



Texas Essential Knowledge and Skills

Correlation of Performance Descriptions	Student Edition Pages
1 The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.	
1(A) The student is expected to demonstrate safe practices during field and laboratory investigations.	3, 15, 16, 18, 19, 25, 28, 46, 47, 55, 68, 78, 79, 87, 102, 108, 109, 117, 125, 142, 151, 170, 171, 179, 184, 202, 203, 211, 230, 232, 233, 241, 261, 268, 269, 277, 295, 300, 329, 342, 353, 362, 374, 375, 385, 401, 410, 411, 419, 439, 444, 445, 453, 474, 480, 481, 489, 505, 520, 521, 529, 539, 550, 551, 559, 573, 586, 587, 595, 603, 626, 627, 635, 638, 654, 655, 663, 681, 688, 689, 697, 715, 728, 729, 737, 751, 766, 767, 775, 786, 796, 797, 805, 832, 833, 841, 848, 862, 863
1(B) The student is expected to make wise choices in the use and conservation of resources and the disposal or recycling of materials.	382, 383, 495, 846, 847, 853, 854, 859, 860, 867
2 The student uses scientific methods during field and laboratory investigations.	
2(A) The student is expected to plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology.	18, 19, 22, 23, 46, 47, 55, 78, 79, 108, 109, 142, 170, 171, 202, 203, 230, 232, 233, 268, 269, 300, 306, 342, 343, 372, 374, 375, 439, 444, 445, 478, 480, 481, 520, 521, 533, 550, 551, 585, 586, 587, 626, 627, 654, 688, 728, 729, 766, 767, 775, 796, 797, 833, 862, 863
2(B) The student is expected to collect data and make measurements with precision.	15, 18, 19, 24, 45, 47, 50–53, 78, 79, 102, 109, 125, 142, 143, 170, 171, 179, 184, 202, 203, 211, 232, 233, 268, 269, 295, 300, 301, 309, 329, 342, 343, 362, 374, 375, 410, 411, 444, 445, 453, 474, 480, 481, 489, 505, 520, 521, 539, 550, 551, 559, 573, 586, 587, 626, 627, 635, 654, 655, 689, 728, 729, 766, 767, 775, 786, 796, 797, 819, 832, 833, 862, 863
2(C) The student is expected to express and manipulate chemical quantities using scientific conventions and mathematical procedures such as dimensional analysis, scientific notation, and significant figures.	26–47, 50–53, 64, 65, 75–77, 83, 84, 142, 143, 164, 310–341, 343, 346–351, 354–363, 365–373, 378–383, 422, 425, 426, 429, 431, 432, 437, 438, 441–443, 445, 448–451, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 474, 475, 478, 480, 481, 491, 493, 494, 496–500, 502–505, 508, 510–512, 517–521, 524–527, 530, 531, 545, 547, 555, 557, 586, 587, 626, 627, 688, 689, 728, 729, 766, 767, 831–833, 871–873, 876–884, 886, 889–902, 911
2(D) The student is expected to organize, analyze, evaluate, make inferences, and predict trends from data.	18, 19, 43–45, 47, 49, 52, 53, 60, 79, 102, 109, 143, 155–157, 164, 170, 171, 177, 233, 277, 288, 301, 337, 343, 349, 351, 353, 372, 374, 375, 390, 410, 411, 444, 445, 480, 481, 503, 527, 533, 539, 550, 551, 556, 626, 627, 655, 661, 689, 773, 796, 797, 803, 819, 830, 833, 862, 863, 871, 872, 878–880, 882–884, 886, 894–897, 900, 905, 907
2(E) The student is expected to communicate valid conclusions.	3, 15, 18, 19, 47, 79, 87, 125, 143, 151, 155, 164, 170, 171, 177, 184, 202, 203, 211, 230, 233, 268, 269, 288, 295, 349, 385, 401, 410, 411, 419, 439, 453, 474, 489, 503, 505, 521, 529, 551, 559, 573, 583, 586, 587, 595, 603, 624, 626, 627, 635, 638, 655, 663, 681, 689, 728, 729, 737, 751, 766, 767, 786, 841, 848, 907
3 The student uses critical thinking and scientific problem solving to make informed decisions.	
3(A) The student is expected to analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.	10–14, 21, 22, 23, 87–90, 112, 127, 152, 154, 174, 435, 436, 439, 552, 789, 790, 806, 807, 834, 845, 859, 860, 867
3(B) The student is expected to make responsible choices in selecting everyday products and services using scientific information.	80, 189, 208, 350, 365, 380, 382, 383, 424, 521, 628, 690, 730, 764–765, 768, 827, 864



