

**ACCESS SCIENCE © 2005**

correlated to

**North Carolina  
Science Standard Course  
of Study and Grade Level  
Competencies  
Grades 5-8**



EDUCATION GROUP



A Houghton Mifflin Company

**YOUR NORTH CAROLINA GREAT SOURCE REPRESENTATIVES**

**MARY LOU HARRIS**

800-289-4490, option 4

Mary\_Lou\_Harris@hmco.com

**VICKY ROBINSON**

(WESTERN NC)

800-289-4490, option 4

Vicky\_Robinson@hmco.com



**ACCESS Science © 2005**  
**correlated to**  
**North Carolina Science Standard Course of Study**  
**and Grade Level Competencies**  
**Grade 5**

**COMPETENCY GOAL 1**

**The learner will conduct investigations to build an understanding of the interdependence of plants and animals.**

| Competency Objectives, Grade 5  | ACCESS Science   |
|---|--|
| 1.01 Describe and compare several common ecosystems (communities of organisms and their interaction with the environment).  | <b>Student Book:</b> 114, 115, 116-121, 122, 123                     |
| 1.02 Identify and analyze the functions of organisms within the population of the ecosystem: <ul style="list-style-type: none"> <li>• Producers.</li> <li>• Consumers.</li> <li>• Decomposers.</li> </ul>           | <b>Student Book:</b> 120-121, 123                                    |
| 1.03 Explain why an ecosystem can support a variety of organisms.   | <b>Student Book:</b> 114, 115, 116-121, 122, 123                     |
| 1.04 Discuss and determine the role of light, temperature, and soil composition in an ecosystem's capacity to support life.   | <b>Student Book:</b> 117, 119, 120, 122                              |
| 1.05 Determine the interaction of organisms within an ecosystem.  | <b>Student Book:</b> 113, 114-115, 116, 117, 118, 119, 120, 121, 122 |
| 1.06 Explain and evaluate some ways that humans affect ecosystems. <ul style="list-style-type: none"> <li>• Habitat reduction due to development.</li> <li>• Pollutants.</li> <li>• Increased nutrients.</li> </ul> | <b>Student Book:</b> 100-101, 102, 104-105, 106-107                  |
| 1.07 Determine how materials are recycled in nature.  | <b>Student Book:</b> 113, 115, 117, 118-119, 120-121                 |

## COMPETENCY GOAL 2

**The learner will make observations and conduct investigations to build an understanding of landforms.**

| Competency Objectives, Grade 5  | ACCESS Science   |
|---|--|
| 2.01 Identify and analyze forces that cause change in landforms over time including: <ul style="list-style-type: none"> <li>• Water and Ice.</li> <li>• Wind.</li> <li>• Gravity.</li> </ul>  | <b>Student Book:</b> 53, 54, 56-57, 58, 59, 61             |
| 2.02 Investigate and discuss the role of the water cycle and how movement of water over and through the landscape helps shape land forms.   | <b>Student Book:</b> 52, 53, 54, 55, 58, 60, 61, 70        |
| 2.03 Discuss and consider the wearing away and movement of rock and soil in erosion and its importance in forming: <ul style="list-style-type: none"> <li>• Canyons.</li> <li>• Valleys.</li> <li>• Meanders.</li> <li>• Tributaries.</li> </ul>                  | <b>Student Book:</b> 53, 54, 57, 58-59, 60-61              |
| 2.04 Describe the deposition of eroded material and its importance in establishing landforms including: <ul style="list-style-type: none"> <li>• Deltas.</li> <li>• Flood Plains.</li> </ul>  | <b>Student Book:</b> 53, 54, 57, 58-59, 60-61              |
| 2.05 Discuss how the flow of water and the slope of the land affect erosion.  | <b>Student Book:</b> 61<br>Also see <i>ScienceSaurus</i> . |
| 2.06 Identify and use models, maps, and aerial photographs as ways of representing landforms.   | <b>Student Book:</b> 52, 53, 54-55, 60, 61, 105, 114-115   |
| 2.07 Discuss and analyze how humans influence erosion and deposition in local communities, including school grounds, as a result of: <ul style="list-style-type: none"> <li>• Clearing land.</li> <li>• Planting vegetation.</li> <li>• Building dams.</li> </ul> | <b>Student Book:</b> 102-103, 109                          |

## COMPETENCY GOAL 3

**The learner will conduct investigations and use appropriate technology to build an understanding of weather and climate.**

| Competency Objectives, Grade 5   | ACCESS Science   |
|--|--|
| 3.01 Investigate the water cycle including the processes of: <ul style="list-style-type: none"> <li>• Evaporation.</li> <li>• Condensation.</li> <li>• Precipitation.</li> <li>• Run-off.</li> </ul>   | <b>Student Book:</b> 65, 70-71, 75                                 |
| 3.02 Discuss and determine how the following are affected by predictable patterns of weather: <ul style="list-style-type: none"> <li>• Temperature.</li> <li>• Wind direction and speed.</li> <li>• Precipitation.</li> <li>• Cloud cover.</li> <li>• Air pressure.</li> </ul> | <b>Student Book:</b> 66-67, 68-69, 71, 72-73, 74, 75               |
| 3.03 Describe and analyze the formation of various types of clouds and discuss their relation to weather systems.  | <b>Student Book:</b> 72-73<br>Also see <i>ScienceSaurus</i> .      |
| 3.04 Explain how global atmospheric movement patterns affect local weather.  | <b>Student Book:</b> 65, 68<br>Also see <i>ScienceSaurus</i> .     |
| 3.05 Compile and use weather data to establish a climate record and reveal any trends.   | <b>Student Book:</b> 66-67, 72, 74, 75                             |
| 3.06 Discuss and determine the influence of geography on weather and climate: <ul style="list-style-type: none"> <li>• Mountains</li> <li>• Sea breezes</li> <li>• Water bodies.</li> </ul>  | <b>Student Handbook:</b> 69, 71<br>Also see <i>ScienceSaurus</i> . |

## COMPETENCY GOAL 4

The learner will conduct investigations and use appropriate technologies to build an understanding of forces and motion in technological designs.

| Competency Objectives, Grade 5  | ACCESS Science  |
|---|---|
| 4.01 Determine the motion of an object by following and measuring its position over time.   | <b>Student Book:</b> 269, 270, 275                              |
| 4.02 Evaluate how pushing or pulling forces can change the position and motion of an object.  | <b>Student Book:</b> 269, 272-273, 274, 276, 277, 278, 279      |
| 4.03 Explain how energy is needed to make machines move. <ul style="list-style-type: none"><li>• Moving air.</li><li>• Gravity.</li></ul>   | <b>Student Book:</b> 270-271<br>Also see <i>ScienceSaurus</i> . |
| 4.04 Determine that an unbalanced force is needed to move an object or change its direction.  | <b>Student Book:</b> 273, 279                                   |
| 4.05 Determine factors that affect motion including: <ul style="list-style-type: none"><li>• Force.</li><li>• Friction.</li><li>• Inertia.</li><li>• Momentum.</li></ul>                | <b>Student Book:</b> 269, 272-279                               |
| 4.06 Build and use a model to solve a mechanical design problem. <ul style="list-style-type: none"><li>• Devise a test for the model.</li><li>• Evaluate the results of test.</li></ul> | <b>Student Book:</b> 271<br>Also see <i>ScienceSaurus</i> .     |
| 4.07 Determine how people use simple machines to solve problems.  | <b>Student Book:</b> 270-271<br>Also see <i>ScienceSaurus</i> . |

