

LITCHFIELD PUBLIC SCHOOLS
Core Curriculum Scope and Sequence
Science/Grade 6

Essential Question: How does the structure of matter affect the properties and uses of materials?

Unit/Time Frame	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	CMT Correlations	Assessments	Resources
<p>Properties of Matter</p> <p>6-8 weeks</p>	<p>6.1.a Mixtures are made of combinations of elements and/or compounds, and they can be separated by using a variety of physical means.</p> <p>6.1.b Pure substances can be either elements or compounds, and they cannot be broken down by physical means.</p>	<ul style="list-style-type: none"> • Explain that density (mass/volume) is a characteristic property that can be used to identify an element or substance. • Describe the structure of the atom and its component parts. • Compare and contrast the properties of a metal with a nonmetal. • Illustrate the differences in physical and chemical properties of a molecule and the individual atoms bonded to form that molecule. • Differentiate between a mixture and an element or compound and identify examples. • Conduct and report on an investigation that uses physical means such particle size, density, solubility and magnetism to separate substances in a mixture. • Use the patterns in the periodic table to locate metals, semimetals and nonmetals; and predict the general characteristics of an elements. 	<p>C 1. Describe the properties of common elements, such as oxygen, hydrogen, carbon, iron and aluminum.</p> <p>C 2. 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>C 3. 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>Create a diagram or model of an atom</p> <p>Mass/Volume Inquiry Lab</p> <p>Inquiry lab comparing metals and nonmetals</p> <p>Mixture inquiry lab</p> <p>Using a periodic table of elements, discuss various elements and their properties</p> <p>Using paper cutouts of various elements, show how they combine to form compounds, determine the compounds name and formula</p> <p>Soils (mixture) inquiry lab</p> <p>Science Notebook</p> <p>Teacher observation of student performance</p> <p>Teacher-prepared assessments</p> <p>Science lab sheets, activities and experiments</p>	<p>Theme based non-fiction literature</p> <p>Holt Science series textbooks</p> <p>Multimedia resource</p> <p>Library Media Specialist</p> <p>Charts/Diagrams</p> <p>Teacher created materials</p>

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Essential Question: How does matter and energy flow through an ecosystem?

Unit/Time Frame	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	CMT Correlations	Assessments	Resources
<p>Matter and Energy in Ecosystems</p> <p>6-8 weeks</p>	<p>6.2a Populations in ecosystems are affected by biotic factors, such as other populations, and abiotic factors, such as soil and water supply.</p> <p>6.2b Populations in ecosystems can be categorized as producers, consumers and decomposers of organic matter.</p>	<ul style="list-style-type: none"> • Analyze and interpret how biotic and abiotic factors interact within a given ecosystem. • Defend the statement, “The sun is the main source of energy on Earth.” • Design and conduct a scientific investigation to explore the porosity and permeability of soils and their ability to support different plant life. • Express in general terms how plants and other photosynthetic organisms use the sun’s energy. • Investigate and report on the effects of abiotic factors on a plant’s ability to photosynthesize. • Compare and contrast how energy and matter flow in an ecosystem emphasizing the interactions among producers, consumers and decomposers. • Create and interpret graphs that illustrate the fluctuation of populations over time. • Distinguish a food chain from a food web and identify local examples of each. • Identify local examples of predator-prey relationships and justify the impact of each type of population on the other. • Explain the impact of environmental conditions such as climate, elevation, and topography or water quality on food chains. • Predict what will happen to a population based on current trends (fires, disease, overhunting, development) and defend the prediction. <p>Embedded Performance Task: Soils</p>	<p>C4. Describe how abiotic factors, such as temperature, water and sunlight, affect the ability of plants to create their own food through photo-synthesis.</p> <p>C5. Explain how populations are affected by predator-prey relationship.</p> <p>C6. Describe common food webs in different Connecticut ecosystems.</p>	<p>Design and conduct a scientific investigation to explore the porosity and permeability of soils and their ability to support different plant life</p> <p>Biotic/abiotic plant inquiry lab</p> <p>Create and Interpret graphs that illustrate the fluctuation of populations over time</p> <p>Food chain/food web inquiry lab</p> <p>Water quality inquiry lab</p> <p>Science Notebook</p> <p>Teacher observation of student performance</p> <p>Teacher-prepared assessments</p> <p>Science lab sheets, activities and experiments</p>	<p>Theme based non-fiction literature</p> <p>Holt Science series textbooks</p> <p>Multimedia resource</p> <p>Library Media Specialist</p> <p>Education Coordinator White Memorial</p> <p>Field Trip White Memorial</p> <p>Charts/Diagrams</p> <p>Teacher created materials</p>

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Essential Question: How do variations in the amount of the sun’s energy hitting the earth’s surface affect daily weather patterns?

