



Glencoe

ARIZONA
Science Standards – High School
***Chemistry: Matter and Change* © 2005**

OBJECTIVES	PAGE REFERENCES
Strand 1: Inquiry Process	
Concept 1: Observations, Questions, and Hypotheses Formulate predictions, questions, or hypotheses based on observations. Evaluate appropriate resources.	
PO 1. Evaluate scientific information for relevance to a given problem. (See R09-S3C1, R10-S3C1, R11-S3C1, R12-S3C1)	SE: <i>Chemistry and Society</i> 80 #2 <i>Problem-Solving Lab</i> 191 <i>Everyday Chemistry</i> 234 #3 TWE: CJ 64, 105, 161, 386, 609, 825 P 675
PO 2. Develop questions from observations that transition into testable hypotheses.	SE: <i>MiniLab</i> 230, 439, 848 <i>ChemLab</i> 18-19, 108-109, 550-551, 862-863 <i>Discovery Lab</i> 385 TWE: A 109
PO 3. Formulate a testable hypothesis.	SE: <i>ChemLab</i> 18-19, 78-79, 202-203, 444-445, 520-521, 550-551, 862-863 <i>MiniLab</i> 439 TWE: A 109, 533
PO 4. Predict the outcome of an investigation based on prior evidence, probability, and/or modeling (not guessing or inferring).	SE: <i>ChemLab</i> 202-203, 410-411, 862-863 <i>Discovery Lab</i> 179 <i>Problem-Solving Lab</i> 155 TWE: A 218, 533 QD 168, 793, 859
Concept 2: Scientific Testing (Investigating and Modeling) Design and conduct controlled investigations.	
PO 1. Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.	SE: 14-16 <i>Problem-Solving Lab</i> 478 <i>Discovery Lab</i> 55 <i>ChemLab</i> 18 #4, 78 #2, 108 #7, 520 #2 TWE: A 392, 405 P 16
PO 2. Identify the resources needed to conduct an investigation.	SE: <i>Problem-Solving Lab</i> 478 <i>ChemLab</i> 627 #1 TWE: A 392, 409, 479, 542, 618 EX 400

OBJECTIVES	PAGE REFERENCES
<p>PO 3. Design an appropriate protocol (written plan of action) for testing a hypothesis:</p> <ul style="list-style-type: none"> • Identify dependent and independent variables in a controlled investigation. • Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes). • Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals (logs), charts, computers/calculators). 	<p>SE: <i>Problem-Solving Lab</i> 372, 478 <i>ChemLab</i> 18-19, 551 #6, 863 #6</p> <p>TWE: EX 11 P 364 A 392, 542, 618</p>
<p>PO 4. Conduct a scientific investigation that is based on a research design.</p>	<p>SE: <i>ChemLab</i> 18-19, 410-411, 688-689</p> <p>TWE: A 497, 542, 618 P 313, 364 EX 11</p>
<p>PO 5. Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers.</p>	<p>SE: <i>ChemLab</i> 18-19, 480-481, 688-689, 832-833</p> <p>TWE: P 101 A 533 MC 167 E 183 CDEV 195 CJ 430</p>
<p>Concept 3: Analysis, Conclusions, and Refinements Evaluate experimental design, analyze data to explain results and to propose further investigations. Design models.</p>	
<p>PO 1. Interpret data that show a variety of possible relationships between variables, including:</p> <ul style="list-style-type: none"> • positive relationship • negative relationship • no relationship 	<p>SE: <i>Problem-Solving Lab</i> 219, 288, 830, 860 <i>ChemLab</i> 862-863 <i>MiniLab</i> 539</p> <p>TWE: MC 167, 315 A 218 QD 224</p>
<p>PO 2. Evaluate whether investigational data support or do not support the proposed hypothesis.</p>	<p>SE: <i>MiniLab</i> 439 <i>ChemLab</i> 550-551</p> <p>TWE: DE 458-459</p>
<p>PO 3. Critique reports of scientific studies (e.g., published papers, student reports).</p>	<p>SE: <i>ChemLab</i> 19 #6, 79 #7, 551 #7</p> <p>TWE: E 99 CJ 781 A 824</p>
<p>PO 4. Evaluate the design of an investigation to identify possible sources of procedural error, including:</p> <ul style="list-style-type: none"> • sample size • trials • controls • analyses 	<p>SE: <i>ChemLab</i> 47 #6, 109 #7, 343 #4, 375 #9, 411 #8, 521 #7, 833 #7 <i>Problem-Solving Lab</i> 155, 372</p> <p>TWE: A 504</p>