**ACCESS Science © 2005**  
 correlated to  
**North Carolina Science Standard Course of Study**  
**and Grade Level Competencies**  
**Grade 6**

**COMPETENCY GOAL 1**

**The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.**

| Competency Objectives, Grade 6   | ACCESS Science   |
|--|--|
| 1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.  | <b>Student Book:</b> 17-21, 22-25, 175, 235, 243, 271, 279   |
| 1.02 Develop appropriate experimental procedures for: <ul style="list-style-type: none"> <li>• Given questions.</li> <li>• Student generated questions.</li> </ul>   | <b>Student Book:</b> 16-17, 20, 21, 175, 183, 199, 247, 255  |
| 1.03 Apply safety procedures in the laboratory and in field studies: <ul style="list-style-type: none"> <li>• Recognize potential hazards.</li> <li>• Manipulate materials and equipment.</li> <li>• Conduct appropriate procedures.</li> </ul>                              | No specific lesson addresses this objective.<br>(See <i>ScienceSaurus</i> .)   |
| 1.04 Analyze variables in scientific investigations: <ul style="list-style-type: none"> <li>• Identify dependent and independent.</li> <li>• Use of a control.</li> <li>• Manipulate.</li> <li>• Describe relationships between.</li> <li>• Define operationally.</li> </ul> | <b>Student Book:</b> 23, 25, 26-27, 39, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303 |
| 1.05 Analyze evidence to: <ul style="list-style-type: none"> <li>• Explain observations.</li> <li>• Make inferences and predictions.</li> <li>• Develop the relationship between evidence and explanation.</li> </ul>  | <b>Student Book:</b> 20, 21, 24, 25, 26, 27, 31, 34-35, 38-39, 50, 51, 74-75, 103, 110-111, 127, 135, 199, 206, 247, 255, 278, 303   |

| Competency Objectives, Grade 6   | ACCESS Science  |
|--|---|
| 1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations: <ul style="list-style-type: none"> <li>• Measurement.</li> <li>• Analysis of data.</li> <li>• Graphing.</li> <li>• Prediction models.</li> </ul> | <b>Student Book:</b> 18-19, 24, 25, 27, 55, 62, 63, 74, 75, 91, 98, 99, 123, 151, 159, 163, 171, 187, 194, 195, 219, 283, 291, 295, 302, 303  |
| 1.07 Prepare models and/or computer simulations to: <ul style="list-style-type: none"> <li>• Test hypotheses.</li> <li>• Evaluate how data fit.</li> </ul>   | <b>Student Book:</b> 19, 22-25, 79, 86, 87, 147, 171, 207, 211, 219, 255, 303   |
| 1.08 Use oral and written language to: <ul style="list-style-type: none"> <li>• Communicate findings.</li> <li>• Defend conclusions of scientific investigations.</li> </ul>   | <b>Student Book:</b> 25, 26-27, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303        |
| 1.09 Use technologies and information systems to: <ul style="list-style-type: none"> <li>• Research.</li> <li>• Gather and analyze data.</li> <li>• Visualize data.</li> <li>• Disseminate findings to others.</li> </ul>  | <b>Student Book:</b> 26, 38, 50, 62, 63, 74, 75, 86, 99, 110, 122, 123, 127, 134, 135, 139, 146, 147, 158, 159, 170, 171, 182, 183, 194, 206, 218, 219, 223, 230, 231, 242, 243, 247, 254, 255, 266, 267, 278, 290, 295, 302, 303 |
| 1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing: <ul style="list-style-type: none"> <li>• Scientific text.</li> <li>• Articles.</li> <li>• Events in the popular press.</li> </ul>              | <b>Student Book:</b> 18, 26, 30-38, 42-50, 54-62, 66-74, 78-86, 90-98, 102-110, 114-122, 126-134, 138-146, 150-158, 162-170, 174-182, 186-194, 198-206, 210-218, 222-230, 234-242, 246-258, 270-278, 282-290, 294-302             |

## COMPETENCY GOAL 2

**The learner will demonstrate an understanding of technological design.**

| Competency Objectives, Grade 6  | ACCESS Science   |
|---|--|
| 2.01 Explore evidence that "technology" has many definitions. <ul style="list-style-type: none"> <li>• Artifact or hardware.</li> <li>• Methodology or technique.</li> <li>• System of production.</li> <li>• Social-technical system.</li> </ul> | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |
| 2.02 Use information systems to: <ul style="list-style-type: none"> <li>• Identify scientific needs, human needs, or problems that are subject to technological solution.</li> <li>• Locate resources to obtain and test ideas.</li> </ul>        | <b>Student Book:</b> 22, 36, 83, 94, 132, 144, 180, 202, 214, 229, 264, 277, 287, 297  |

| Competency Objectives, Grade 6   | ACCESS Science   |
|--|--|
| 2.03 Evaluate technological designs for: <ul style="list-style-type: none"> <li>• Application of scientific principles.</li> <li>• Risks and benefits.</li> <li>• Constraints of design.</li> <li>• Consistent testing protocols.</li> </ul> | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |
| 2.04 Apply tenets of technological design to make informed consumer decisions about: <ul style="list-style-type: none"> <li>• Products.</li> <li>• Processes.</li> <li>• Systems.</li> </ul>   | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |

