

Chemistry (Wilbraham) © 2012
Correlated to:
ACT – College Readiness Standards – Science
(High School)

ACT - COLLEGE READINESS STANDARDS - SCIENCE	Chemistry (Wilbraham) © 2012
Score Range - 1-12	
Interpretation of Data	
Standards	
<ul style="list-style-type: none"> ■ Students who score in the 1–12 range are most likely beginning to develop the knowledge and skills assessed in the other score ranges. 	
Ideas for Progress	
<ul style="list-style-type: none"> ■ locate data in simple tables and graphs 	SE: 8, 35, 116, 175, 610 TR: Lab Manual: 55, 59, 131, 208, 277
<ul style="list-style-type: none"> ■ become familiar with different types of graphs (e.g., line graphs, pie charts, bar graphs) 	SE: 8, 175, 521, 595, 610 TR: Lab Manual: 60-61, 130-131, 158-160, 206-207, 314-315
<ul style="list-style-type: none"> ■ become familiar with units of measurement commonly used in science 	SE: 74-80 TR: Lab Manual: 16, 18, 37, 59-60, 79
Scientific Investigation	
Ideas for Progress	
<ul style="list-style-type: none"> ■ observe experiments being performed and discuss what was done and why 	SE: 20-21 TR: Lab Manual: 21-24 (Text reference: Lesson 1.3)
Evaluation of Models, Inferences, and Experimental Results	
Ideas for Progress	
<ul style="list-style-type: none"> ■ discuss what hypotheses and conclusions are and how they are different from each other 	SE: Can be Developed From: 14, 16, 17 TR: Can be Developed From: Lab Manual: 21-24
Score Range - 13-15	
Interpretation of Data	
Standards	
<ul style="list-style-type: none"> ■ Select a single piece of data, (numerical or non numerical), from a simple data presentation(e.g., a table or graph with two or three variables; a food web diagram) 	SE: 8, 175, 178, 458, 610
<ul style="list-style-type: none"> ■ Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) 	SE: Can Be Developed From: 8, 175, 429, 438, 468

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Ideas for Progress	
■ locate several data points in a simple table or graph and make comparisons between them	SE: 81, 177, 312, 559, 729 TR: Lab Manual: 66, 119, 144, 208, 216
■ become familiar with common terms used in science (e.g., star, force, mineral)	SE: 174, 194, 356, 518, 762 <i>(All lessons have vocabulary list on first page supported by highlighted definitions within text)</i>
■ create basic tables and graphs from sets of scientific data	SE: 51, 120, 324, 467, 887 TR: Lab Manual: 60-61, 130-131, 142-143, 158-160, 206-207, 314-315
■ read newspaper and magazine articles pertaining to science and technology and discuss main points with peers	TR: Lab Manual: 198, 202, 250, 297, 317
■ describe trends and relationships in data displayed in simple tables and graphs	SE: 178, 179-180, 181-182 TR: Lab Manual: 144, 208, 316
Scientific Investigation	
Ideas for Progress	
■ determine an appropriate method for performing a simple experiment	SE: 92 TR: Lab Manual: 24, 44, 96, 172, 223
■ perform simple laboratory activities designed to teach familiarity with a number of commonly used tools (e.g., thermometers, balances, glassware)	SE: 20 TR: Lab Manual: 13, 14, 15, 16, 18, 19
Evaluation of Models, Inferences, and Experimental Results	
Ideas for Progress	
■ read science articles of an appropriate level from newspapers and science news magazines and identify any hypotheses or conclusions made by the author(s)	TR: Can Be Developed From: Lab Manual: 198, 202, 250, 297, 317
Score Range - 16-19	
Interpretation of Data	
Standards	
■ Select two or more pieces of data from a simple data presentation	SE: 35, 178, 312, 438, 677

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■ Understand basic scientific terminology	SE: 174, 194, 356, 518, 762 <i>(All lessons have vocabulary list on first page supported by highlighted definitions within text)</i>
■ Find basic information in a brief body of text	SE: 104, 148, 225, 315, 408 (all Lesson Check)
■ Determine how the value of one variable changes as the value of another variable changes in a simple data presentation	SE: 456, 458, 521, 542, 882 TR: Lab Manual: 37-43, 229-230, 235
Ideas for Progress	
■ display data gathered in laboratory exercises in a variety of formats (e.g., line graphs, pie charts, bar graphs)	SE: 887 TR: Lab Manual: 60-61, 130-131, 158-160, 206-207, 314-315
Scientific Investigation	
Standards	
■ Understand the methods and tools used in a simple experiment	SE: 20-21 TR: Lab Manual: 21-24
Ideas for Progress	
■ perform experiments that require more than one step	SE: 149, 184, 475, 508, 635 TR: Lab Manual: 128, 134, 169-170, 204-205, 306-307
■ conduct a simple experiment that makes use of a control group	SE: Can Be Developed From: 542 (Interpret Graphs) TR: Lab Manual: 58
Evaluation of Models, Inferences, and Experimental Results	
Ideas for Progress	
■ read descriptions of actual experiments (e.g., completed science fair research, simple experiments from science education journals) and discuss whether the conclusions that were made support or contradict the hypotheses	TR: Lab Manual: 198, 202, 250, 297, 317
■ formulate hypotheses, predictions, or conclusions based on the results of an experiment	SE: 17, 279, 437, 491, 519 TR: Lab Manual: 132, 187, 209, 246, 317