Unit/Time Frame	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	CMT Correlations	Assessments	Resources
<p>Energy in the Earth’s system.</p> <p>6-8 weeks</p>	<p>6.3.a. Local and regional weather are affected by the amount of solar energy the area receives and proximity to a large body of water.</p>	<ul style="list-style-type: none"> • Compare the composition and structure of the Earth’s atmospheric layers. • Demonstrate how changes in temperature, pressure and moisture affect weather patterns (e.g., air masses and air pressure.) • Describe in writing how solar energy drives Earth’s weather systems. • Investigate and report on how the introduction of heat affects the motion of particles and the distance between them. • Illustrate the transfer of energy as matter changes phase. • Design, conduct and report in writing an investigation that reveals different substances absorb and release heat at different rates. • Research and give examples of heat transfer and local weather differences in Connecticut. • Investigate and explain the movement of local winds, including “sea breezes” and “land breezes,” based on the uneven heating of the earth’s surface and a change in air pressure. • Examine and explain that global winds are caused by uneven heating of the Earth’s surface and the rotation of the Earth. • Design a weather forecast based on collected weather data. 	<p>C7. Describe the effect of heating on the movement of molecules in solids, liquids and gases.</p> <p>C8. 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>C9. Explain how the uneven heating of the earth’s surface causes winds.</p>	<p>Create a diagram that compares the composition and structure of the Earth’s atmospheric layers</p> <p>Record daily local weather elements and patterns over a 2 week period</p> <p>Analyze and summarize how changes affect these weather patterns</p> <p>Create a diagram showing the states of matter and how energy is transferred</p> <p>Observe and analyze local weather differences in Connecticut</p> <p>Explain in a writing piece how solar energy drives Earth’s weather systems</p>	<p>Theme based nonfiction literature</p> <p>Holt Science series textbooks</p> <p>Multimedia resources</p> <p>Library Media Specialist</p> <p>Charts/Diagrams</p> <p>Teacher created materials</p>

				<p>Design, conduct and report in writing an investigation that reveals different substances absorb and release heat at different rates</p> <p>Design and present a weather forecast based on collected data Science Notebook</p> <p>Teacher observation of student performance</p> <p>Teacher-prepared assessments</p> <p>Science lab sheets, activities and experiments</p>	
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Essential Question: How does water moving across and through earth materials carry with it the product of human activity?

Unit/Time Frame	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	CMT Correlations	Assessments	Resources
<p style="text-align: center;">Science and Technology in Society</p> <p style="text-align: center;">6-8 weeks</p>	<p>6.4. a. Most precipitation that falls on Connecticut eventually reaches Long Island Sound.</p>	<ul style="list-style-type: none"> • Discuss and chart the reasons why water is essential for life. • Research the differences in quantities between fresh water (solid and liquid) and salt water covering the Earth’s surface and report on the impact to humans. • Observe, analyze and record the unique physical and chemical properties of water. • Investigate and explain in writing how substances, both harmful and beneficial, dissolve in and are carried by surface and ground water. • Use appropriate maps to locate and identify the major watersheds that drain into Long Island Sound and analyze how the topography influences the way water moves in the Long Island Sound watershed. • Research and evaluate in writing the effects of common point and non-point water pollutants in Connecticut. • Compare and contrast the general structures, processes and limitations of a septic system to a secondary wastewater treatment plant. • Debate the effectiveness of laws, regulations and remedial actions in the protection and restoration of water resources. 	<p>C 10. Explain the role of septic and sewage systems on the quality of surface and ground water.</p> <p>C 11. Explain how human activity may impact water resources in Connecticut, such as ponds, rivers and the Long Island Sound ecosystem.</p>	<p>Summarize in writing the reasons why water is essential for life</p> <p>Research and summarize in writing the differences in quantities between fresh water (solid and liquid) and salt water covering the Earth’s surface and report on the impact to humans</p> <p>Stream water pollution inquiry lab</p> <p>Research and summarize in writing the health of our local stream</p> <p>Interpret and analyze maps to locate and identify the major watersheds that drain into the Sound</p> <p>Research and</p>	<p>Theme based nonfiction literature</p> <p>Long Island Sound Student/Teacher Resource and Activity Manual</p> <p>Multimedia Resources</p> <p>Long Island Sound Educators and Presenter (classroom visit)</p> <p>Soundwaters Coastal Education Center field trip</p> <p>Charts/Diagrams</p> <p>Teacher created materials</p>

				<p>evaluate in writing the effects of common point and non-common point water pollutants in Connecticut</p> <p>LIS Lab Investigations</p> <p>Create a Wiki or Glogster to display and summarize all LIS Investigations</p> <p>Teacher observation of student performance</p> <p>Teacher-prepared assessments</p> <p>Science lab sheets, activities and experiments</p>	
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