### COMPETENCY GOAL 3

**The learner will build an understanding of the geological cycles, forces, processes, and agents which shape the lithosphere.**

| Competency Objectives, Grade 6   | ACCESS Science   |
|--|--|
| 3.01 Evaluate the forces that shape the lithosphere including: <ul style="list-style-type: none"> <li>• Crustal plate movement.</li> <li>• Folding and faulting.</li> <li>• Deposition.</li> <li>• Volcanic activity.</li> <li>• Earthquakes.</li> </ul>   | <b>Student Book:</b> 29, 30, 32-33, 34-35, 36, 37, 38, 39, 44-45, 53, 54, 60, 61 |
| 3.02 Examine earthquake and volcano patterns.  | <b>Student Book:</b> 29, 31, 33-37, 38, 39, 44-45                                |
| 3.03 Explain the model for the interior of the earth.  | <b>Student Book:</b> 29, 30, 32, 33  |
| 3.04 Describe the processes which form and the uses of earth materials. <ul style="list-style-type: none"> <li>• Rock cycle.</li> <li>• Minerals.</li> <li>• Characteristics of rocks.</li> <li>• Economic use of rocks and minerals.</li> <li>• Value of gems and precious metals.</li> <li>• Common gems, minerals, precious metals and rocks found in N.C.</li> </ul> | <b>Student Book:</b> 34, 41-43, 44-45, 46, 47, 48, 49, 51, 60, 93                |

| Competency Objectives, Grade 6   | ACCESS Science  |
|--|---|
| <p>3.05 Analyze soil properties that can be observed and measured to predict soil quality including:</p> <ul style="list-style-type: none"> <li>• Color.</li> <li>• Horizon profile.</li> <li>• Infiltration.</li> <li>• Soil temperature.</li> <li>• Structure.</li> <li>• Consistency.</li> <li>• Texture.</li> <li>• Particle size.</li> <li>• pH.</li> <li>• Fertility.</li> <li>• Soil moisture.</li> </ul> | <p><b>Student Book:</b> 56, 117, 119<br/>Also see <i>ScienceSaurus</i>.</p>         |
| <p>3.06 Evaluate ways in which human activities have affected Earth's pedosphere and the measures taken to control the impact:</p> <ul style="list-style-type: none"> <li>• Vegetative cover.</li> <li>• Agriculture.</li> <li>• Land use.</li> <li>• Nutrient balance.</li> <li>• Soil as a vector.</li> </ul>  | <p><b>Student Book:</b> 100-111, 119</p>  |
| <p>3.07 Assess the use of technology and information systems in monitoring lithospheric phenomenon.</p>  | <p>No specific lesson addresses this objective.<br/>(See <i>ScienceSaurus</i>.)</p> |
| <p>3.08 Conclude that the good health of environments and organisms requires:</p> <ul style="list-style-type: none"> <li>• Monitoring of the pedosphere.</li> <li>• Taking steps to maintain soil quality.</li> <li>• Stewardship.</li> </ul>  | <p><b>Student Book:</b> 100-111</p>   |

## COMPETENCY GOAL 4

The learner will investigate the cycling of matter.

| Competency Objectives, Grade 6   | ACCESS Science   |
|--|--|
| 4.01 Describe the flow of energy and matter in natural systems: <ul style="list-style-type: none"><li>• Energy flows through ecosystems in one direction, from the sun through producers to consumers to decomposers.</li><li>• Matter is transferred from one organism to another and between organisms and their environments.</li><li>• Water, nitrogen, carbon dioxide, and oxygen are substances cycled between the living and non-living environments.</li></ul> | <b>Student Book:</b> 113-123                               |
| 4.02 Evaluate the significant role of decomposers.   | <b>Student Book:</b> 120, 132                              |
| 4.03 Examine evidence that green plants make food. <ul style="list-style-type: none"><li>• Photosynthesis is a process carried on by green plants and other organisms containing chlorophyll.</li><li>• During photosynthesis, light energy is converted into stored energy which the plant, in turn, uses to carry out its life processes.</li></ul>  | <b>Student Book:</b> 118, 119, 120, 141, 164-165, 166, 171 |
| 4.04 Evaluate the significance of photosynthesis to other organisms: <ul style="list-style-type: none"><li>• The major source of atmospheric oxygen is photosynthesis.</li><li>• Carbon dioxide is removed from the atmosphere and oxygen is released during photosynthesis.</li><li>• Green plants are the producers of food that is used directly or indirectly by consumers.</li></ul>  | <b>Student Book:</b> 118-119, 120, 164-165, 166, 171       |
| 4.05 Evaluate designed systems for ability to enable growth of certain plants and animals.   | <b>Student Book:</b> 143, 144-145, 167                     |

## COMPETENCY GOAL 5

**The learner will build understanding of the Solar System.**

| Competency Objectives, Grade 6   | ACCESS Science  |
|--|---|
| <p>5.01 Analyze the components and cycles of the solar system including:</p> <ul style="list-style-type: none"> <li>• Sun.</li> <li>• Planets and moons.</li> <li>• Asteroids and meteors.</li> <li>• Comets.</li> <li>• Phases.</li> <li>• Seasons.</li> <li>• Day/year.</li> <li>• Eclipses.</li> </ul>  | <p><b>Student Book:</b> 77, 78-79, 80-83, 84, 85, 86, 87, 292-303</p>   |
| <p>5.02 Compare and contrast the Earth to other planets in terms of:</p> <ul style="list-style-type: none"> <li>• Size.</li> <li>• Composition.</li> <li>• Relative distance from the sun.</li> <li>• Ability to support life.</li> </ul>  | <p><b>Student Book:</b> 301, 302<br/>Also see <i>ScienceSaurus</i>.</p> |
| <p>5.03 Relate the influence of the sun and the moon's orbit to the gravitational effects produced on Earth.</p> <ul style="list-style-type: none"> <li>• Solar storms.</li> <li>• Tides.</li> </ul>   | <p><b>Student Book:</b> 59, 84, 274, 294, 298</p>                       |
| <p>5.04 Describe space explorations and the understandings gained from them including:</p> <ul style="list-style-type: none"> <li>• N.A.S.A.</li> <li>• Technologies used to explore space.</li> <li>• Historic timeline.</li> <li>• Apollo mission to the moon.</li> <li>• Space Shuttle.</li> <li>• International Space Station.</li> <li>• Future goals.</li> </ul> | <p><b>Student Book:</b> 297<br/>Also see <i>ScienceSaurus</i>.</p>      |
| <p>5.05 Describe the setting of the solar system in the universe including:</p> <ul style="list-style-type: none"> <li>• Galaxy.</li> <li>• Size.</li> <li>• The uniqueness of Earth.</li> </ul>   | <p><b>Student Book:</b> 293, 297, 299-301</p>                           |
| <p>5.06 Analyze the spin-off benefits generated by space exploration technology including:</p> <ul style="list-style-type: none"> <li>• Medical.</li> <li>• Materials.</li> <li>• Transportation.</li> <li>• Processes.</li> <li>• Future research.</li> </ul>   | <p><b>Student Book:</b> 297</p>   |

