



Active Chemistry Correlation to the Wisconsin Model Academic Standards, Science 9-12

Standard A: Science Connections

Standards and Expected Performances	Location/Page where Standard is found
A.12.1 Apply the underlying themes of science to develop defensible visions of the future	
A.12.2 Show how conflicting assumptions about science themes lead to different opinions and decisions about evolution, health, population, longevity, education, and use of resources, and show how these opinions and decisions have diverse effects on an individual, a community, and a country, both now and in the future	15-18, 19-22, 29-32, 34, 35-37, 39-40, 54, 63-64, 82, 101-103, 152-153, 182-184, 416-418, 568-569, 608-610, 618-620, 703-704, 712-713, 919-921
A.12.3 Give examples that show how partial systems, models, and explanations are used to give quick and reasonable solutions that are accurate enough for basic needs	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
A.12.4 Construct arguments that show how conflicting models and explanations of events can start with similar evidence	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
A.12.5 Show how the ideas and themes of science can be used to make real-life decisions about careers, work places, life-styles, and use of resources	92, 170, 246, 344, 424, 502, 584, 668, 734, 834, 928
A.12.6 Identify and, using evidence learned or discovered, replace inaccurate personal models and explanations of science-related events	15-18, 19-22, 29-32, 34, 35-37, 39-40, 54, 63-64, 82, 101-103, 152-153, 182-184, 416-418, 568-569, 608-610, 618-620, 703-704, 712-713, 919-921

A.12.7 Re-examine the evidence and reasoning that led to conclusions drawn from investigations, using the science themes	15-18, 19-22, 29-32, 34, 35-37, 39-40, 54, 63-64, 82, 101-103, 152-153, 182-184, 416-418, 568-569, 608-610, 618-620, 703-704, 712-713, 919-921
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Standard B: Nature of Science

Standards and Expected Performances	Location/Page where Standard is found
B.12.1 Show how cultures and individuals have contributed to the development of major ideas in the earth and space, life and environmental, and physical sciences	
B.12.2 Identify the cultural conditions that are usually present during great periods of discovery, scientific development, and invention	
B.12.3 Relate the major themes of science to human progress in understanding science and the world	162-164, 179-181, 193-195, 201-203, 233-235, 353-356, 416-418, 532-535, 560-562, 575-577, 607, 685-686, 743-744, 766-768, 812-816, 826-827, 902-904
B.12.4 Show how basic research and applied research contribute to new discoveries, inventions, and applications	15-18, 19-22, 29-32, 34, 35-37, 39-40, 54, 63-64, 82, 101-103, 152-153, 182-184, 416-418, 568-569, 608-610, 618-620, 703-704, 712-713, 919-921
B.12.5 Explain how science is based on assumptions about the natural world and themes that describe the natural world	

Standard C: Science Inquiry

Standards and Expected Performances	Location/Page where Standard is found
C.12.1 When studying science content, ask questions suggested by current social issues, scientific literature, and observations* of phenomena, build hypotheses that might answer some of these questions, design possible investigations*, and describe results that might emerge from such investigations	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,
C.12.2 Identify* issues from an area of science study, write questions that could be investigated*, review previous research on these questions, and design and conduct responsible and safe investigations to help answer the 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
C.12.3 Evaluate* the data collected during an investigation*, critique the data-collection procedures and results, and suggest ways to make any needed improvements	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
C.12.4 During investigations*, choose the best data-collection procedures and materials available, use them competently, and calculate the degree of precision of the resulting 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,
C.12.5 Use the explanations* and models* found in the earth and space, life and environmental, and physical sciences to develop likely explanations* for the results of their investigations*	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
C.12.6 Present the results of investigations* to groups concerned with the issues, explaining* the meaning and implications of the results, and answering questions in terms the audience can understand	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
C.12.7 Evaluate* articles and reports in the popular press, in scientific journals, on television, and on the Internet, using criteria related to accuracy, degree of error, sampling, treatment of data, and other standards of experimental design	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

Standard D: Physical Science

Standards and Expected Performances	Location/Page where Standard is found
STRUCTURE OF ATOMS AND MATTER	
D.12.1 Describe* atomic structure and the properties of atoms, molecules, and matter during physical and chemical interactions*	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, 79-85, 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
D.12.2 Explain* the forces that hold the atom together and illustrate* how nuclear interactions* change the atom	20-23, 26-28, 32-34, 42-44, 48-52, 54, 71-72, 80-91, 104-107, 139, 148, 164-165, 366-368, 453, 570-571, 757-765, 793-798, 804-809, 851
D.12.3 Explain* exchanges of energy* in chemical interactions* and exchange of mass and energy in atomic/nuclear reactions	80-91, 110-113, 114-119, 159, 174, 165, 259-263, 274-278, 300-307, 318-328, 361-364, 369-371, 379-382, 401-406, 410-413, 468-476, 512-518, 519, 520-531, 537-538, 544-550, 551-558, 563, 588, 712-719
CHEMICAL REACTIONS	
D.12.4 Explain* how substances, both simple and complex, interact* with one another to produce new substances	19-21, 78, 82, 96, 102, 154, 163-166, 186-190, 213-218, 222, 228-232, 256-258, 259-263, 266-273, 276, 279, 321-327, 356-360, 392-397, 411, 412, 437, 445, 456-463, 470-476, 489, 490, 514-520, 525-526, 530, 537-539, 570, 608, 613, 616, 619, 626-629, 636, 642-647, 672, 680-682, 689, 725, 738, 761, 817-821, 838, 885