Texas Essential Knowledge and Skills

Correlation of Performance Descriptions	Student Edition Pages
3(C) The student is expected to evaluate the impact of research on scientific thought, society, and the environment.	4, 5, 6, 11–15, 17, 18, 22–23, 26, 45, 48, 52, 80, 88–91, 95, 110, 118, 122–124, 126, 128–132, 172, 190, 201, 204, 208, 270, 341, 344, 376, 412, 446, 482, 495, 541, 588, 656, 677, 686, 690, 696, 698, 701, 724, 730, 761–764, 768, 780, 815, 828–831, 834, 838, 846, 853, 854, 860, 864, 867, 868
3(D) The student is expected to describe the connection between chemistry and future careers.	9, 41, 56, 106, 110, 136, 160, 182, 222, 250, 297, 328, 354, 400, 421, 460, 499, 548, 569, 599, 641, 676, 702, 703, 762, 794, 828, 845
3(E) The student is expected to research and describe the history of chemistry and contributions of scientists.	4–6, 10–12, 14, 15, 18, 30, 84, 87–98, 105, 112–113, 117, 118, 122–124, 127–132, 140, 146, 151–154, 158, 174, 176, 180, 190, 192, 207, 208, 264, 385, 421, 423, 428, 563, 569, 677, 684, 686, 697, 698, 701, 710, 719, 722, 726, 727, 734, 789, 790, 808, 826, 838
4 The student knows the characteristics of matter.	
4(A) The student is expected to differentiate between physical and chemical properties of matter.	8, 9, 22–23, 27, 28, 48, 50, 52, 56–58, 60, 78, 79, 82–85, 170, 171, 270, 387, 476, 477, 478, 479
4(B) The student is expected to analyze examples of solids, liquids, and gases to determine their compressibility, structure, motion of particles, shape and volume.	58, 59, 60, 61, 83, 386–409, 410, 411, 414–417, 419–422, 426, 427, 430–436, 446, 448, 449, 451, 873, 878–880, 886, 896, 902, 908, 909
4(C) The student is expected to investigate and identify properties of mixtures and pure substances.	7, 8, 55–57, 66–71, 74–77, 78, 79, 80, 82–85, 151, 158, 170–171, 177, 180–204, 206–209, 213, 214, 218–220, 230, 231, 236–239, 243, 244, 268–270, 272–275, 300–302, 304, 306, 307, 310, 312–320, 329, 385, 394, 395, 397–403, 410–412, 414–417, 453–456, 459, 471–473, 476–481, 484–486, 492–494, 496, 497, 509, 524–527, 594–617, 623–625, 628, 630–633, 647, 697, 700, 708, 709, 714–718, 722, 723, 725–729, 732, 735, 775–778, 781–785, 787–789, 791, 800–803, 843, 844, 855, 857, 858, 866–869, 872, 875, 876, 878–881, 883, 884, 896, 900, 906–909, 911
4(D) The student is expected to describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior.	70, 72, 73, 83–85, 98–101, 104, 112–115, 153–164, 170, 171, 174–177, 179–187, 189, 192, 194, 196, 197, 201, 206–209, 213–216, 222, 227, 236–239, 263, 264, 265, 550, 551, 637, 641, 856, 873, 874
5 The student knows that energy transformations occur during physical or chemical changes in matter.	
5(A) The student is expected to identify changes in matter, determine the nature of the change, and examine the forms of energy involved.	4, 5, 18, 19, 59–65, 74, 78–79, 82–85, 105–107, 112–115, 122–126, 131, 144, 146–149, 181, 193, 195, 196, 198, 199, 202, 203, 206–209, 212, 215, 218–220, 228, 229, 230–233, 236–239, 246, 277–281, 284–293, 296, 297, 299–302, 304–307, 353, 376, 381–383, 412, 455, 456, 457, 458, 460, 484, 486, 489–490, 495–497, 502, 514–519, 520–528, 535–537, 539–552, 554–557, 559–576, 581–583, 590–593, 636, 639, 644, 650, 656, 658–661, 665–668, 673, 690, 692, 694, 715, 725, 782, 785, 786, 792, 793, 795, 796–797, 800–803, 805, 807, 809, 811, 812, 814, 815, 817, 820–833, 836–839, 842–845, 847, 849, 850, 855, 857–859, 861, 866, 868, 869, 872, 873, 875–878, 880–886
5(B) The student is expected to identify and measure energy transformation and exchanges involved in chemical reactions.	247, 423–424, 488, 498, 501–503, 506, 507, 509–514, 517–520, 521, 524–527, 532–536, 538, 539, 541, 548, 554–557, 573, 588, 664–666, 669–672, 674–687, 688–689, 692–695, 792–795, 800–803, 879, 881–885
5(C) The student is expected to measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases.	18–19, 62, 230, 302, 396, 397, 404–411, 414–417, 419, 424–430, 444–445, 448–451, 472, 473, 492–495, 502–505, 515, 516, 518, 519, 520–521, 522–524, 527, 725, 726, 850, 851, 859, 862–863, 866–869, 879–881