## 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 transformation.**

| Competency Objectives, Grade 6  | ACCESS Science   |
|---|--|
| 6.01 Determine how convection and radiation transfer energy.  | <b>Student Book:</b> 265<br>Also see <i>ScienceSaurus</i> .      |
| 6.02 Analyze heat flow through materials or across space from warm objects to cooler objects until both objects are at equilibrium.   | <b>Student Book:</b> 225, 263, 265                               |
| 6.03 Analyze sound as an example that vibrating materials generate waves that transfer energy. <ul style="list-style-type: none"> <li>• Frequency.</li> <li>• Amplitude.</li> <li>• Loudness.</li> <li>• How sound travels through different material.</li> <li>• Form and function of the human ear.</li> </ul>  | <b>Student Book:</b> 280, 281, 282-283, 284-285, 288-289, 291    |
| 6.04 Evaluate data for qualitative and quantitative relationships associated with energy transfer and/or transformation.  | <b>Student Book:</b> 223, 225, 226, 230, 252-253, 263, 265, 267  |
| 6.05 Analyze the physical interactions of light and matter: <ul style="list-style-type: none"> <li>• Absorption.</li> <li>• Scattering.</li> <li>• Color perception.</li> <li>• Form and function of the human eye.</li> </ul>  | <b>Student Book:</b> 280, 281, 282, 284-285, 286-287, 290, 291   |
| 6.06 Analyze response to heat to determine the suitability of materials for use in technological design: <ul style="list-style-type: none"> <li>• Conduction.</li> <li>• Expansion.</li> <li>• Contraction.</li> </ul>  | <b>Student Book:</b> 265<br>Also see <i>ScienceSaurus</i> .      |
| 6.07 Analyze the Law of Conservation of Energy: <ul style="list-style-type: none"> <li>• Conclude that energy cannot be created or destroyed, but only changed from one form into another.</li> <li>• Conclude that the amount of energy stays the same, although within the process some energy is always converted to heat.</li> <li>• Some systems transform energy with less loss of heat than others.</li> </ul> | <b>Student Book:</b> 253, 263<br>Also see <i>ScienceSaurus</i> . |

## COMPETENCY GOAL 7

**The learner will conduct investigations and use technologies and information systems to build an understanding of population dynamics.**

| Competency Objectives, Grade 6  | ACCESS Science   |
|---|--|
| <p>7.01 Describe ways in which organisms interact with each other and with non-living parts of the environment:</p> <ul style="list-style-type: none"> <li>• Coexistence/Cooperation/Competition.</li> <li>• Symbiosis.</li> <li>• Mutual dependence.</li> </ul>                                | <p><b>Student Book:</b> 113, 115, 118-119, 120-121</p>             |
| <p>7.02 Investigate factors that determine the growth and survival of organisms including:</p> <ul style="list-style-type: none"> <li>• Light.</li> <li>• Temperature range.</li> <li>• Mineral availability.</li> <li>• Soil/rock type.</li> <li>• Water.</li> <li>• Energy.</li> </ul>        | <p><b>Student Book:</b> 164-166, 168, 177, 178</p>                 |
| <p>7.03 Explain how changes in habitat may affect organisms.</p>  | <p><b>Student Book:</b> 103, 104, 110, 197</p>                     |
| <p>7.04 Evaluate data related to human population growth, along with problems and solutions:</p> <ul style="list-style-type: none"> <li>• Waste disposal.</li> <li>• Food supplies.</li> <li>• Resource availability.</li> <li>• Transportation.</li> <li>• Socio-economic patterns.</li> </ul> | <p><b>Student Book:</b> 88-99, 100-111</p>                         |
| <p>7.05 Examine evidence that overpopulation by any species impacts the environment.</p>  | <p><b>Student Book:</b> 105<br/>Also see <i>ScienceSaurus</i>.</p> |
| <p>7.06 Investigate processes which, operating over long periods of time, have resulted in the diversity of plant and animal life present today:</p> <ul style="list-style-type: none"> <li>• Natural selection.</li> <li>• Adaptation.</li> </ul>  | <p><b>Student Book:</b> 197, 198, 200-201, 202-203, 207</p>        |

**ACCESS Science © 2005**  
 correlated to  
**North Carolina Science Standard Course of Study**  
**and Grade Level Competencies**  
**Grade 7**

**COMPETENCY GOAL 1**

**The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.**

| Competency Objectives, Grade 7   | ACCESS Science   |
|--|--|
| 1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.  | <b>Student Book:</b> 17-21, 22-25, 175, 235, 243, 271, 279   |
| 1.02 Develop appropriate experimental procedures for: <ul style="list-style-type: none"> <li>• Given questions.</li> <li>• Student generated questions.</li> </ul>   | <b>Student Book:</b> 16-17, 20, 21, 175, 183, 199, 247, 255  |
| 1.03 Apply safety procedures in the laboratory and in field studies. <ul style="list-style-type: none"> <li>• Recognize potential hazards.</li> <li>• Safely manipulate materials and equipment.</li> <li>• Conduct appropriate procedures.</li> </ul>                       | No specific lesson addresses this objective.<br>(See <i>ScienceSaurus</i> .)   |
| 1.04 Analyze variables in scientific investigations: <ul style="list-style-type: none"> <li>• Identify dependent and independent.</li> <li>• Use of a Control.</li> <li>• Manipulate.</li> <li>• Describe relationships between.</li> <li>• Define operationally.</li> </ul> | <b>Student Book:</b> 23, 25, 26-27, 39, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303 |
| 1.05 Analyze evidence to: <ul style="list-style-type: none"> <li>• Explain observations.</li> <li>• Make inferences and predictions.</li> <li>• Develop the relationship between evidence and explanation.</li> </ul>  | <b>Student Book:</b> 20, 21, 24, 25, 26, 27, 31, 34-35, 38-39, 50, 51, 74-75, 103, 110-111, 127, 135, 199, 206, 247, 255, 278, 303   |

| Competency Objectives, Grade 7   | ACCESS Science  |
|--|---|
| 1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations: <ul style="list-style-type: none"> <li>• Measurement.</li> <li>• Analysis of data.</li> <li>• Graphing.</li> <li>• Prediction models.</li> </ul> | <b>Student Book:</b> 18-19, 24, 25, 27, 55, 62, 63, 74, 75, 91, 98, 99, 123, 151, 159, 163, 171, 187, 194, 195, 219, 283, 291, 295, 302, 303  |
| 1.07 Prepare models and/or computer simulations to: <ul style="list-style-type: none"> <li>• Test hypotheses.</li> <li>• Evaluate how data fit.</li> </ul>   | <b>Student Book:</b> 19, 22-25, 79, 86, 87, 147, 171, 207, 211, 219, 255, 303   |
| 1.08 Use oral and written language to: <ul style="list-style-type: none"> <li>• Communicate findings.</li> <li>• Defend conclusions of scientific investigations</li> </ul>  | <b>Student Book:</b> 25, 26-27, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303        |
| 1.09 Use technologies and information systems to: <ul style="list-style-type: none"> <li>• Research.</li> <li>• Gather and analyze data.</li> <li>• Visualize data.</li> <li>• Disseminate findings to others.</li> </ul>  | <b>Student Book:</b> 26, 38, 50, 62, 63, 74, 75, 86, 99, 110, 122, 123, 127, 134, 135, 139, 146, 147, 158, 159, 170, 171, 182, 183, 194, 206, 218, 219, 223, 230, 231, 242, 243, 247, 254, 255, 266, 267, 278, 290, 295, 302, 303 |
| 1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing: <ul style="list-style-type: none"> <li>• Scientific text.</li> <li>• Articles.</li> <li>• Events in the popular press.</li> </ul>              | <b>Student Book:</b> 18, 26, 30-38, 42-50, 54-62, 66-74, 78-86, 90-98, 102-110, 114-122, 126-134, 138-146, 150-158, 162-170, 174-182, 186-194, 198-206, 210-218, 222-230, 234-242, 246-258, 270-278, 282-290, 294-302             |