OBJECTIVES	PAGE REFERENCES
PO 5. Design models (conceptual or physical) of the following to represent "real world" scenarios: <ul style="list-style-type: none"> • carbon cycle • water cycle • phase change • collisions 	SE: 850-851, 858-859 <i>Problem-Solving Lab</i> 533 TWE: A 406 P 850
PO 6. Use descriptive statistics to analyze data, including: <ul style="list-style-type: none"> • mean • frequency • range (See MHS-S2C1-10)	SE: <i>MiniLab</i> 102 <i>ChemLab</i> 480-481, 832-833 TWE: A 104
PO 7. Propose further investigations based on the findings of a conducted investigation.	SE: <i>ChemLab</i> 627 #1, 833 #1 TWE: A 411, 481, 583, 830, 860, 863
Concept 4: Communication Communicate results of investigations.	
PO 1. For a specific investigation, choose an appropriate method for communicating the results. (See W09-S3C2-01 and W10-S3C2-01)	SE: <i>Chemistry Online</i> 291, 762 <i>Chemistry and Society</i> 80 #1 TWE: DI 181 CDEV 189 E 103, 122, 200, 468
PO 2. Produce graphs that communicate data. (See MHS-S2C1-02)	SE: <i>Problem-Solving Lab</i> 390, 503 <i>MiniLab</i> 164, 539 <i>ChemLab</i> 550-551, 862-863 TWE: MC 167, 192 CU 819 A 218
PO 3. Communicate results clearly and logically.	SE: <i>Chemistry Online</i> 576 <i>Chemistry and Society</i> 80 #1 <i>How It Works</i> 864 #2 TWE: A 193, 203, 504, 618, 627, 819, 829
PO 4. Support conclusions with logical scientific arguments.	SE: <i>Problem-Solving Lab</i> 44, 424 <i>MiniLab</i> 125, 164 <i>Discovery Lab</i> 87 TWE: CU 826 A 58, 95, 162, 671
Strand 2: History and Nature of Science	
Concept 1: History of Science as a Human Endeavor Identify individual, cultural, and technological contributions to scientific knowledge.	
PO 1. Describe how human curiosity and needs have influenced science, impacting the quality of life worldwide.	SE: <i>Chemistry and Society</i> 20, 110 <i>Chemistry and Technology</i> 344, 768 <i>Everyday Chemistry</i> 412 TWE: EX 6, 17 CD 99 P 335
PO 2. Describe how diverse people and/or cultures, past and present, have made important contributions to scientific innovations.	SE: 87-97, 122-124, 127-134, 151-153, 806 <i>History Connection</i> 311 TWE: CJ 386, 517 CD 197 E 63

OBJECTIVES	PAGE REFERENCES
PO 3. Analyze how specific changes in science have affected society.	SE: <i>Chemistry and Society</i> 20, 110 <i>Chemistry and Technology</i> 344, 768 <i>How It Works</i> 204, 552 TWE: P 120 TS 110, 376 A 679
PO 4. Analyze how specific cultural and/or societal issues promote or hinder scientific advancements.	SE: <i>Everyday Chemistry</i> 730 <i>Chemistry and Society</i> 110 <i>Chemistry and Technology</i> 446 TWE: CJ 825
Concept 2: Nature of Scientific Knowledge Understand how science is a process for generating knowledge.	
PO 1. Specify the requirements of a valid, scientific explanation (theory), including that it be: <ul style="list-style-type: none"> • logical • subject to peer review • public • respectful of rules of evidence 	SE: 13, 87-91 <i>Chapter Assessment 22 #33</i> TWE: R 13 CU 13 IM 12 EX 89
PO 2. Explain the process by which accepted ideas are challenged or extended by scientific innovation.	SE: 10-13, 92-97, 122-123, 806 <i>Biology Connection</i> 701 <i>Chemistry and Technology</i> 446 TWE: A 11, 791 QD 88 CB 792
PO 3. Distinguish between pure and applied science.	SE: 14 <i>Section Assessment 17 #17</i> TWE: CJ 14 DI 15 R 17
PO 4. Describe how scientists continue to investigate and critically analyze aspects of theories.	SE: 97, 815-816, 826 <i>Chemistry and Technology</i> 344, 690 <i>Chemistry and Society</i> 110 <i>Problem-Solving Lab</i> 8
Strand 3: Science in Personal and Social Perspectives	
Concept 1: Changes in Environments Describe the interactions between human populations, natural hazards, and the environment.	
PO 1. Evaluate how the processes of natural ecosystems affect, and are affected by, humans.	SE: 845-849, 853, 859-860 <i>MiniLab</i> 848 <i>Problem-Solving Lab</i> 860 <i>Earth Science Connection</i> 457 TWE: CU 849 A 849 EX 675 CJ 502