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Score Range - 20-23	
Interpretation of Data	
Standards	
■ Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram)	SE: 177, 324, 438, 729, 814 TR: Lab Manual: 109-114
■ Compare or combine data from a simple data presentation (e.g., order or sum data from a table)	SE: 81, 177, 559, 729, 814
■ Translate information into a table, graph, or diagram	SE: 51, 120, 324, 467, 887 TR: Lab Manual: 60-61, 130-131, 158-160, 206-207, 314-315
Ideas for Progress	
■ examine line graphs to determine if they show a direct or inverse relationship between variables	SE: 605 TR: Lab Manual: 37-43
■ become familiar with scatterplots	
■ determine a simple mathematical relationship between two variables	SE: Can Be Developed From: 896 (Quick Lab)
■ integrate scientific information from popular sources, (e.g., newspapers, magazines, the Internet), with that found in textbooks	SE: Can Be Developed From: 19 TR: Lab Manual: 198, 202, 250, 297, 317
Scientific Investigation	
Standards	
■ Understand the methods and tools used in a moderately complex experiment	SE: 583, 828, 849 TR: Lab Manual: 93, 156-157, 164, 169-170, 244
■ Understand a simple experimental design	SE: 184, 583, 635, 828, 849 TR: Lab Manual: 24
■ Identify a control in an experiment	TR: Can Be Developed From: Lab Manual: 58
■ Identify similarities and differences between experiments	SE: 828, 849
Ideas for Progress	
■ perform several repetitions of an experiment to determine the reliability of results	TR: Can Be Developed From: Lab Manual: 147-153, 231-235, 259-266

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Evaluation of Models, Inferences, and Experimental Results	
Standards	
■ Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model	SE: 17, 51, 184, 765, 778 TR: Lab Manual: 187, 198, 270, 278, 303, 317
■ Identify key issues or assumptions in a model	SE: 184, 787 TR: Lab Manual: 73, 291
Ideas for Progress	
■ evaluate whether the data produced by an experiment adequately support a given conclusion	SE: Can Be Developed From: 279 TR: Lab Manual: 66, 81-83, 152, 166, 175-176
■ compare and contrast two different models about a scientific phenomenon	SE: 787
Score Range - 24-27	
Interpretation of Data	
Standards	
■ Compare or combine data from two or more simple data presentations (e.g., categorize data from a table using a scale from another table)	SE: 72 TR: Lab Manual: 39-41
■ Compare or combine data from a complex data presentation	SE: 542, 572, 597, 601, 605 TR: Lab Manual: 206-208, 234-235, 249-250
■ Interpolate between data points in a table or graph	SE: 312 TR: Lab Manual: 66
■ Determine how the value of one variable changes as the value of another variable changes in a complex data presentation	SE: 521, 605 TR: Lab Manual: 208, 235, 316
■ Identify and/or use a simple, (e.g., linear), mathematical relationship between data	SE: Can Be Developed From: 458 TR: Lab Manual: 37-43
■ Analyze given information when presented with new, simple information	SE: 178, 456, 458, 597, 605 TR: Lab Manual: 216, 222, 229, 235, 265
Ideas for Progress	
■ relate scientific information contained in written text to numerical data	SE: 328 TR: Lab Manual: 41, 61, 208-209, 234-235