## COMPETENCY GOAL 2

**The learner will demonstrate an understanding of technological design.**

| Competency Objectives, Grade 7  | ACCESS Science   |
|---|--|
| 2.01 Explore evidence that "technology" has many definitions. <ul style="list-style-type: none"> <li>• Artifact or hardware.</li> <li>• Methodology or technique.</li> <li>• System of production.</li> <li>• Social-technical system.</li> </ul> | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |
| 2.02 Use information systems to: <ul style="list-style-type: none"> <li>• Identify scientific needs, human needs, or problems that are subject to technological solution.</li> <li>• Locate resources to obtain and test ideas</li> </ul>         | <b>Student Book:</b> 22, 36, 83, 94, 132, 144, 180, 202, 214, 229, 264, 277, 287, 297  |

| Competency Objectives, Grade 7   | ACCESS Science   |
|--|--|
| 2.03 Evaluate technological designs for: <ul style="list-style-type: none"> <li>• Application of scientific principles.</li> <li>• Risks and benefits.</li> <li>• Constraints of design.</li> <li>• Consistent testing protocols.</li> </ul> | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |
| 2.04 Apply tenets of technological design to make informed consumer decisions about: <ul style="list-style-type: none"> <li>• Products.</li> <li>• Processes.</li> <li>• Systems.</li> </ul>   | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |

### COMPETENCY GOAL 3

**The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.**

| Competency Objectives, Grade 7   | ACCESS Science   |
|--|--|
| 3.01 Explain the composition, properties and structure of the atmosphere: <ul style="list-style-type: none"> <li>• Mixture of gases.</li> <li>• Stratified layers.</li> <li>• Each layer has distinct properties.</li> <li>• As altitude increases, air pressure decreases.</li> <li>• Equilibrium.</li> </ul> | <b>Student Book:</b> 68, 108<br>Also see <i>ScienceSaurus</i> .      |
| 3.02 Describe properties that can be observed and measured to predict air quality: <ul style="list-style-type: none"> <li>• Particulate matter.</li> <li>• Ozone.</li> </ul>   | <b>Student Book:</b> 68, 108<br>Also see <i>ScienceSaurus</i> .      |
| 3.03 Conclude that the good health of environments and organisms requires: <ul style="list-style-type: none"> <li>• The monitoring of air quality.</li> <li>• Taking steps to maintain healthy air quality.</li> <li>• Stewardship.</li> </ul>   | <b>Student Book:</b> 100-111<br>Also see <i>ScienceSaurus</i> .      |
| 3.04 Evaluate how humans impact air quality including: <ul style="list-style-type: none"> <li>• Air quality standards.</li> <li>• Point and non-point sources of air pollution in North Carolina.</li> <li>• Financial and economic trade-offs.</li> <li>• Local air quality issues.</li> </ul>                | <b>Student Book:</b> 68, 107, 108<br>Also see <i>ScienceSaurus</i> . |

| Competency Objectives, Grade 7  | ACCESS Science  |
|---|---|
| 3.05 Examine evidence that atmospheric properties can be studied to predict atmospheric conditions and weather hazards: <ul style="list-style-type: none"> <li>• Humidity.</li> <li>• Temperature.</li> <li>• Wind speed and direction.</li> <li>• Air pressure.</li> <li>• Precipitation.</li> <li>• Tornados.</li> <li>• Hurricanes.</li> <li>• Floods.</li> <li>• Storms.</li> </ul> | <b>Student Book:</b> 61, 66, 67, 68, 69, 71, 72-73, 74, 75            |
| 3.06 Assess the use of technology in studying atmospheric phenomena and weather hazards: <ul style="list-style-type: none"> <li>• Satellites.</li> <li>• Weather maps.</li> <li>• Predicting.</li> <li>• Recording.</li> <li>• Communicating information about conditions.</li> </ul>   | <b>Student Book:</b> 66-67, 74, 75<br>Also see <i>ScienceSaurus</i> . |

### 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.**

| Competency Objectives, Grade 7  | ACCESS Science                                 |
|---|--|
| 4.01 Analyze how human body systems interact to provide for the needs of the human organism: <ul style="list-style-type: none"> <li>• Musculoskeletal.</li> <li>• Cardiovascular.</li> <li>• Endocrine and Nervous.</li> <li>• Digestive and Circulatory.</li> <li>• Excretory.</li> <li>• Reproductive.</li> <li>• Respiratory.</li> <li>• Immune.</li> <li>• Nervous system.</li> </ul> | <b>Student Book:</b> 154-159, 178-179, 180-181 |
| 4.02 Describe how systems within the human body are defined by the functions it performs.   | <b>Student Book:</b> 154-159                   |

| Competency Objectives, Grade 7  | ACCESS Science                               |
|---|--|
| 4.03 Explain how the structure of an organ is adapted to perform specific functions within one or more systems. <ul style="list-style-type: none"> <li>• Liver.</li> <li>• Heart.</li> <li>• Lung.</li> <li>• Brain</li> <li>• Stomach.</li> <li>• Kidney.</li> </ul> | <b>Student Book:</b> 154-159                 |
| 4.04 Evaluate how systems in the human body help regulate the internal environment.   | <b>Student Book:</b> 172, 173, 176-177       |
| 4.05 Analyze how an imbalance in homeostasis may result from a disruption in any human system.  | <b>Student Book:</b> 176-177                 |
| 4.06 Describe growth and development of the human organism.   | <b>Student Book:</b> 186, 189, 191           |
| 4.07 Explain the effects of environmental influences on human embryo development and human health including: <ul style="list-style-type: none"> <li>• Smoking.</li> <li>• Alcohol.</li> <li>• Drugs.</li> <li>• Diet.</li> </ul>                                      | No specific lesson addresses this objective. |
| 4.08 Explain how understanding human body systems can help make informed decisions regarding health.  | <b>Student Book:</b> 176-181                 |

