



**CONNECTICUT**  
**Content Standards and Expected Performances**  
**Core Science for Grades 6-8**  
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OBJECTIVES	PAGE REFERENCES
<b>Grade 6</b> <b>Core Themes, Content Standards, and Expected Performances</b>	
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p><b>6.1 - Materials can be classified as pure substances or mixtures, depending on their chemical and physical properties.</b></p> <ul style="list-style-type: none"> <li>◆ Mixtures are made of combinations of elements and/or compounds, and they can be separated by using a variety of physical means.</li> <li>◆ Pure substances can be either elements or compounds, and they cannot be broken down by physical means.</li> </ul>	<p>SE: 113-117  <i>MiniLAB</i> 114  <i>Applying Science</i> 115</p> <p>TWE: TPK 113            MM 114            QD 116            AIL 118</p>
<p><b>C1.</b> Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.</p>	<p>SE: 106-111  <i>LAB</i> 112</p> <p>TWE: A 107, 110            QD 110            CA 111</p>
<p><b>C 2.</b> Describe how the properties of simple compounds, such as water and table salt, are different from the properties of the elements of which they are made.</p>	<p>SE: 114  <i>MiniLAB</i> 114  <i>LAB</i> 119</p> <p>TWE: TPK 113</p>
<p><b>C 3.</b> Explain how mixtures can be separated by using the properties of the substances from which they are made, such as particle size, density, solubility and boiling point.</p>	<p>SE: 116  <i>Applying Science</i> 115</p> <p>TWE: DI 115            QD 116</p>

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<p><i>Matter and Energy in Ecosystems – How do matter and energy flow through ecosystems?</i></p> <p><b>6.2 - An ecosystem is composed of all the populations that are living in a certain space and the physical factors with which they interact.</b></p> <ul style="list-style-type: none"> <li>◆ Populations in ecosystems are affected by biotic factors, such as other populations, and abiotic factors, such as soil and water supply.</li> <li>◆ Populations in ecosystems can be categorized as producers, consumers and decomposers of organic matter.</li> </ul>	<p>SE: 391, 620, 622-624, 633-634  <i>National Geographic</i> 393, 621  <i>MiniLAB</i> 623  <i>LAB</i> 626, 636</p> <p>TWE: QD 624, 634  MM 634  R 635</p>
<p><b>C4.</b> Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photosynthesis.</p>	<p>SE: 622-624  <i>MiniLAB</i> 623  <i>LAB</i> 626</p> <p>TWE: QD 624  A 624  CU 625</p>
<p><b>C 5.</b> Explain how populations are affected by predator-prey relationships.</p>	<p>SE: 630  TWE: D 630  FF 630  QD 631</p>
<p><b>C 6.</b> Describe common food webs in different Connecticut ecosystems.</p>	<p>An expanded discussion of this objective can be based on:  SE: 634  TWE: CU 635  These references are not limited to Connecticut ecosystems.</p>
<p><i>Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems?</i></p> <p><b>6.3 - Variations in the amount of the sun's energy hitting the Earth's surface affect daily and seasonal weather patterns.</b></p> <ul style="list-style-type: none"> <li>◆ Local and regional weather are affected by the amount of solar energy these areas receive and by their proximity to a large body of water.</li> </ul>	<p>SE: 348-350, 354  TWE: LD 354  DI 361</p>
<p><b>C 7.</b> Describe the effect of heating on the movement of molecules in solids, liquids and gases.</p>	<p>SE: 73-75  TWE: TFYI 73  VL 74  SJ 349</p>
<p><b>C 8.</b> Explain how local weather conditions are related to the temperature, pressure and water content of the atmosphere and the proximity to a large body of water.</p>	<p>SE: 348-350, 356-361  TWE: QD 349  A 350  DI 361</p>