OBJECTIVES	PAGE REFERENCES
PO 2. Describe the environmental effects of the following natural and/or human-caused hazards: <ul style="list-style-type: none"> • flooding • drought • earthquakes • fires • pollution • extreme weather 	SE: 190, 845-849, 853, 859-860 <i>Chemistry and Society</i> 80, 834 <i>Problem-Solving Lab</i> 860 TWE: TS 80, 834 CJ 502
PO 3. Assess how human activities (e.g., clear cutting, water management, tree thinning) can affect the potential for hazards.	SE: 190, 845-849, 853-854, 859-860 <i>How It Works</i> 552 <i>Chemistry and Society</i> 80 <i>Problem-Solving Lab</i> 860 TWE: TS 80 AC 652 EX 675
PO 4. Evaluate the following factors that affect the quality of the environment: <ul style="list-style-type: none"> • urban development • smoke • volcanic dust 	SE: 845-849, 853-854, 859-860 <i>Chemistry and Society</i> 80 <i>Problem-Solving Lab</i> 860 TWE: TS 80
PO 5. Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity.	SE: <i>How It Works</i> 552 <i>Chemistry Online</i> 853 TWE: CJ 740, 825 A 845 EX 675 P 859 AC 652
Concept 2: Science and Technology in Society Develop viable solutions to a need or problem.	
PO 1. Analyze the costs, benefits, and risks of various ways of dealing with the following needs or problems: <ul style="list-style-type: none"> • various forms of alternative energy • storage of nuclear waste • abandoned mines • greenhouse gases • hazardous wastes 	SE: 825-826 <i>Chemistry Online</i> 853 <i>Chemistry and Technology</i> 690 <i>Everyday Chemistry</i> 730 TWE: P 675, 859 CJ 825 TS 730
PO 2. Recognize the importance of basing arguments on a thorough understanding of the core concepts and principles of science and technology.	SE: <i>Problem-Solving Lab</i> 860 <i>Discovery Lab</i> 87 <i>How It Works</i> 270 #2, 376 #1, 522 #1 TWE: A 95, 845 TS 80 EX 158
PO 3. Support a position on a science or technology issue.	SE: <i>Chemistry and Society</i> 20, 110, 482, 834 <i>Chemistry Online</i> 830 TWE: A 510, 853 EX 196, 823

OBJECTIVES	PAGE REFERENCES
PO 4. Analyze the use of renewable and nonrenewable resources in Arizona: <ul style="list-style-type: none"> • water • land • soil • minerals • air 	SE: <i>Everyday Chemistry</i> 730 <i>ChemLab</i> 627 #1 TWE: P 467 EX 701 CJ 825
PO 5. Evaluate methods used to manage natural resources (e.g., reintroduction of wildlife, fire ecology).	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 SE: 121-125 <i>Real World BioChallenge</i> 88 <i>Problem-Solving Lab</i> 124 <i>Biology and Society</i> 600, 854
Concept 3: Human Population Characteristics Analyze factors that affect human populations.	
PO 1. Analyze social factors that limit the growth of a human population, including: <ul style="list-style-type: none"> • affluence • education • access to health care • cultural influences 	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 SE: 100-103
PO 2. Describe biotic (living) and abiotic (nonliving) factors that affect human populations.	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 Point out to students that humans are affected by abiotic factors. SE: 37-38, 52-55, 56-57, 65-66, 91-93, 96-99, 100-103
PO 3. Predict the effect of a change in a specific factor on a human population.	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 SE: <i>Section Assessment</i> 103 #5
Strand 5: Physical Science	
Concept 1: Structure and Properties of Matter Understand physical, chemical, and atomic properties of matter.	
PO 1. Describe substances based on their physical properties.	SE: 56-57, 155-158, 595-596 <i>Discovery Lab</i> 179 <i>ChemLab</i> 46-47, 170-171 TWE: A 65 QD 57 DI 228 P 57
PO 2. Describe substances based on their chemical properties.	SE: 57, 595-596 <i>ChemLab</i> 170-171, 300-301 <i>MiniLab</i> 184 TWE: QD 57, 168 A 65 DE 166-167