D.12.5 Identify* patterns in chemical and physical properties and use them to predict* likely chemical and physical changes and interactions	2, 3, 6, 7, 10, 13, 19-23, 24, 26-28, 32-34, 36-41, 42-44, 48-52, 54, 56, 58, 59-62, 66, 70, 71, 72-74, 79-85, 89-91, 93, 96, 112, 126-128, 141, 146-147, 159-161, 196-197, 199, 200, 204, 250, 292, 297, 304, 339, 356, 366, 448, 476, 499, 595-596, 599, 602-604, 606, 643-647, 654, 672, 763, 772-774, 838, 851
D.12.6 Through investigations*, identify* the types of chemical interactions*, including endothermic, exothermic, oxidation, photosynthesis, and acid/base reactions	19-21, 78, 82, 96, 102, 147-148, 154, 163-166, 186-190, 213-218, 222, 228-232, 256-258, 255-263, 266-273, 276, 279, 293-297, 308-315, 321-327, 356-360, 392-397, 411, 412, 437, 445, 456-463, 470-476, 489, 490, 498-501, 514-520, 525-526, 530, 537-539, 570, 608, 613, 616, 619, 626-629, 636, 642-647, 672, 680-682, 689, 725, 738, 761, 817-821 838, 885
MOTIONS AND FORCES	
D.12.7 Qualitatively and quantitatively analyze* changes in the motion of objects and the forces that act on them and represent analytical data both algebraically and graphically	
D.12.8 Understand* the forces of gravitation, the electromagnetic force, intermolecular force, and explain* their impact on the universal system	68-71, 72, 73, 79, 80-88, 228, 449, 453, 623, 774, 818, 851-852
D.12.9 Describe* models* of light, heat, and sound and through investigations* describe* similarities and differences in the way these energy* forms behave	36-38, 40, 159, 300-306
CONSERVATION OF ENERGY AND THE INCREASE IN DISORDER	
D.12.10 Using the science themes*, illustrate* the law of conservation of energy* during chemical and nuclear reactions	80-91, 166, 270, 300-315, 328, 333, 472, 516, 525, 535-536, 560-566, 623

INTERACTIONS OF MATTER AND ENERGY	
D.12.11 Using the science themes*, explain* common occurrences in the physical world	7-10, 26-28, 35-38, 58-62, 77-79, 101-103, 110-113, 120-121, 126-127, 134-137, 144-146, 152-153, 157-160, 162-164, 182-184, 193-195, 201-203, 210-214, 224-230, 233-235, 255-258, 274-278, 287-291, 300-301, 308-311, 318-320, 329-332, 353-356, 369-371, 379-382, 390-392, 401-404, 416-420, 433-435, 441-444, 468-469, 477-479, 485-488, 496-497, 522-524, 532-535, 544-545, 551-554, 560-562, 568-569, 575-577, 599-602, 618-622, 632-634, 641-643, 659-662, 677-679, 685-686, 693-697, 703-704, 712-713, 727-729, 743-744, 766-768, 779-783, 799-804, 812-827, 843-848, 857-859, 867-869, 892-896, 902-912, 919-921
D.12.12 Using the science themes* and knowledge of chemical, physical, atomic, and nuclear interactions*, explain* changes in materials, living things, earth's features, and stars	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

Standard G: Science Applications

Standards and Expected Performances	Location/Page where Standard is found
G.12.1 Identify personal interests in science and technology, implications that these interests might have for future education, and decisions to be considered	92, 170, 246, 344, 424, 502, 584, 668, 734, 834, 928
G.12.2 Design, build, evaluate, and revise models and explanations related to the earth and space, life and environmental, and physical sciences	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
G.12.3 Analyze the costs, benefits, or problems resulting from a scientific or technological innovation, including implications for the individual and the community	179-181
G.12.4 Show how a major scientific or technological change has had an impact on work, leisure, or the home	76, 109, 119, 131, 161, 169, 181, 192, 200, 209, 221, 232, 307, 328, 378, 400, 501, 574, 598, 607, 617, 629, 658, 684, 692, 702, 726, 733, 750, 778, 798, 833, 856, 866, 901, 909, 918, 927,
G.12.5 Choose a specific problem in our society, identify alternative scientific or technological solutions to that problem and argue it merits	2-3, 127-133, 182-190, 193-198, 233-238, 300-306, 318-327, 353-358, 416-421, 532-540, 560-566, 575-583, 608-615, 727-732, 743-748, 766-776, 826-832, 892-900, 910-917, 919-927

Standard H: Science in Personal and Social Perspectives

Standards and Expected Performances	Location/Page where Standard is found
H.12.1 Using the science themes and knowledge of the earth and space, life and environmental, and physical sciences, analyze the costs, risks, benefits, and consequences of a proposal concerning resource management in the community and determine the potential impact of the proposal on life in the community and the region	353-358, 532-540, 560-566, 575-583
H.12.2 Evaluate proposed policy recommendations (local, state, and/or national) in science and technology for validity, evidence, reasoning, and implications, both short and long-term	

H.12.3 Show how policy decisions in science depend on social values, ethics, beliefs, and time-frames as well as considerations of science and technology	19-22, 30, 34, 39-40, 54, 63-64, 82, 182-190
H.12.4 Advocate a solution or combination of solutions to a problem in science or technology	2-5, 98-100, 224-230, 233-238, 241-244, 287-295, 318-327, 351-358, 416-421, 532-540, 560-566, 575-583, 685-692, 741-742, 766-776, 826-832, 841-842, 910-918,
H.12.5 Investigate how current plans or proposals concerning resource management, scientific knowledge, or technological development will have an impact on the environment, ecology, and quality of life in a community or region	182-190, 193-198, 308-315, 318-327, 353-358, 766-776, 841-854
H.12.6 Evaluate data and sources of information when using scientific information to make decisions	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
H.12.7 When making decisions, construct a plan that includes the use of current scientific knowledge and scientific reasoning	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,