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<b>C 9.</b> Explain how the uneven heating of the Earth's surface causes winds.	SE: 353-355 <i>Applying Math</i> 353 TWE: CD 353 TFYI 354 VL 354
<i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i> <b>6.4 - Water moving across and through earth materials carries with it the products of human activities.</b> <ul style="list-style-type: none"> <li>◆ Most precipitation that falls on Connecticut eventually reaches Long Island Sound.</li> </ul>	Water runoff is discussed on the following pages: SE: 329-331 TWE: D 658
<b>C 10.</b> Explain the role of septic and sewage systems on the quality of surface and ground water.	SE: 658-659 TWE: TFYI 659 VL 659
<b>C 11.</b> Explain how human activity may impact water resources in Connecticut, such as ponds, rivers and the Long Island Sound ecosystem.	SE: 650-651, 658-659 <i>LAB</i> 654 TWE: VL 659
<b>Grade 7</b> <b>Core Themes, Content Standards and Expected Performances</b>	
<i>Energy Transfer and Transformations – What is the role of energy in our world?</i> <b>7.1 - Energy provides the ability to do work and can exist in many forms.</b> <ul style="list-style-type: none"> <li>◆ Work is the process of making objects move through the application of force.</li> <li>◆ Energy can be stored in many forms and can be transformed into the energy of motion.</li> </ul>	SE: 144-145, 166-168 <i>Applying Math</i> 145 <i>MiniLAB</i> 167 TWE: TFYI 166
<b>C 12.</b> Explain the relationship among force, distance and work, and use the relationship ( $W=F \times D$ ) to calculate work done in lifting heavy objects.	SE: 144-145 <i>Applying Math</i> 145
<b>C 13.</b> Explain how simple machines, such as inclined planes, pulleys and levers, are used to create mechanical advantage.	SE: 146-150 <i>MiniLAB</i> 147 TWE: D 146 A 148, 149 QD 149
<b>C 14.</b> Describe how different types of stored (potential) energy can be used to make objects move.	SE: 166-168 <i>MiniLAB</i> 167 TWE: TFYI 166 CA 169

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<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p><b>7.2 - Many organisms, including humans, have specialized organ systems that interact with each other to maintain dynamic internal balance.</b></p> <ul style="list-style-type: none"> <li>◆ All organisms are composed of one or more cells; each cell carries on life-sustaining functions.</li> <li>◆ Multicellular organisms need specialized structures and systems to perform basic life functions.</li> </ul>	<p>SE: 476, 483-487 LAB 482 MiniLAB 484 National Geographic 486</p> <p>TWE: IL 486 CA 487</p>
<p><b>C 15.</b> Describe the basic structures of an animal cell, including nucleus, cytoplasm, mitochondria and cell membrane, and how they function to support life.</p>	<p>SE: 478-480 TWE: A 478 MM 478 VL 478 UA 479</p>
<p><b>C 16.</b> Describe the structures of the human digestive, respiratory and circulatory systems, and explain how they function to bring oxygen and nutrients to the cells and expel waste materials.</p>	<p>SE: 563-568 MiniLAB 569</p> <p>TWE: TFYI 563, 564, 566 A 567 CD 567</p>
<p><b>C 17.</b> Explain how the human musculo-skeletal system supports the body and allows movement.</p>	<p>SE: 560, 562 TWE: QD 561 TFYI 561 VL 562 LD 562</p>
<p><i>Energy in the Earth's Systems – How do external and internal sources of energy affect the Earth's systems?</i></p> <p><b>7.3 - Landforms are the result of the interaction of constructive and destructive forces over time.</b></p> <ul style="list-style-type: none"> <li>◆ Volcanic activity and the folding and faulting of rock layers during the shifting of the Earth's crust affect the formation of mountains, ridges and valleys.</li> <li>◆ Glaciation, weathering and erosion change the Earth's surface by moving earth materials from place to place.</li> </ul>	<p>SE: 299-303, 323-331 MiniLAB 301 National Geographic 324 Applying Science 329</p> <p>TWE: QD 300 MM 327, 329</p>
<p><b>C 18.</b> Describe how folded and faulted rock layers provide evidence of the gradual up and down motion of the Earth's crust.</p>	<p>SE: 299-301 MiniLAB 301</p> <p>TWE: QD 300 UA 300 SJ 300</p>

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<p><b>C 19.</b> Explain how glaciation, weathering and erosion create and shape valleys and floodplains.</p>	<p>SE: 323-331  <i>National Geographic</i> 324  <i>LAB</i> 323-333            TWE: MM 327, 329            SJ 329            AIL 333</p>
<p><b>C 20.</b> Explain how the boundaries of tectonic plates can be inferred from the location of earthquakes and volcanoes.</p>	<p>SE: 292-297, 302-303  <i>National Geographic</i> 294</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p><b>7.4 - Technology allows us to improve food production and preservation, thus improving our ability to meet the nutritional needs of growing populations.</b></p> <ul style="list-style-type: none"> <li>◆ Various microbes compete with humans for the same sources of food.</li> </ul>	<p>This objective can be covered during class discussion with a local food science or public health representative.            Also see Glencoe’s <i>Science Level Blue</i> © 2008            SE: <i>Integrate Health</i> 505  <i>Integrate History</i> 75            TWE: A 504</p>
<p><b>C 21.</b> Describe how freezing, dehydration, pickling and irradiation prevent food spoilage caused by microbes.</p>	<p>This objective can be covered during class discussion with a local food science or public health representative.            Also see Glencoe’s <i>Science Level Blue</i> © 2008            SE: 504  <i>Integrate Health</i> 505            TWE: A 504</p>
<p><b>Grade 8</b>  <b>Core Themes, Content Standards and Expected Performances</b></p>	
<p><i>Forces and Motion – What makes objects move the way they do?</i></p> <p><b>8.1 - An object’s inertia causes it to continue moving the way it is moving unless it is acted upon by a force to change its motion.</b></p> <ul style="list-style-type: none"> <li>◆ The motion of an object can be described by its position, direction of motion and speed.</li> <li>◆ An unbalanced force acting on an object changes its speed and/or direction of motion.</li> <li>◆ Objects moving in circles must experience force acting toward the center.</li> </ul>	<p>SE: 130-133, 136-137  <i>National Geographic</i> 142  <i>LAB</i> 151            TWE: QD 137            A 137            DI 142</p>
<p><b>C 22.</b> Calculate the average speed of a moving object and illustrate the motion of objects in graphs of distance over time.</p>	<p>SE: 130-132, 135  <i>Applying Math</i> 131            TWE: A 133</p>

