

Glencoe/McGraw-Hill

***Chemistry: Matter and Change* ©2005**

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correlated to

Alabama

Course of Study for Chemistry

Grades 9-12

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CORRELATED TO
ALABAMA COURSE OF STUDY FOR CHEMISTRY

GRADES 9–12

OBJECTIVES	PAGE REFERENCES
1. Differentiate among pure substances, mixtures, elements, and compounds.	
<ul style="list-style-type: none"> • Distinguishing between intensive and extensive properties of matter 	SE: 56–57 TWE: 56–57
<ul style="list-style-type: none"> • Contrasting properties of metals, nonmetals, and metalloids 	SE: 155, 158, 211, 228–230, 287–288 TWE: 155, 158, 211, 228–230, 287–288
<ul style="list-style-type: none"> • Distinguishing between homogeneous and heterogeneous forms of matter 	SE: 67 TWE: 67
2. Describe the structure of carbon chains, branched chains, and rings.	
	SE: 187–188, 719–720, 768 TWE: 187–188, 719–720, 768
3. Use the periodic table to identify periodic trends, including atomic radii, ionization energy, electronegativity, and energy levels. (AHSGE Standard II: 3)	
<ul style="list-style-type: none"> • Utilizing electron configurations, Lewis dot structures, and orbital notations to write chemical formulas 	SE: 137–138, 140–141, 243–246, 252–258 TWE: 137–138, 140–141, 243–246, 252–258
<ul style="list-style-type: none"> • Calculating the number of protons, neutrons, and electrons in an isotope 	SE: 100–101, 102, 104 TWE: 100–101, 102, 104
<ul style="list-style-type: none"> • Utilizing benchmark discoveries to describe the historical development of atomic structure, including photoelectric effect, absorption, and emission spectra of elements 	SE: 89–90, 94–96, 123–124, 127–128, 129–130, 131–132, 142–143 TWE: 89–90, 94–96, 123–124, 127–128, 129–130, 131–132, 142–143

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OBJECTIVES	PAGE REFERENCES
4. Describe solubility in terms of energy changes associated with the solution process. (AHSGE Standard II: 2)	
<ul style="list-style-type: none"> • Using solubility curves to interpret saturation levels 	SE: 457–461 TWE: 457–461
<ul style="list-style-type: none"> • Explaining the conductivity of electrolytic solutions 	SE: 683–687, 688–689 TWE: 683–687, 688–689
<ul style="list-style-type: none"> • Describing acids and bases in terms of strength, concentration, pH, and neutralization reactions 	SE: 595–599, 602–605, 607, 610–614, 615–616, 617–621 TWE: 595–599, 602–605, 607, 610–614, 615–616, 617–621
<ul style="list-style-type: none"> • Describing factors that affect the rate of solution 	SE: 456–457 TWE: 456–457
<ul style="list-style-type: none"> • Solving problems involving molarity, including solution preparation and dilution 	SE: 464–468 TWE: 464–468
5. Use the kinetic theory to explain states of matter, phase changes, solubility, and chemical reactions.	
SE: 385–386, 419–420 TWE: 385–386, 419–420	
6. Solve stoichiometric problems involving relationships among the number of particles, moles, and masses of reactants and products in a chemical reaction. (AHSGE Standard II: 4)	
<ul style="list-style-type: none"> • Predicting ionic and covalent bond types and products given known reactants 	SE: 215–220, 232–233, 241–247 TWE: 215–220, 232–233, 241–247
<ul style="list-style-type: none"> • Assigning oxidation numbers for individual atoms of monatomic and polyatomic ions 	SE: 222, 637, 641–643, 644–646, 647, 654–655 TWE: 222, 637, 641–643, 644–646, 647, 654–655

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OBJECTIVES	PAGE REFERENCES
<ul style="list-style-type: none"> Identifying the nomenclature of ionic compounds, binary compounds, and acids 	SE: 225–227, 248–249, 250–251 TWE: 225–227, 248–249, 250–251
<ul style="list-style-type: none"> Classifying chemical reactions as composition, decomposition, single replacement, or double replacement (AHSGE Standard II: 4) 	SE: 284–287 TWE: 284–287
<ul style="list-style-type: none"> Determining empirical or molecular formulas for a compound using percent composition data 	SE: 331–334, 336–337 TWE: 331–334, 336–337
7. Explain behavior of ideal gases in terms of pressure, volume, temperature, and number of particles using Charles’s law, Boyle’s law, Gay-Lussac’s law, the combined gas law, and the ideal gas law.	SE: 421–422, 423–424, 426–427, 428–429, 434–439, 444–446 TWE: 421–422, 423–424, 426–427, 428–429, 434–439, 444–446
8. Distinguish among endothermic and exothermic physical and chemical changes. (AHSGE Standard II: 4)	
<ul style="list-style-type: none"> Calculating temperature change by using specific heat 	SE: 492–495, 496–498 TWE: 492–495, 496–498
<ul style="list-style-type: none"> Using Le Châtelier’s principle to explain changes in physical and chemical equilibrium 	SE: 569–574, 584–585, 586–587 TWE: 569–574, 584–585, 586–587
9. Distinguish between chemical and nuclear reactions. (AHSGE Standard II: 4)	
<ul style="list-style-type: none"> Identifying atomic and subatomic particles, including mesons, quarks, tachyons, and baryons 	SE: 92–94, 96–97 TWE: 92–94, 96–97
<ul style="list-style-type: none"> Calculating the half-life of selective radioactive isotopes 	SE: 817–818, 819 TWE: 817–818, 819

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OBJECTIVES	PAGE REFERENCES
• Identifying types of radiation and their properties	SE: 105–107, 829–831 TWE: 105–107, 829–831
• Contrasting fission and fusion	SE: 822–823, 826 TWE: 822–823, 826
• Describing carbon-14 decay as a dating method	SE: 820 TWE: 820

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