## COMPETENCY GOAL 5

**The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.**

| Competency Objectives, Grade 7  | ACCESS Science                                 |
|---|--|
| 5.01 Explain the significance of genes to inherited characteristics: <ul style="list-style-type: none"> <li>• Genes are the units of information.</li> <li>• Parents transmit genes to their offspring.</li> <li>• Some medical conditions and diseases are genetic.</li> </ul> | <b>Student Book:</b> 185-187, 190-191, 192-193 |
| 5.02 Explain the significance of reproduction: <ul style="list-style-type: none"> <li>• Sorting and recombination of parents' genetic material.</li> <li>• Potential variation among offspring.</li> </ul>  | <b>Student Book:</b> 189-193                   |

| Competency Objectives, Grade 7   | ACCESS Science               |
|--|------------------------------|
| 5.03 Identify examples and patterns of human genetic traits: <ul style="list-style-type: none"> <li>• Dominant and recessive.</li> <li>• Incomplete dominance.</li> </ul>                                | <b>Student Book:</b> 193     |
| 5.04 Analyze the role of probability in the study of heredity: <ul style="list-style-type: none"> <li>• Role of each parent in transfer of genetic traits.</li> <li>• Analysis of pedigrees.</li> </ul>  | <b>Student Book:</b> 186     |
| 5.05 Summarize the genetic transmittance of disease.   | <b>Student Book:</b> 192     |
| 5.06 Evaluate evidence that human characteristics are a product of: <ul style="list-style-type: none"> <li>• Inheritance.</li> <li>• Environmental factors, and</li> <li>• Lifestyle choices.</li> </ul> | <b>Student Book:</b> 184-195 |

## 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.**

| Competency Objectives, Grade 7  | ACCESS Science                |
|---|-------------------------------|
| 6.01 Demonstrate ways that simple machines can change force.  | <b>Student Book:</b> 270-271  |
| 6.02 Analyze simple machines for mechanical advantage and efficiency.   | <b>Student Book:</b> 270-271  |
| 6.03 Evaluate motion in terms of Newton's Laws: <ul style="list-style-type: none"> <li>• The force of friction retards motion.</li> <li>• For every action there is an equal and opposite reaction.</li> <li>• The greater the force, the greater the change in motion.</li> <li>• An object's motion is the result of the combined effect of all forces acting on the object.</li> <li>• A moving object that is not subjected to a force will continue to move at a constant speed in a straight line.</li> <li>• An object at rest will remain at rest.</li> </ul> | <b>Student Book:</b> 268-279  |
| 6.04 Analyze that an object's motion is always judged relative to some other object or point.   | <b>Student Book:</b> 222, 275 |

| Competency Objectives, Grade 7  | ACCESS Science  |
|---|---|
| <p>6.05 Describe and measure quantities that characterize moving objects and their interactions within a system:</p> <ul style="list-style-type: none"> <li>• Time.</li> <li>• Distance.</li> <li>• Mass.</li> <li>• Force.</li> <li>• Velocity.</li> <li>• Center of mass.</li> <li>• Acceleration.</li> </ul> | <p><b>Student Book:</b> 210, 212, 229, 269, 270, 272-273, 274, 275, 276, 282, 299</p> |
| <p>6.06 Investigate and analyze the real world interactions of balanced and unbalanced forces:</p> <ul style="list-style-type: none"> <li>• Sports and recreation.</li> <li>• Transportation.</li> <li>• The human body.</li> </ul>   | <p><b>Student Book:</b> 269, 272-274, 275, 276-277</p>                                |

**ACCESS Science © 2005**  
 correlated to  
**North Carolina Science Standard Course of Study**  
**and Grade Level Competencies**  
**Grade 8**

**COMPETENCY GOAL 1**

**The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.**

| Competency Objectives, Grade 8   | ACCESS Science   |
|--|--|
| 1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.  | <b>Student Book:</b> 17-21, 22-25, 175, 235, 243, 271, 279   |
| 1.02 Develop appropriate experimental procedures for: <ul style="list-style-type: none"> <li>• Given questions.</li> <li>• Student generated questions.</li> </ul>   | <b>Student Book:</b> 16-17, 20, 21, 175, 183, 199, 247, 255  |
| 1.03 Apply safety procedures in the laboratory and in field studies: <ul style="list-style-type: none"> <li>• Recognize potential hazards.</li> <li>• Safely manipulate materials and equipment.</li> <li>• Conduct appropriate procedures.</li> </ul>                       | No specific lesson addresses this objective.<br>(See <i>ScienceSaurus</i> .)   |
| 1.04 Analyze variables in scientific investigations: <ul style="list-style-type: none"> <li>• Identify dependent and independent.</li> <li>• Use of a control.</li> <li>• Manipulate.</li> <li>• Describe relationships between.</li> <li>• Define operationally.</li> </ul> | <b>Student Book:</b> 23, 25, 26-27, 39, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303 |
| 1.05 Analyze evidence to: <ul style="list-style-type: none"> <li>• explain observations.</li> <li>• make inferences and predictions.</li> <li>• develop the relationship between evidence and explanation</li> </ul>   | <b>Student Book:</b> 20, 21, 24, 25, 26, 27, 31, 34-35, 38-39, 50, 51, 74-75, 103, 110-111, 127, 135, 199, 206, 247, 255, 278, 303   |

| Competency Objectives, Grade 8   | ACCESS Science  |
|--|---|
| 1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations: <ul style="list-style-type: none"> <li>• Measurement.</li> <li>• Analysis of data.</li> <li>• Graphing.</li> <li>• Prediction models.</li> </ul> | <b>Student Book:</b> 18-19, 24, 25, 27, 55, 62, 63, 74, 75, 91, 98, 99, 123, 151, 159, 163, 171, 187, 194, 195, 219, 283, 291, 295, 302, 303  |
| 1.07 Prepare models and/or computer simulations to: <ul style="list-style-type: none"> <li>• Test hypotheses.</li> <li>• Evaluate how data fit.</li> <li>• Make predictions.</li> </ul>  | <b>Student Book:</b> 19, 22-25, 79, 86, 87, 147, 171, 207, 211, 219, 255, 303   |
| 1.08 Use oral and written language to: <ul style="list-style-type: none"> <li>• Communicate findings.</li> <li>• Defend conclusions of scientific investigations.</li> <li>• Describe strengths and weaknesses of claims, arguments, and/or data.</li> </ul>       | <b>Student Book:</b> 25, 26-27, 50-51, 62-63, 74-75, 86-87, 98-99, 110-111, 122-123, 134-135, 146-147, 158-159, 170-171, 182-183, 194-195, 206-207, 218-219, 230-231, 242-243, 254-255, 266-267, 278-279, 290-291, 302-303        |
| 1.09 Use technologies and information systems to: <ul style="list-style-type: none"> <li>• Research.</li> <li>• Gather and analyze data.</li> <li>• Visualize data.</li> <li>• Disseminate findings to others.</li> </ul>  | <b>Student Book:</b> 26, 38, 50, 62, 63, 74, 75, 86, 99, 110, 122, 123, 127, 134, 135, 139, 146, 147, 158, 159, 170, 171, 182, 183, 194, 206, 218, 219, 223, 230, 231, 242, 243, 247, 254, 255, 266, 267, 278, 290, 295, 302, 303 |
| 1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing: <ul style="list-style-type: none"> <li>• Scientific text.</li> <li>• Articles.</li> <li>• Events in the popular press.</li> </ul>              | <b>Student Book:</b> 18, 26, 30-38, 42-50, 54-62, 66-74, 78-86, 90-98, 102-110, 114-122, 126-134, 138-146, 150-158, 162-170, 174-182, 186-194, 198-206, 210-218, 222-230, 234-242, 246-258, 270-278, 282-290, 294-302             |

