

Carolina Biological Supply Company Correlation to Indiana Academic Standards

Grade 8

- Conservation
- Organisms-From Macro to Micro
- Properties of Matter
- Water



Grade 8

Process Standards

The Nature of Science

Students gain scientific knowledge by observing the natural and constructed world, performing and evaluating investigations and communicating their findings. These principles should guide student work and be integrated into the curriculum along with the content standards on a daily basis.

- Make predictions and develop testable questions based on research and prior knowledge.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 11 “Exploring Microorganisms”
Organisms—From Macro to Micro SG/TG: Lesson 18 “The Next Generation: Part 1”
Properties of Matter SG/TG: Lesson 03 “Density Predictions”
Properties of Matter SG/TG: Lesson 08 “Changing Matter and Mass”
Properties of Matter SG/TG: Lesson 14 “Mass, Volume, and Dissolving”
Properties of Matter SG/TG: Lesson 15 “Separating a Soluble and an Insoluble Substance”

- Plan and carry out investigations as a class, in small groups or independently often over a period of several class lessons.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 01 “What Are Organisms?”
Organisms—From Macro to Micro SG/TG: Lesson 02 “The WOWBug: Getting a Closer Look”
Organisms—From Macro to Micro SG/TG: Lesson 03 “Investigating *Lumbriculus*”
Organisms—From Macro to Micro SG/TG: Lesson 04 “Creating Your Own Pond”
Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle”
Organisms—From Macro to Micro SG/TG: Lesson 06 “The Cabbage White—From Egg to Butterfly”
Organisms—From Macro to Micro SG/TG: Lesson 07 “Exploring Cells”
Organisms—From Macro to Micro SG/TG: Lesson 08 “Cell Division: Multiplying by Dividing”
Organisms—From Macro to Micro SG/TG: Lesson 09 “Sexual Reproduction in Flowering Plants”
Organisms—From Macro to Micro SG/TG: Lesson 10 “Leaf Structure and Transpiration”
Organisms—From Macro to Micro SG/TG: Lesson 11 “Exploring Microorganisms”
Organisms—From Macro to Micro SG/TG: Lesson 12 “Revisiting Your Pond”
Organisms—From Macro to Micro SG/TG: Lesson 13 “Anchor Activity”
Organisms—From Macro to Micro SG/TG: Lesson 14 “Investigating Fungi I—The Molds”
Organisms—From Macro to Micro SG/TG: Lesson 15 “Investigating Fungi II—Yeast”
Organisms—From Macro to Micro SG/TG: Lesson 16 “Introducing *Daphnia*”
Organisms—From Macro to Micro SG/TG: Lesson 17 “Exploring the *Hydra*”
Organisms—From Macro to Micro SG/TG: Lesson 18 “The Next Generation: Part 1”
Organisms—From Macro to Micro SG/TG: Lesson 19 “The Next Generation: Part 2—Secrets Revealed”
Organisms—From Macro to Micro SG/TG: Lesson 20 “The Key to Organisms—An Assessment”
Properties of Matter SG/TG: Lesson 01 “Our Ideas About Matter”
Properties of Matter SG/TG: Lesson 02 “Determining Density”
Properties of Matter SG/TG: Lesson 03 “Density Predictions”
Properties of Matter SG/TG: Lesson 04 “Do Gases Have Density”
Properties of Matter SG/TG: Lesson 05 “Temperature and Density”
Properties of Matter SG/TG: Lesson 06 “Applying the Heat”
Properties of Matter SG/TG: Lesson 07 “Just a Phase”
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Properties of Matter SG/TG: Lesson 09 “The Mystery Object”