OBJECTIVES	PAGE REFERENCES
PO 3. Predict properties of elements and compounds using trends of the periodic table (e.g., metals, non-metals, bonding – ionic/covalent).	SE: 155-158, 163-169 <i>ChemLab</i> 170-171 <i>Problem-Solving Lab</i> 155, 288 TWE: A 155 DE 166-167 MC 167 QD 168
PO 4. Separate mixtures of substances based on their physical properties.	SE: 68-69, 725-726 <i>ChemLab</i> 78-79, 268-269 <i>MiniLab</i> 68 <i>Chemistry Online</i> 69 <i>Section Assessment</i> 69 #16 & #19 <i>Chapter Assessment</i> 82-83 #47 & #51 TWE: CJ 67 A 725
PO 5. Describe the properties of electric charge and the conservation of electric charge.	SE: <i>Discovery Lab</i> 87 TWE: QD 92, 118
PO 6. Describe the following features and components of the atom: <ul style="list-style-type: none"> • protons • neutrons • electrons • mass • number and type of particles • structure • organization 	SE: 92-101 <i>Section Assessment</i> 97 #7 <i>Chapter Assessment</i> 112 #36 & #38 TWE: A 97, 101 RS 111 DE 92-93 IM 100
PO 7. Describe the historical development of models of the atom.	SE: 87-97, 117-118, 127-134 <i>Section Assessment</i> 97 #10 TWE: EX 89, 97 CJ 94 RS 111 P 133 R 97
PO 8. Explain the details of atomic structure (e.g., electron configuration, energy levels, isotopes).	SE: 98-104, 127-139 <i>MiniLab</i> 102 <i>Chapter Assessment</i> 147 #78 TWE: A 101, 104, 139 QD 129 CJ 133
Concept 2: Motions and Forces Analyze relationships between forces and motion.	
PO 1. Determine the rate of change of a quantity (e.g., rate of erosion, rate of reaction, rate of growth, velocity).	SE: 529-531, 817 <i>MiniLab</i> 539, 819 <i>ChemLab</i> 410-411, 550-551 TWE: QD 530 CJ 530 A 411
PO 2. Analyze the relationships among position, velocity, acceleration, and time: <ul style="list-style-type: none"> • graphically • mathematically 	See Glencoe's <i>Physical Science</i> © 2005 pages 38-44.

OBJECTIVES	PAGE REFERENCES
PO 3. Explain how Newton's 1 st Law applies to objects at rest or moving at constant velocity.	See Glencoe's <i>Physical Science</i> © 2005 pages 54-55.
PO 4. Using Newton's 2 nd Law of Motion, analyze the relationships among the net force acting on a body, the mass of the body, and the resulting acceleration: <ul style="list-style-type: none"> • graphically • mathematically 	See Glencoe's <i>Physical Science</i> © 2005 pages 68-70.
PO 5. Use Newton's 3 rd Law to explain forces as interactions between bodies (e.g., a table pushing up on a vase that is pushing down on it; an athlete pushing on a basketball as the ball pushes back on her).	See Glencoe's <i>Physical Science</i> © 2005 pages 83-84.
PO 6. Analyze the two-dimensional motion of objects by using vectors and their components.	See Glencoe's <i>Physics: Principles and Problems</i> © 2005 SE: 120-125, 131-135, 147-152, 153-156 <i>Launch Lab</i> 119 <i>Physics Lab</i> 136-137, 160-161 TWE: HSS 148 ICE 121 IM 122
PO 7. Give an example that shows the independence of the horizontal and vertical components of projectile motion.	See Glencoe's <i>Physical Science</i> © 2005 pages 79-80.
PO 8. Analyze the general relationships among force, acceleration, and motion for an object undergoing uniform circular motion.	See Glencoe's <i>Physical Science</i> © 2005 pages 81-82.
PO 9. Represent the force conditions required to maintain static equilibrium.	SE: <i>Physics Connection</i> 563
PO 10. Describe the nature and magnitude of frictional forces.	See Glencoe's <i>Physical Science</i> © 2005 pages 70-72.
PO 11. Using the Law of Universal Gravitation, predict how the gravitational force will change when the distance between two masses changes or the mass of one of them changes.	See Glencoe's <i>Physical Science</i> © 2005 page 76.
PO 12. Using Coulomb's Law, predict how the electrical force will change when the distance between two point charges changes or the charge of one of them changes.	TWE: TS 130 Also see Glencoe's <i>Physical Science</i> © 2005 pages 193-194.
PO 13. Analyze the impulse required to produce a change in momentum.	See Glencoe's <i>Physical Science</i> © 2005 pages 86-87.
PO 14. Quantify interactions between objects to show that the total momentum is conserved in both collision and recoil situations.	See Glencoe's <i>Physical Science</i> © 2005 pages 87-88.