## COMPETENCY GOAL 2

**The learner will demonstrate an understanding of technological design.**

| Competency Objectives, Grade 8  | ACCESS Science   |
|---|--|
| 2.01 Explore evidence that "technology" has many definitions. <ul style="list-style-type: none"> <li>• Artifact or hardware.</li> <li>• Methodology or technique.</li> <li>• System of production.</li> <li>• Social-technical system.</li> </ul> | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |

| Competency Objectives, Grade 8   | ACCESS Science   |
|--|--|
| 2.02 Use information systems to: <ul style="list-style-type: none"> <li>Identify scientific needs, human needs, or problems that are subject to technological solution.</li> <li>Locate resources to obtain and test ideas.</li> </ul> | <b>Student Book:</b> 22, 36, 83, 94, 132, 144, 180, 202, 214, 229, 264, 277, 287, 297  |
| 2.03 Evaluate technological designs for: <ul style="list-style-type: none"> <li>Application of scientific principles.</li> <li>Risks and benefits.</li> <li>Constraints of design.</li> <li>Consistent testing protocols.</li> </ul>   | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |
| 2.04 Apply tenets of technological design to make informed consumer decisions about: <ul style="list-style-type: none"> <li>Products.</li> <li>Processes.</li> <li>Systems.</li> </ul>   | <b>Student Book:</b> 22, 36, 48, 57, 68, 83, 94, 106, 117, 132, 144, 156, 168, 180, 192, 202, 214, 229, 240, 252, 264, 277, 287, 297 |

### COMPETENCY GOAL 3

**The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the hydrosphere.**

| Competency Objectives, Grade 8  | ACCESS Science  |
|---|---|
| 3.01 Analyze the unique properties of water including: <ul style="list-style-type: none"> <li>Universal solvent.</li> <li>Cohesion and adhesion.</li> <li>Polarity.</li> <li>Density and buoyancy.</li> <li>Specific heat.</li> </ul>   | <b>Student Book:</b> 217, 228, 231, 236<br>Also see <i>ScienceSaurus</i> .    |
| 3.02 Explain the structure of the hydrosphere including: <ul style="list-style-type: none"> <li>Water distribution on earth.</li> <li>Local river basin.</li> <li>Local water availability.</li> </ul>  | <b>Student Book:</b> 54-55, 60, 62, 92, 94<br>Also see <i>ScienceSaurus</i> . |
| 3.03 Evaluate evidence that Earth's oceans are a reservoir of nutrients, minerals, dissolved gases, and life forms: <ul style="list-style-type: none"> <li>Estuaries.</li> <li>Marine ecosystems.</li> <li>Upwelling.</li> <li>Behavior of gases in the marine environment.</li> <li>Value and sustainability of marine resources.</li> <li>Deep ocean technology and understandings gained.</li> </ul> | <b>Student Book:</b> 33, 114, 118<br>Also see <i>ScienceSaurus</i> .          |

| Competency Objectives, Grade 8   | ACCESS Science  |
|--|---|
| 3.04 Describe how terrestrial and aquatic food webs are interconnected.  | <b>Student Book:</b> 118<br>Also see <i>ScienceSaurus</i> . |
| 3.05 Analyze hydrospheric data over time to predict the health of a water system including: <ul style="list-style-type: none"> <li>• Temperature.</li> <li>• Dissolved oxygen.</li> <li>• pH.</li> <li>• Nitrates.</li> <li>• Turbidity.</li> <li>• Bio-indicators.</li> </ul>                                       | <b>Student Book:</b> 107<br>Also see <i>ScienceSaurus</i> . |
| 3.06 Evaluate technologies and information systems used to monitor the hydrosphere.  | No specific lesson addresses this objective.                |
| 3.07 Describe how humans affect the quality of water: <ul style="list-style-type: none"> <li>• Point and non-point sources of water pollution in North Carolina.</li> <li>• Possible effects of excess nutrients in North Carolina waters.</li> <li>• Economic trade-offs.</li> <li>• Local water issues.</li> </ul> | <b>Student Book:</b> 107, 109                               |
| 3.08 Recognize that the good health of environments and organisms requires: <ul style="list-style-type: none"> <li>• Monitoring of the hydrosphere.</li> <li>• Water quality standards.</li> <li>• Methods of water treatment.</li> <li>• Maintaining safe water quality.</li> <li>• Stewardship.</li> </ul>         | <b>Student Book:</b> 109                                    |

## COMPETENCY GOAL 4

The learner will conduct investigations and utilize technology and information systems to build an understanding of chemistry.

| Competency Objectives, Grade 8   | ACCESS Science  |
|--|---|
| 4.01 Understand that both naturally occurring and synthetic substances are chemicals.  | <b>Student Book:</b> 44, 107, 177<br>Also see <i>ScienceSaurus</i> .    |
| 4.02 Evaluate evidence that elements combine in a multitude of ways to produce compounds that account for all living and nonliving substances.   | <b>Student Book:</b> 209, 212, 215, 217                                 |
| 4.03 Explain how the periodic table is a model for: <ul style="list-style-type: none"><li>• Classifying elements.</li><li>• Identifying the properties of elements.</li></ul>  | <b>Student Book:</b> 232-241  |
| 4.04 Describe the suitability of materials for use in technological design: <ul style="list-style-type: none"><li>• Electrical Conductivity.</li><li>• Density.</li><li>• Magnetism.</li><li>• Solubility.</li><li>• Malleability.</li></ul>   | <b>Student Book:</b> 92, 94, 211, 228, 236, 238, 258-259                |
| 4.05 Identify substances based on characteristic physical properties: <ul style="list-style-type: none"><li>• Density.</li><li>• Boiling/Melting points.</li><li>• Solubility.</li><li>• Chemical reactivity.</li><li>• Specific heat.</li></ul>   | <b>Student Book:</b> 217, 227, 228, 236, 245, 250-255                   |
| 4.06 Describe and measure quantities related to chemical/physical changes within a system: <ul style="list-style-type: none"><li>• Temperature.</li><li>• Volume.</li><li>• Mass.</li><li>• Precipitate.</li><li>• Gas production.</li></ul>   | <b>Student Book:</b> 19, 68, 107, 210, 212, 222-223, 225, 226, 228, 229 |
| 4.07 Identify evidence supporting the law of conservation of matter. <ul style="list-style-type: none"><li>• During an ordinary chemical reaction matter cannot be created or destroyed.</li><li>• In a chemical reaction, the total mass of the reactants equals the total mass of the products mass of the products.</li></ul> | <b>Student Book:</b> 217, 251<br>Also see <i>ScienceSaurus</i> .        |