Properties of Matter SG/TG: Lesson 10 “Starting the Anchor Activity”
Properties of Matter SG/TG: Lesson 11 “Pure Substance or Mixture?”
Properties of Matter SG/TG: Lesson 12 “What Happens When Substances Are Mixed With Water?”
Properties of Matter SG/TG: Lesson 13 “How Much Solute Dissolves in a Solvent?”
Properties of Matter SG/TG: Lesson 14 “Mass, Volume, and Dissolving”
Properties of Matter SG/TG: Lesson 15 “Separating a Soluble and an Insoluble Substance”
Properties of Matter SG/TG: Lesson 16 “Researching Solvents”
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Properties of Matter SG/TG: Lesson 19 “Assessing Our Progress”
Properties of Matter SG/TG: Lesson 20 “Breaking Down a Compound”
Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”
Properties of Matter SG/TG: Lesson 22 “Combining Elements”
Properties of Matter SG/TG: Lesson 23 “Chemical Reactions Involving Metals”
Properties of Matter SG/TG: Lesson 24 “Countering Corrosion”
Properties of Matter SG/TG: Lesson 25 “Mass and Chemical Reactions”
Properties of Matter SG/TG: Lesson 26 “End-of-Module Assessment”

- Collect quantitative data with appropriate tools or technologies and use appropriate units to label numerical data.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 03 “Investigating *Lumbriculus*” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 06 “The Cabbage White—From Egg to Butterfly” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 12 “Revisiting Your Pond” Extensions
Properties of Matter SG/TG: Lesson 11 “Pure Substance or Mixture?”
Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”

- Incorporate variables that can be changed, measured or controlled.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 10 “Leaf Structure and Transpiration” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 12 “Revisiting Your Pond” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 15 “Investigating Fungi II—Yeast” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 16 “Introducing *Daphnia*” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 16 “Introducing *Daphnia*” Extensions
Organisms—From Macro to Micro SG/TG: Lesson 18 “The Next Generation: Part 1” Extensions

- Use the principles of accuracy and precision when making measurement.

The STC Program

Properties of Matter SG/TG: Lesson 04 “Do Gases Have Density”
Properties of Matter SG/TG: Lesson 13 “How Much Solute Dissolves in a Solvent?”
Properties of Matter SG/TG: Lesson 26 “End-of-Module Assessment”

- Test predictions with multiple trials.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 03 “Investigating *Lumbriculus*”
Organisms—From Macro to Micro SG/TG: Lesson 04 “Creating Your Own Pond”
Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle”
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Properties of Matter SG/TG: Lesson 24 “Countering Corrosion”
Properties of Matter SG/TG: Lesson 25 “Mass and Chemical Reactions”

- Keep accurate records in a notebook during investigations.

The STC Program

Properties of Matter SG/TG: Lesson 01 “Our Ideas About Matter”
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- Analyze data, using appropriate mathematical manipulation as required, and use it to identify patterns and make inferences based on these patterns.

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- Evaluate possible causes for differing results (valid data).

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- Compare the results of an experiment with the prediction.

The STC Program

Properties of Matter SG/TG: Lesson 16 “Researching Solvents”

- Communicate findings using graphs, charts, maps and models through oral and written reports.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 02 “The WOWBug: Getting a Closer Look”
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The Design Process:

As citizens of the constructed world, students will participate in the design process. Students will learn to use materials and tools safely and employ the basic principles of the engineering design process in order to find solutions to problems.

- Identify a need or problem to be solved.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle” Extensions

- Brainstorm potential solutions.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 01 “What Are Organisms?”

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- Document the design throughout the entire design process so that it can be replicated in a portfolio/notebook with drawings including labels.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle” Extensions

- Select a solution to the need or problem.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle” Extensions

- Select the most appropriate materials to develop a solution that will meet the need.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle” Extensions

- Create the solution through a prototype.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 05 “Wisconsin Fast Plants: Beginning the Cycle” Extensions

- Test and evaluate how well the solution meets the goal.

The STC Program

Organisms—From Macro to Micro SG/TG: Lesson 04 “Creating Your Own Pond”

Organisms—From Macro to Micro SG/TG: Lesson 12 “Revisiting Your Pond”

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Organisms—From Macro to Micro SG/TG: Lesson 15 “Investigating Fungi II—Yeast”

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- Evaluate and test the design using measurement.

