



## Active Chemistry Correlation to the Connecticut Core Science Curriculum Framework, Grades 9-10

### Core Scientific Inquiry, Literacy and Numeracy

Standards and Expected Performances	Location/Page where Standard is found
<b>D INQ.1</b> Identify questions that can be answered through scientific investigation.	119, 125, 131, 143, 151,156, 240, 286, 297, 307,317,328, 343,360, 400, 440, 476, 484, 541, 574, 617, 640, 649, 658, 667, 709, 778, 833, 901, 909,
<b>D INQ.2</b> Read, interpret and examine the credibility and validity of scientific claims in different sources of information.	15-18, 35-37, 19-20, 24, 29-30, 33, 34, 39-41, 43, 46-50, 54, 58-62, 82, 101-103, 182-184, 703-704, 712-713
<b>D INQ.3</b> Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.	119, 125, 131, 143, 151,156, 240, 286, 297, 307,317,328, 343,360, 400, 440, 476, 484, 541, 574, 617, 640, 649, 658, 667, 709, 778, 833, 901, 909,
<b>D INQ.4</b> Design and conduct appropriate types of scientific investigations to answer different questions.	7-10, 15-18, 35-37, 101-103, 113-113, 120-121, 126-127, 134-137, 144-146, 152-153, 157-158, 162-164, 182-184, 193-195, 201-203, 210-214, 224-227, 233-236, 241-242, 255-258, 287-291, 300-301, 308-311, 318-320, 329-332, 353-356, 369-371, 379-382, 390-392, 401-404, 408-410, 416-418, 433-435, 441-444, 448-451, 456-460, 468-469, 477-479, 485-488, 496-497, 511-513, 522-524, 532-535, 544-545, 551-554, 560-562, 568-569, 575-577, 599-602, 608-610, 618-520, 632-634, 641-643, 659-661, 677-679,

	685-686, 693-697, 703-704, 712-713, 727-728, 743-745, 766-768, 779-783, 790-792, 799-803, 812-816, 843-848, 857-858, 867-869, 877-882, 892-896, 902-904, 910-912, 919-921
<b>D INQ.5</b> Identify independent and dependent variables, including those that are kept constant and those used as controls.	119, 125, 131, 143, 151, 156, 240, 286, 297, 307, 317, 328, 343, 360, 400, 440, 476, 484, 541, 574, 617, 640, 649, 658, 667, 709, 778, 833, 901, 909,
<b>D INQ.6</b> Use appropriate tools and techniques to make observations and gather data.	102, 111, 121, 135, 145, 158, 163, 194-5, 202, 211, 225, 234, 242, 256, 288, 309, 311, 330, 354, 370, 391, 402, 434, 442, 450, 459, 468, 477, 486, 512, 523, 533, 545, 553, 576, 600, 609, 618, 633, 642, 651, 660, 679, 686, 694, 703, 712, 727, 766, 802, 845, 858, 868, 878, 893, 903, 910, 920,
<b>D INQ.7</b> Assess the reliability of the data that was generated in the investigation.	7-10, 26-28, 46-50, 58-62, 101-103, 113-113, 120-121, 134-137, 144-146, 182-184, 193-195, 201-203, 210-214, 224-227, 233-236, 241-242, 255-258, 287-291, 300-301, 308-311, 329-332, 353-356, 361-364, 369-371, 379-382, 390-392, 401-404, 416-418, 433-435, 441-444, 448-451, 456-460, 468-469, 477-479, 485-488, 496-497, 511-513, 522-524, 532-535, 544-545, 560-562, 575-577, 599-602, 608-610, 618-520, 632-634, 641-643, 659-661, 677-679, 685-686, 693-697, 703-704, 712-713, 727-728, 743-745, 779-783, 790-792, 799-803, 812-816, 843-848, 857-858, 867-869, 877-882, 892-896, 902-904, 910-912, 919-921
<b>D INQ.8</b> Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.	7-10, 26-28, 46-50, 58-62, 101-103, 113-113, 120-121, 134-137, 144-146, 182-184, 193-195, 201-203, 210-214, 224-227, 233-236, 241-242, 255-258, 287-291, 300-301, 308-311, 329-332, 353-356, 361-

	<p>364, 369-371, 379-382, 390-392, 401-404, 416-418, 433-435, 441-444, 448-451, 456-460, 468-469, 477-479, 485-488, 496-497, 511-513, 522-524, 532-535, 544-545, 560-562, 575-577, 599-602, 608-610, 618-520, 632-634, 641-643, 659-661, 677-679, 685-686, 693-697, 703-704, 712-713, 727-728, 743-745, 779-783, 790-792, 799-803, 812-816, 843-848, 857-858, 867-869, 877-882, 892-896, 902-904, 910-912, 919-921</p>
<p><b>D INQ.9</b> Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.</p>	<p>7-10, 15-18, 26-28, 35-38, 46-50, 58-62, 68-69, 77-79, 101-103, 110-113, 144-146, 179-181, 182-184, 193-195, 201-203, 233-235, 241-242, 255-258, 265-269, 274-278, 287-291, 300-301, 308-311, 361-364, 369-371, 379-382, 390-392, 401-404, 408-410, 416-418, 433-435, 441-444, 448-451, 456-460, 477-479, 485-488, 496-497, 511-513, 522-524, 532-535, 544-545, 551-554, 560-562, 575-577, 593-594, 599-602, 608-610, 618-622, 641-643, 677-679, 685-686, 693-697, 712-713, 743-744, 766-768, 779-783, 790-792, 799-804, 812-816, 826-827, 843-848, 857-859, 867-869, 877-882, 892-896, 902-904, 910-912, 919-921</p>
<p><b>D INQ.10</b> Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.</p>	<p>15-18, 35-38, 46-50, 58-62, 101-103, 110-113, 120-121, 134-137, 144-146, 182-184, 193-195, 201-203, 210-214, 224-230, 233-235, 241-242, 255-258, 287-291, 300-301, 308-311, 329-332, 353-356, 361-364, 369-371, 379-382, 390-392, 401-404, 416-418, 433-435, 441-444, 448-451, 456-460, 468-469, 477-479, 485-488, 496-497, 511-513,</p>