| Competency Objectives, Grade 8   | ACCESS Science                                      |
|--|---|
| <p>4.08 Identify evidence that some chemicals may contribute to human health conditions including:</p> <ul style="list-style-type: none"> <li>• Cancer.</li> <li>• Autoimmune disease.</li> <li>• Birth defects.</li> <li>• Heart disease.</li> <li>• Diabetes.</li> <li>• Learning and behavioral disorders.</li> <li>• Kidney disease.</li> <li>• Asthma.</li> </ul> | <p>No specific lesson addresses this objective.</p> |
| <p>4.09 Describe factors that determine the effects a chemical has on a living organism including:</p> <ul style="list-style-type: none"> <li>• Exposure.</li> <li>• Potency.</li> <li>• Dose and the resultant concentration of chemical in the organism.</li> <li>• Individual susceptibility.</li> <li>• Possible means to eliminate or reduce effects.</li> </ul>  | <p><b>Student Book:</b> 106-109</p>                 |
| <p>4.10 Describe risks and benefits of chemicals including:</p> <ul style="list-style-type: none"> <li>• Medicines.</li> <li>• Food preservatives.</li> <li>• Crop yield.</li> <li>• Sanitation.</li> </ul>  | <p><b>Student Book:</b> 103, 106-109</p>            |

## 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.**

| Competency Objectives, Grade 8  | ACCESS Science  |
|---|---|
| <p>5.01 Interpret ways in which rocks, fossils, and ice cores record Earth's geologic history and the evolution of life including:</p> <ul style="list-style-type: none"> <li>• Geologic Time Scale.</li> <li>• Index Fossils.</li> <li>• Law of Superposition.</li> <li>• Unconformity.</li> <li>• Evidence for climate change.</li> <li>• Extinction of species.</li> <li>• Catastrophic events.</li> </ul> | <p><b>Student Book:</b> 31, 198-199, 201, 204</p>                                   |
| <p>5.02 Correlate evolutionary theories and processes:</p> <ul style="list-style-type: none"> <li>• Biological.</li> <li>• Geological.</li> <li>• Technological.</li> </ul>   | <p><b>Student Book:</b> 30, 203<br/>Also see <i>ScienceSaurus</i>.</p>              |
| <p>5.03 Examine evidence that the geologic evolution has had significant global impact including:</p> <ul style="list-style-type: none"> <li>• Distribution of living things.</li> <li>• Major geological events.</li> <li>• Mechanical and chemical weathering.</li> </ul>   | <p><b>Student Book:</b> 28-37, 40-49, 52-61, 105</p>                                |
| <p>5.04 Analyze satellite imagery as a method to monitor Earth from space:</p> <ul style="list-style-type: none"> <li>• Spectral analysis.</li> <li>• Reflectance curves.</li> </ul>  | <p>No specific lesson addresses this objective.<br/>(See <i>ScienceSaurus</i>.)</p> |
| <p>5.05 Use maps, ground truthing and remote sensing to make predictions regarding:</p> <ul style="list-style-type: none"> <li>• Changes over time.</li> <li>• Land use.</li> <li>• Urban sprawl.</li> <li>• Resource management.</li> </ul>  | <p><b>Student Book:</b> 31, 100-111</p>   |

## COMPETENCY GOAL 6

**The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of cell theory.**

| Competency Objectives, Grade 8  | ACCESS Science   |
|---|--|
| <p>6.01 Describe cell theory:</p> <ul style="list-style-type: none"> <li>• All living things are composed of cells.</li> <li>• Cells provide structure and carry on major functions to sustain life.</li> <li>• Some organisms are single cell; other organisms, including humans, are multi-cellular.</li> <li>• Cell function is similar in all living things.</li> </ul> | <p><b>Student Book:</b> 126-131, 132-133, 136-143, 144-145, 148-155, 156</p> |
| <p>6.02 Analyze structures, functions, and processes within animal cells for:</p> <ul style="list-style-type: none"> <li>• Capture and release of energy.</li> <li>• Feedback information.</li> <li>• Dispose of wastes.</li> <li>• Reproduction.</li> <li>• Movement.</li> <li>• Specialized needs.</li> </ul>   | <p><b>Student Book:</b> 137, 141, 142</p>                                    |
| <p>6.03 Compare life functions of protists:</p> <ul style="list-style-type: none"> <li>• Euglena.</li> <li>• Amoeba.</li> <li>• Paramecium.</li> <li>• Volvox.</li> </ul>   | <p><b>Student Book:</b> 125, 132</p>   |
| <p>6.04 Conclude that animal cells carry on complex chemical processes to balance the needs of the organism.</p> <ul style="list-style-type: none"> <li>• Cells grow and divide to produce more cells.</li> <li>• Cells take in nutrients to make the energy for the work cells do.</li> <li>• Cells take in materials that a cell or an organism needs.</li> </ul>         | <p><b>Student Book:</b> 137, 141, 142</p>                                    |

## COMPETENCY GOAL 7

**The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of microbiology.**

| Competency Objectives, Grade 8  | ACCESS Science   |
|---|--|
| 7.01 Compare and contrast microbes: <ul style="list-style-type: none"> <li>• Size, shape, structure.</li> <li>• Whether they are living cells.</li> </ul>   | <b>Student Book:</b> 125, 131, 180   |
| 7.02 Describe diseases caused by microscopic biological hazards including: <ul style="list-style-type: none"> <li>• Viruses.</li> <li>• Bacteria.</li> <li>• Parasites.</li> <li>• Contagions.</li> <li>• Mutagens.</li> </ul>  | <b>Student Book:</b> 131, 180-181, 202                                       |
| 7.03 Analyze data to determine trends or patterns to determine how an infectious disease may spread including: <ul style="list-style-type: none"> <li>• Carriers.</li> <li>• Vectors.</li> <li>• Conditions conducive to disease.</li> <li>• Calculate reproductive potential of bacteria.</li> </ul> | <b>Student Book:</b> 131, 180-181, 202                                       |
| 7.04 Evaluate the human attempt to reduce the risk of and treatments for microbial infections including: <ul style="list-style-type: none"> <li>• Solutions with anti-microbial properties.</li> <li>• Antibiotic treatment.</li> <li>• Research.</li> </ul>  | <b>Student Book:</b> 132, 202  |
| 7.05 Investigate aspects of biotechnology including: <ul style="list-style-type: none"> <li>• Specific genetic information available.</li> <li>• Careers.</li> <li>• Economic benefits to North Carolina.</li> <li>• Ethical issues.</li> <li>• Impact for agriculture.</li> </ul>                    | No specific lesson addresses this objective.<br>(See <i>ScienceSaurus</i> .) |



---

TOLL FREE: 800-289-4490

VISIT OUR WEB SITE: [WWW.GREATSOURCE.COM](http://WWW.GREATSOURCE.COM)

---