The STC Program

Properties of Matter SG/TG: Lesson 09 “The Mystery Object”
Properties of Matter SG/TG: Lesson 19 “Assessing Our Progress”
Properties of Matter SG/TG: Lesson 26 “End-of-Module Assessment”

- Present evidence using mathematical representations (graphs, data tables).

The STC Program

Properties of Matter SG/TG: Lesson 10 “Starting the Anchor Activity”

- Communicate the solution including evidence using mathematical representations (graphs, data tables), drawings or prototypes.

The STC Program

Properties of Matter SG/TG: Lesson 10 “Starting the Anchor Activity”

- Redesign to improve the solution based on how well the solution meets the need.

The STC Program

Properties of Matter SG/TG: Lesson 10 “Starting the Anchor Activity”

Standard 1: Physical Science

Core Standard

Describe how atomic structure determines chemical properties and how atoms and molecules interact.

- 8.1.1 Explain that all matter is composed of particular arrangements of atoms of approximately one hundred elements.

The STC Program

Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”

- 8.1.2 Understand that elements are organized on the periodic table based on atomic number.

The STC Program

Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”
Properties of Matter SG/TG: Lesson 22 “Combining Elements”

- 8.1.3 Explain how the arrangement of atoms and molecules determines chemical properties of substances.

The STC Program

Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”
Properties of Matter SG/TG: Lesson 22 “Combining Elements”

8.1.4 Describe the structure of an atom and relate the arrangement of electrons to how that atom interacts with other atoms.

8.1.5 Explain that atoms join together to form molecules and compounds and illustrate with diagrams the relationship between atoms, compounds and molecules.

The STC Program

Properties of Matter SG/TG: Lesson 20 “Breaking Down a Compound”

Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”

Properties of Matter SG/TG: Lesson 22 “Combining Elements”

Properties of Matter SG/TG: Lesson 25 “Mass and Chemical Reactions”

8.1.6 Explain that elements and compounds have characteristic properties such as density, boiling points and melting points, that remain unchanged regardless of the sample size.

The STC Program

Properties of Matter SG/TG: Lesson 02 “Determining Density”

Properties of Matter SG/TG: Lesson 05 “Temperature and Density”

Properties of Matter SG/TG: Lesson 06 “Applying the Heat”

Properties of Matter SG/TG: Lesson 07 “Just a Phase”

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Properties of Matter SG/TG: Lesson 22 “Combining Elements”

8.1.7 Explain that chemical changes occur when substances react and form one or more different products, whose physical and chemical properties are different from those of the reactants.

The STC Program

Properties of Matter SG/TG: Lesson 23 “Chemical Reactions Involving Metals”

Properties of Matter SG/TG: Lesson 24 “Countering Corrosion”

Properties of Matter SG/TG: Lesson 25 “Mass and Chemical Reactions”

8.1.8 Demonstrate that in a chemical change, the total numbers of each kind of atom in the product are the same as in the reactants and that the total mass of the reacting system is conserved.

The STC Program

Properties of Matter SG/TG: Lesson 25 “Mass and Chemical Reactions”

Standard 2: Earth and Space Systems

Core Standard

Explain how the sun’s energy heats the air, land, and water driving the processes that result in wind, ocean currents, and the water cycle.

Core Standard

Describe how human activities have changed the land, water, and atmosphere.

8.2.1 Recognize and demonstrate how the sun’s energy drives convection in the atmosphere and in bodies of water, which results in ocean currents and weather patterns.

8.2.2 Describe and model how water moves through the earth’s crust, atmosphere, and oceans in a cyclic way, as liquid, vapor, and solid.

KIDS DISCOVER: *Water*

8.2.3 Describe the characteristics of ocean currents and identify their effects on weather patterns.

8.2.4 Describe the physical and chemical composition of the atmosphere at different elevations.

8.2.5 Describe the conditions that cause Indiana weather and weather-related events such as tornadoes, lake effect snow, blizzards, thunderstorms, and flooding.