OBJECTIVES	PAGE REFERENCES
Concept 3: Conservation of Energy and Increase in Disorder Understand ways that energy is conserved, stored, and transferred.	
PO 1. Describe the following ways in which energy is stored in a system: <ul style="list-style-type: none"> • mechanical • electrical • chemical • nuclear 	SE: 489-491, 665-666, 821-823 <i>ChemLab</i> 520-521, 688-689 TWE: DE 492-493 VL 666 A 826
PO 2. Describe various ways in which energy is transferred from one system to another (e.g., mechanical contact, thermal conduction, electromagnetic radiation).	SE: 118-120, 495 <i>Chemistry Online</i> 493 <i>ChemLab</i> 862-863 TWE: DI 228 P 120
PO 3. Recognize that energy is conserved in a closed system.	SE: 490 TWE: CJ 64
PO 4. Calculate quantitative relationships associated with the conservation of energy.	Conservation of energy is discussed on: SE: 490 TWE: CJ 64
PO 5. Analyze the relationship between energy transfer and disorder in the universe (2 nd Law of Thermodynamics).	SE: 514-516 <i>Section Assessment</i> 519 #42-44 TWE: E 516 EX 514 QD 515
PO 6. Distinguish between heat and temperature.	SE: 386, 491, 496 <i>ChemLab</i> 520-521 <i>Chapter Assessment</i> 524 #46 TWE: R 494 IM 493
PO 7. Explain how molecular motion is related to temperature and phase changes.	SE: 386, 404-408 <i>Problem-Solving Lab</i> 533 <i>ChemLab</i> 410-411 <i>Chapter Assessment</i> 414 #31 TWE: A 391, 406 RF 406 R 408 DE 62-63
Concept 4: Chemical Reactions Investigate relationships between reactants and products in chemical reactions.	
PO 1. Apply the law of conservation of matter to changes in a system.	SE: 63-65, 283, 354-356 <i>Chapter Assessment</i> 378 #37 TWE: CJ 355 QD 64, 279
PO 2. Identify the indicators of chemical change, including formation of a precipitate, evolution of a gas, color change, absorption or release of heat energy.	SE: 63, 277-278 <i>ChemLab</i> 78-79 <i>Discovery Lab</i> 277, 353 TWE: CJ 278

OBJECTIVES	PAGE REFERENCES
PO 3. Represent a chemical reaction by using a balanced equation.	SE: 278-291, 354-356 <i>ChemLab</i> 300-301 <i>Discovery Lab</i> 489 TWE: A 282, 283 P 279 IM 281 QD 354 CU 355
PO 4. Distinguish among the types of bonds (i.e., ionic, covalent, metallic, hydrogen bonding).	SE: 215-220, 228-229, 241-247 <i>ChemLab</i> 232-233 TWE: A 231 DE 248-249 CJ 217, 243 P 215 VL 228
PO 5. Describe the mole concept and its relationship to Avogadro's number.	SE: 309-312 <i>Discovery Lab</i> 309 <i>Section Assessment</i> 312 #6 & #8 TWE: QD 310 CU 312 R 312
PO 6. Solve problems involving such quantities as moles, mass, molecules, volume of a gas, and molarity using the mole concept and Avogadro's number.	SE: 311-327, 430-433, 436-438, 464-465 <i>Problem-Solving Lab</i> 314 <i>MiniLab</i> 439 TWE: A 312, 317, 323, 435
PO 7. Predict the properties (e.g., melting point, boiling point, conductivity) of substances based upon bond type.	SE: 217-220, 228-229, 266 <i>Problem-Solving Lab</i> 219 <i>ChemLab</i> 232-233 TWE: A 231, 266 DI 228 VL 228 R 231
PO 8. Quantify the relationships between reactants and products in chemical reactions (e.g., stoichiometry, equilibrium, energy transfers).	SE: 353-363 <i>MiniLab</i> 362 <i>ChemLab</i> 374-375 <i>Chapter Assessment</i> 379-380 #61-75 TWE: A 360, 363 R 355, 363 CU 355 QD 360
PO 9. Predict the products of a chemical reaction using types of reactions (e.g., synthesis, decomposition, replacement, combustion).	SE: 284-291, 635-637, 762-764 <i>ChemLab</i> 300-301 <i>Discovery Lab</i> 635 <i>MiniLab</i> 786 TWE: CJ 287 P 284 CB 286 A 291