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<p><b>C 23.</b> Describe the qualitative relationships among force, mass and changes in motion.</p>	<p>SE: 136-143  <i>Applying Math</i> 140  <i>National Geographic</i> 142  LAB 151  TWE: QD 137  IM 140  IL 141  LD 141</p>
<p><b>C 24.</b> Describe the forces acting on an object moving in a circular path.</p>	<p>SE: 417  <i>National Geographic</i> 142  TWE: DI 142</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i>  <b>8.2 - Reproduction is a characteristic of living systems and it is essential for the continuation of every species.</b></p> <ul style="list-style-type: none"> <li>◆ Heredity is the passage of genetic information from one generation to another.</li> <li>◆ Some of the characteristics of an organism are inherited and some result from interactions with the environment.</li> </ul>	<p>SE: 599-605  <i>Applying Math</i> 603  LAB 606-607  <i>Science and Society</i> 608  TWE: D 600, 603  IM 602  AIL 607  A 608</p>
<p><b>C 25.</b> Explain the similarities and differences in cell division in somatic and germ cells.</p>	<p>SE: 592, 594-595  <i>National Geographic</i> 596  TWE: TFYI 592  LD 594  DI 595</p>
<p><b>C 26.</b> Describe the structure and function of the male and female human reproductive systems, including the process of egg and sperm production.</p>	<p>SE: 574-576  <i>National Geographic</i> 596  TWE: D 575  CC 575  TFYI 575  QD 576  DI 576</p>
<p><b>C 27.</b> Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.</p>	<p>SE: 590-591, 594-595, 600-602  TWE: VL 595  D 600  UA 602</p>
<p><i>Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet?</i>  <b>8.3 - The solar system is composed of planets and other objects that orbit the sun.</b></p> <ul style="list-style-type: none"> <li>◆ Gravity is the force that governs the motions of objects in the solar system.</li> <li>◆ The motion of the Earth and moon relative to the sun causes daily, monthly and yearly cycles on Earth.</li> </ul>	<p>SE: 417, 440-446  <i>MiniLAB</i> 421, 441  LAB 447  TWE: VL 443  A 443</p>

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<b>C 28.</b> Explain the effect of gravity on the orbital movement of planets in the solar system.	SE: 417 <i>MiniLAB 421</i>
<b>C 29.</b> Explain how the regular motion and relative position of the sun, Earth and moon affect the seasons, phases of the moon and eclipses.	SE: 440-446 <i>MiniLAB 441</i> <i>LAB 447</i> TWE: TPK 440 IM 441 VL 443 A 443
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p><b>8.4 - In the design of structures there is a need to consider factors such as function, materials, safety, cost and appearance.</b></p> <ul style="list-style-type: none"> <li>◆ Bridges can be designed in different ways to withstand certain loads and potentially destructive forces.</li> </ul>	Application to building design and earthquake forces is covered on page: TWE: DI 138 Also see See Glencoe's <i>Science Level Blue</i> © 2008 to stimulate discussion to meet this objective. SE: 217 <i>Science and History 234</i> TWE: DI 217
<b>C 30.</b> Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.	Application to building design and earthquake forces is covered on page: TWE: DI 138 Also see Glencoe's <i>Science Level Blue</i> © 2008 to stimulate discussion to meet this objective. SE: 217 TWE: DI 217

### Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
CA	Check Assessment
CC	Curriculum Connection
CD	Cultural Diversity
CU	Check for Understanding
D	Discussion
DI	Differentiated Instruction
FF	Fun Fact
IL	Inquiry Lab
IM	Identifying Misconceptions
LD	Lab Demonstration
MM	Make a Model
QD	Quick Demo
R	Reteach
SJ	Science Journal
TFYI	Teacher FYI
TPK	Tie to Prior Knowledge
UA	Use an Analogy
VL	Visual Learning