8.2.6 Identify, explain, and discuss some effects human activities have on the biosphere, such as air, soil, light, noise and water pollution.

KIDS DISCOVER: *Water*

8.2.7 Recognize that some of Earth’s resources are finite and describe how recycling, reducing consumption and the development of alternatives can reduce the rate of their depletion.

KIDS DISCOVER: *Conservation*

8.2.8 Explain that human activities, beginning with the earliest herding and agricultural activities, have drastically changed the environment and have affected the capacity of the environment to support native species. Explain current efforts to reduce and eliminate these impacts and encourage sustainability.

KIDS DISCOVER: *Conservation*

KIDS DISCOVER: *Water*

Standard 3: Life Science

Core Standard

Understand the predictability of characteristics being passed from parents to offspring.

Core Standard

Explain how a particular environment selects for traits that increase the likelihood of survival and reproduction by individuals bearing those traits.

8.3.1 Explain that reproduction is essential for the continuation of every species and is the mechanism by which all organisms transmit genetic information.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 07 “Exploring Cells”

Organisms-From Macro to Micro SG/TG: Lesson 08 “Cell Division: Multiplying by Dividing”

Organisms-From Macro to Micro SG/TG: Lesson 19 “The Next Generation: Part 2—Secrets Revealed”

8.3.2 Compare and contrast the transmission of genetic information in sexual and asexual reproduction.

The STC Program

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8.3.3 Explain that genetic information is transmitted from parents to offspring mostly by chromosomes.

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Organisms-From Macro to Micro SG/TG: Lesson 09 “Sexual Reproduction in Flowering Plants”

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8.3.4 Understand the relationship between deoxyribonucleic acid (DNA), genes, and chromosomes.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 19 “The Next Generation: Part 2—Secrets Revealed”

8.3.5 Identify and describe the difference between inherited traits and physical and behavioral traits that are acquired or learned.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 19 “The Next Generation: Part 2—Secrets Revealed”

8.3.6 Observe anatomical structures of a variety of organisms and describe their similarities and differences. Use the data collected to organize the organisms into groups and predict their relatedness.

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8.3.7 Recognize and explain that small genetic differences between parents and offspring can accumulate in successive generations so that descendants may be different from their ancestors.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 09 “Sexual Reproduction in Flowering Plants

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8.3.8 Examine traits of individuals within a population of organisms that have given them an advantage in survival and reproduction in a given environment or when the environment changes.

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Organisms-From Macro to Micro SG/TG: Lesson 13 “Anchor Activity”-Research Project”
Organisms-From Macro to Micro SG/TG: Lesson 16 “Introducing *Daphnia*?”

8.3.9 Describe the effect of environmental changes on populations of organisms when their adaptive characteristics put them at a disadvantage for survival. Describe how extinction of a species can ultimately result.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 04 “Creating Your Pond”
Organisms-From Macro to Micro SG/TG: Lesson 12 “Revisiting Your Pond”

8.3.10 Recognize and describe how new varieties of organisms have come about from selective breeding.

The STC Program

Organisms-From Macro to Micro SG/TG: Lesson 18 “The Next Generation: Part 1”

Standard 4: Engineering and Technology

Core Standard

Identify the appropriate materials to be used to solve a problem based on their specific properties and characteristic

8.4.1 Understand how the strength of attractive forces between particles in a material helps to explain many physical properties of the material, such as why different materials exist as gases, liquids or solids at a given temperature.

The STC Program

Properties of Matter SG/TG: Lesson 20 “Breaking Down a Compound”
Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”
Properties of Matter SG/TG: Lesson 22 “Combining Elements”

8.4.2 Rank the strength of attractions between the particles of room-temperature materials.

8.4.3 Investigate the properties (mechanical, chemical, electrical, thermal, magnetic, and optical) of natural and engineered materials.

The STC Program

Properties of Matter SG/TG: Lesson 10 “Starting the Anchor Activity”
Properties of Matter SG/TG: Lesson 21 “Examining and Grouping Elements”

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