OBJECTIVES	PAGE REFERENCES
PO 10. Explain the energy transfers within chemical reactions using the law of conservation of energy.	SE: 498-500 <i>Chapter Assessment 524 #57</i> TWE: QD 498 CU 500 P 499
PO 11. Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.	SE: 536-541, 569-574 <i>MiniLab 539, 573</i> <i>ChemLab 550-551</i> <i>Chemistry and Technology 588</i> TWE: DE 536-537 CJ 538 A 541 R 574
PO 12. Compare the nature, behavior, concentration, and strengths of acids and bases.	SE: 595-607, 617-621 <i>Discovery Lab 595</i> <i>ChemLab 626-627</i> <i>How It Works 628</i> <i>MiniLab 604</i> <i>Chemistry Online 599</i> TWE: IM 603 QD 597 A 618
PO 13. Determine the transfer of electrons in oxidation/reduction reactions.	SE: 635-643 <i>Discovery Lab 635</i> <i>MiniLab 638</i> <i>ChemLab 654-655</i> TWE: R 643 CJ 638 DE 636-637
Concept 5: Interactions of Energy and Matter Understand the interactions of energy and matter.	
PO 1. Describe various ways in which matter and energy interact (e.g., photosynthesis, phase change).	SE: 404-408, 683-687, 793, 827-831 <i>ChemLab 18-19, 862-863</i> <i>MiniLab 230</i> TWE: A 406 QD 61, 827
PO 2. Describe the following characteristics of waves: <ul style="list-style-type: none"> • wavelength • frequency • period • amplitude 	SE: 118-121 <i>Section Assessment 126 #1</i> TWE: QD 120 CJ 119
PO 3. Quantify the relationships among the frequency, wavelength, and the speed of light.	SE: 119, 121 <i>Chapter Assessment 147 #65-69, #71, & #76</i>
PO 4. Describe the basic assumptions of kinetic molecular theory.	SE: 385-386, 419-420 TWE: CJ 386

OBJECTIVES	PAGE REFERENCES
PO 5. Apply kinetic molecular theory to the behavior of matter (e.g., gas laws).	SE: 386-389, 404-408, 421-427 <i>ChemLab</i> 108-109 <i>Chapter Assessment</i> 414 #32 TWE: A 406 DE 420-421 QD 425 IM 426
PO 6. Analyze calorimetric measurements in simple systems and the energy involved in changes of state.	SE: 404-408, 496-498, 502-504 <i>MiniLab</i> 505 <i>ChemLab</i> 520-521 <i>Problem-Solving Lab</i> 503 <i>Section Assessment</i> 500 #19 TWE: A 406, 497 EX 505
PO 7. Explain the relationship between the wavelength of light absorbed or released by an atom or molecule and the transfer of a discrete amount of energy.	SE: 122-128 <i>ChemLab</i> 142-143 <i>Problem-Solving Lab</i> 130 <i>Chapter Assessment</i> 147 #71 TWE: BM 123 A 128, 130 DE 136-137 DI 127
PO 8. Describe the relationship among electric potential, current, and resistance in an ohmic system.	See Glencoe's <i>Physical Science</i> © 2005 pages 204-205.
PO 9. Quantify the relationships among electric potential, current, and resistance in an ohmic system.	See Glencoe's <i>Physical Science</i> © 2005 pages 204-205.

Codes Used for TWE Pages

A	Assessment
AC	Applying Chemistry
BM	Building a Model
CB	Content Background
CD	Cultural Diversity
CDEV	Concept Development
CJ	Chemistry Journal
CU	Check for Understanding
DE	Demonstration
DI	Differentiated Instruction
E	Enrichment
EX	Extension
IM	Identifying Misconceptions
MC	Math in Chemistry
P	Portfolio
QD	Quick Demo
R	Reteach
RF	Reinforcement
RS	Review Strategies
TS	Teaching Strategies
VL	Visual Learning