

5.01 Interpret ways in which rocks, fossils, and ice cores record Earth's geologic history and the evolution f life including:

- **Geologic Time Scale.**
- **Index Fossils.**
- **Law of Superposition.**
- **Unconformity.**
- **Evidence for climate change.**
- **Extinction of species.**
- **Catastrophic events.**

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 30, 32, 33, 34
Earth Science Lab, Level B: Cards 30, 32, 33, 34

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

5.02 Correlate evolutionary theories and processes:

- **Biological.**
- **Geological.**
- **Technological.**

Life Science Lab, Level A: Cards 65, 66, 67, 68
Life Science Lab, Level B: Cards 65, 66, 67, 68
Life Science Lab Teacher's Handbook: Hands-On Activity 5, *Making Fossils*, pages 93-95

Earth Science Lab, Level A: Cards 30, 31, 32, 33, 34, 60, 61
Earth Science Lab, Level B: Cards 30, 31, 32, 33, 34, 60, 61

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

5.03 Examine evidence that the geologic evolution has had significant global impact including:

- **Distribution of living things.**
- **Major geological events.**
- **Mechanical and chemical weathering.**

Life Science Lab, Level A: Cards 65, 66, 67, 68
Life Science Lab, Level B: Cards 65, 66, 67, 68

Earth Science Lab, Level A: Cards 2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 30, 31, 32
Earth Science Lab, Level B: Cards 2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 30, 31, 32
Earth Science Lab Teacher's Handbook: Hands-On Activity 2, *Plate Boundaries in Action*, pages 77-79

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

5.04 Analyze satellite imagery as a method to monitor Earth from Space;

- **Spectral analysis.**
- **Reflectance curves.**

Life Science Lab, Level A: Card 83
Life Science Lab, Level B: Card 83

Earth Science Lab, Level A: Cards 16, 20, 51, 80
Earth Science Lab, Level B: Cards 16, 20, 51, 80

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of evidence of evolution in organisms and landforms.

5.05 Use maps, ground truthing and remote sensing to make predictions regarding:

- **Changes over time.**
- **Land use.**
- **Urban sprawl.**
- **Resource management.**

Life Science Lab, Level A: Card 83
Life Science Lab, Level B: Card 83

Earth Science Lab, Level A: Cards 16, 19, 20, 50, 51
Science Lab, Level B: Cards 16, 19, 20, 50, 51

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of cell theory.
6.01 Describe cell theory. • **All living things are composed of cells.** • **Cells provide structure and carry on major functions to sustain life.** • **Some organisms are single-cell; other organisms, including humans, are multi-cellular.** • **Cell function is similar in all living things.**
Life Science Lab, Level A: Cards 1, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 44 **Life Science Lab, Level B:** Cards 1, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 44 **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79; Hands-On Activity 2, *Culturing Bacteria,* pages 81-83

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of cell theory.
6.02 Analyze structures, functions, and processes within animals' cells for: • **Capture and release of energy.** • **Feedback information.** • **Disposal of wastes.** • **Reproduction.** • **Movement.** • **Specialized needs.**
Life Science Lab, Level A: Cards 5, 6, 7, 8, 9, 10, 44 **Life Science Lab, Level B:** Cards 5, 6, 7, 8, 9, 10, 44 **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of cell theory.
6.03 Compare life functions of protists: • **Euglena.** • **Amoeba.** • **Paramecium.** • **Volvox.**
Life Science Lab, Level A: Card 14 **Life Science Lab, Level B:** Card 14

Competency Goal 6: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of cell theory.
6.04 Conclude that animal cells carry on complex chemical processes to balance the needs of the organism. • **Cells grow and divide to produce more cells.** • **Cells take in nutrients to make the energy for the work cells do.** • **Cells take in materials that a cell or an organism needs.**
Life Science Lab, Level A: Cards 6, 8, 9, 10, 46, 60 **Life Science Lab, Level B:** Cards 6, 8, 9, 10, 46, 60 **Life Science Lab Teacher's Handbook:** Hands-On Activity 1, *Examining Cells,* pages 77-79

Competency Goal 7 The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.
7.01 Compare and contrast microbes. • **Size, shape, structure.** • **Whether they are living cells.**
Life Science Lab, Level A: Cards 11, 12, 13, 14, 15 **Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15 **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83

Competency Goal 7 The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.
7.02 Describe diseases caused by microscopic biological hazards including: • **Viruses.** • **Bacteria.** • **Parasites.** • **Contagions.** • **Mutagens.**
Life Science Lab, Level A: Cards 11, 12, 13, 14, 15 **Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15 **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83

Competency Goal 7 The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.
7.03 Analyze data to determine trends or patterns to determine how an infectious disease may spread including: • **Carriers.** • **Vectors.** • **Conditions conductive to disease.** • **Calculate reproductive potential of bacteria.**
Life Science Lab, Level A: Cards 11, 12 **Life Science Lab, Level B:** Cards 11, 12 **Life Science Lab Teacher's Handbook:** Hands-On Activity 2, *Culturing Bacteria*, pages 81-83

Competency Goal 7 The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.
7.04 Evaluate the human attempt to reduce the risk of and treatments for microbial infections including: • **Solutions with anti-microbial properties.** • **Antibiotic treatment.** • **Research.**
Life Science Lab, Level A: Cards 11, 12, 13, 14, 15 **Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15

Competency Goal 7 The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.
7.05 Investigate aspects of biotechnology including: • **Specific genetic information available.** • **Careers.** • **Economic benefits to North Carolina.** • **Ethical issues.** • **Impact for agriculture.**
Life Science Lab, Level A: Cards 11, 12, 13, 14, 15, 65, 69 **Life Science Lab, Level B:** Cards 11, 12, 13, 14, 15, 65, 69