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■ manipulate algebraic equations that represent data	SE: 92, 467, 559, 571, 583, 670 TR: Lab Manual: 40-42, 214-215, 263-265
Scientific Investigation	
Standards	
■ Understand the methods and tools used in a complex experiment	SE: 20-24 TR: Lab Manual: 79-84, 85-90, 91-96, 259-266, 291-297
■ Understand a complex experimental design	SE: 374, 399, 475, 635, 752 TR: Lab Manual: 223, 258, 266, 274, 290
■ Predict the results of an additional trial or measurement in an experiment	SE: 51 TR: Lab Manual: 44, 100, 152, 222-223, 266, 316
■ Determine the experimental conditions that would produce specified results	TR: Lab Manual: 44, 56, 166, 230, 266
Ideas for Progress	
■ determine the hypothesis behind an experiment that requires more than one step	TR: Lab Manual: 187, 198, 270, 278, 317
■ determine alternate methods of testing a hypothesis	TR: Can Be Developed From: Lab Manual: 48, 100, 161, 172, 187
Evaluation of ,models, Inferences, and Experimental Results	
Standards	
■ Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models	SE: 184 TR: Lab Manual: 77
■ Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why	SE: Can Be Developed From: 635, 670
■ Identify strengths and weaknesses in one or more models	SE: Can Be Developed From: 184, 778, 787, 856
■ Identify similarities and differences between models	SE: Can Be Developed From: 184, 778, 787, 856
■ Determine which model(s) is(are) supported or weakened by new information	SE: Can Be Developed From: 184, 778, 787, 856

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■ Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion	SE: Can Be Developed From: 184, 778, 787, 856 TR: Lab Manual: 293-294
Ideas for Progress	
■ communicate findings of an experiment and compare conclusions with those of peers	SE: 72, 109 (Quick Lab) TR: Lab Manual: 126, 216
Score Range - 28-32	
Interpretation of Data	
Standards	
■ Compare or combine data from a simple data presentation with data from a complex data presentation	TR: Lab Manual: 39-40
■ Identify and/or use a complex, (e.g., nonlinear), mathematical relationship between data	SE: Can Be Developed From: 605, 610, 677, 765, 882 TR: Lab Manual: 59-60, 64-65, 206-207, 234-236
■ Extrapolate from data points in a table or graph	SE: 312, 458
Ideas for Progress	
■ examine two or more related sets of data and then combine those data in ways that are useful	TR: Lab Manual: 38-40, 206-207
Scientific Investigation	
Standards	
■ Determine the hypothesis for an experiment	TR: Lab Manual: 21-24, 114, 166, 198, 266, 278
■ Identify an alternate method for testing a hypothesis	TR: Can Be Developed From: Lab Manual: 114, 166, 198, 266, 278
Ideas for Progress	
■ carry out scientific investigations in which the importance of accuracy and precision is stressed	SE: 72, 92, 571 TR: Lab Manual: 42-43, 56, 121-126
■ consider how changing an experimental procedure will affect the results of their scientific investigations	SE: Can Be Developed From: 109 (Quick Lab)
■ design and carry out additional scientific inquiries to answer specific questions	SE: 51, 149, 184, 324, 508 TR: Lab Manual: 152, 166, 254, 274, 290

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Evaluation of Models, Inferences, and Experimental Results	
Standards	
■ Select a complex hypothesis, prediction, or conclusion that is supported by a data presentation or model	SE: Can Be Developed From: 51, 184, 778, 787, 856
■ Determine whether new information supports or weakens a model, and why	SE: Can Be Developed From: 184, 778, 787, 856
■ Use new information to make a prediction based on a model	SE: Can Be Developed From: 51, 184, 778, 787, 856
Ideas for Progress	
■ formulate hypotheses, predictions, or conclusions by comparing and contrasting several different sets of data from different experiments	SE: 51 TR: Lab Manual: 119-120
■ evaluate the merits of a conclusion based on the analysis of several sets of data	SE: Can Be developed From: 892
■ seek out new information that enhances or challenges their existing knowledge	SE: Can Be Developed From: 83 TR: Lab Manual: 198, 202, 250, 297, 317
Score Range - 33-36	
Interpretation of Data	
Standards	
■ Compare or combine data from two or more complex data presentations	TR: Lab Manual: 130-131, 192, 206-207, 235-236, 311-316
■ Analyze given information when presented with new, complex information	TR: Lab Manual: 297, 316
Scientific Investigation	
Standards	
■ Understand precision and accuracy issues	SE: 64-73 TR: Lab Manual: 42-43, 56, 121-126, 240
■ Predict how modifying the design or methods of an experiment will affect results	SE: 51 TR: Lab Manual: 44, 100, 152, 222-223, 266, 316
■ Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results	SE: 51, 149, 184, 374, 475 TR: Lab Manual: 198, 215, 231-236, 259-266

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Evaluation of Models, Inferences, and Experimental Results	
Standards	
<ul style="list-style-type: none"> ■ Select a complex hypothesis, prediction, or conclusion that is supported by two or more data presentations or models 	SE: 778 TR: Lab Manual: 208
<ul style="list-style-type: none"> ■ Determine whether given information supports or contradicts a complex hypothesis or conclusion, and why 	SE: 404 (Quick Lab) TR: Lab Manual: 208
http://www.act.org/standard/pdf/CRS.pdf	