	522-524, 532-535, 544-545, 560-562, 575-577, 599-602, 608-610, 618-622, 632-634, 641-643, 659-662, 677-679, 685-686, 693-697, 703-704, 712-713, 727-729, 743-744, 779-783, 790-792, 799-804, 812-816, 826-827, 843-848, 857-859, 867-869, 877-882, 892-896, 902-904, 910-912, 919-921
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## Grade 9

### Core Themes, Content Standards and Expected Performances

#### Strand I: Energy Transformations

Standards and Expected Performances	Location/Page where Standard is found
<b>9.1 - Energy cannot be created or destroyed; however, energy can be converted from one form to another.</b>	
<b>D 1.</b> Describe the effects of adding energy to matter in terms of the motion of atoms and molecules, and the resulting phase changes.	110-113, 114-119, 174, 260, 274-278, 361-364, 369-371, 379-382, 401-406, 410-413, 544-550, 551-558, 712-719
<b>D 2.</b> Explain how energy is transferred by conduction, convection and radiation.	159, 512-518, 519, 563, 588,
<b>D 3.</b> Describe energy transformations among heat, light, electricity and motion.	330-307, 318-328, 468-476, 511-531
<b>9.2 - The electrical force is a universal force that exists between any two charged objects.</b>	
<b>D 4.</b> Explain the relationship among voltage, current and resistance in a simple series circuit.	8,9, 147, 193, 200, 308-317, 353-360, 461
<b>D 5.</b> Explain how electricity is used to produce heat and light in incandescent bulbs and heating elements.	308-317, 511-518

<b>D 6.</b> Describe the relationship between current and magnetism.	8, 9, 79, 147, 193, 200, 356, 359, 461
<b>9.3 - Various sources of energy are used by humans and all have advantages and disadvantages.</b>	
<b>D 7.</b> Explain how heat is used to generate electricity.	
<b>D 8.</b> Describe the availability, current uses and environmental issues related to the use of fossil and nuclear fuels to produce electricity.	514-518, 525, 536
<b>D 9.</b> Describe the availability, current uses and environmental issues related to the use of hydrogen fuel cells, wind and solar energy to produce electricity.	

### Strand II: Chemical Structures and Properties

<b>Standards and Expected Performances</b>	<b>Location/Page where Standard is found</b>
<b>9.4 - Atoms react with one another to form new molecules.</b>	
<b>D 10.</b> Describe the general structure of the atom, and explain how the properties of the first 20 elements in the Periodic Table are related to their atomic structures.	2, 3, 6, 7, 10, 13, 19-23, 24, 26-28, 29-33, 32-34, 39, 42-44, 48-52, 54, 56, 66, 77-78, 89-91, 93, 96, 159, 196-197, 199, 250, 292, 297, 304, 356, 366, 448, 499, 595, 611, 641, 643-647, 763, 772-774, 851
<b>D 11.</b> Describe how atoms combine to form new substances by transferring electrons (ionic bonding) or sharing electrons (covalent bonding).	71-76, 364-368, 451-455, 622-629, 757-765, 769-777, 838, 850-853,
<b>D 12.</b> Explain the chemical composition of acids and bases, and explain the change of pH in neutralization reactions.	10, 13, 182, 184-190, 210, 213, 215, 233-234, 250, 257, 424, 445, 488-490, 491, 539, 570, 588, 625, 687-689, 703, 706, 754, 817, 820-824, 828-829, 868, 870-871
<b>9.5 – Due to its unique chemical structure, carbon forms many organic and inorganic compounds.</b>	

<b>D 13.</b> Explain how the structure of the carbon atom affects the type of bonds it forms in organic and inorganic molecules.	114, 152-155, 168, 174, 337-339, 362-363, 366, 419, 428, 437, 539, 570, 588, 706, 738, 751-764, 759, 790-811, 827, 833, 838
<b>D 14.</b> Describe combustion reactions of hydrocarbons and their resulting by-products.	162-169,
<b>D 15.</b> Explain the general formation and structure of carbon-based polymers, including synthetic polymers, such as polyethylene, and biopolymers, such as carbohydrate.	152-156, 162-169, 416-424, 751-764, 790-811,
<b>9.6 - Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals.</b>	
<b>D 16.</b> Explain how simple chemical monomers can be combined to create linear, branched and/or cross-linked polymers.	152-155, 568-571, 703-709, 751-765, 790-798, 799-810
<b>D 17.</b> Explain how the chemical structure of polymers affects their physical properties.	152-155, 361-368, 568-571, 703-709, 722-726, 766-778, 790-798, 799-811
<b>D 18.</b> Explain the short- and long-term impacts of landfills and incineration of waste materials on the quality of the environment.	892-900, 910-917,