Texas Essential Knowledge and Skills

Correlation of Performance Descriptions	Student Edition Pages
6 The student knows that atomic structure is determined by nuclear composition, allowable electron cloud, and subatomic particles.	
6(A) The student is expected to describe the existence and properties of subatomic particles.	92–104, 112–115, 127–141, 143, 144, 146–149, 159–163, 165–169, 174–177, 204, 211, 216, 219, 220, 222, 228, 229, 235, 236, 238, 807–812, 836, 837, 839, 872–874, 886
6(B) The student is expected to analyze stable and unstable isotopes of an element to determine the relationship between the isotope’s stability and its application.	86, 106, 107, 112, 113, 115, 808–812, 818–820, 832–834, 837–839, 886
6(C) The student is expected to summarize the historical development of the periodic table to understand the concept of periodicity.	70, 71, 83, 84, 151–154, 163–169, 174–177
7 The student knows the variables that influence the behavior of gases.	
7(A) The student is expected to describe interrelationships among temperature, particle number, pressure, and volume of gases contained within a closed system.	388–392, 414–417, 418, 420–438, 440–443, 445, 448–451, 460, 565, 572, 574, 589, 590, 591, 592, 878–880, 883, 897, 898
7(B) The student is expected to illustrate the data obtained from investigations with gases in a closed system and determine if the data are consistent with the Universal Gas Law.	439, 445, 450, 879, 880
8 The student knows how atoms form bonds to acquire a stable arrangement of electrons.	
8(A) The student is expected to identify characteristics of atoms involved in chemical bonding.	140, 141, 211–217, 222–229, 236–238, 241–243, 245, 246, 247, 252–259, 261–267, 272–275, 532–534, 637, 643, 656, 698, 710, 711, 719–721, 723, 732, 768, 776, 777, 873–875, 884–886
8(B) The student is expected to investigate and compare the physical and chemical properties of ionic and covalent compounds.	211–212, 217–220, 232, 233, 237, 238, 242–244, 247, 290, 292, 304, 339, 340, 482, 644, 646, 650, 651, 653, 658, 660, 708, 709, 710, 714–721, 725–727, 732, 735, 736–773, 798, 856, 874–877, 881, 885, 886
8(C) The student is expected to compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances.	188, 217, 218, 221, 224–226, 228–231, 237, 238, 245, 246, 248–262, 264–267, 272–275, 320, 321, 325, 338, 401, 482, 698, 699, 701–724, 727, 732–735, 737–773, 775–791, 798, 800–803, 868, 875, 886
8(D) The student is expected to describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds.	266–270, 274, 435, 436, 743–746, 748, 749, 778, 779, 786, 788–790, 800, 875
9 The student knows the processes, effects, and significance of nuclear fission and nuclear fusion.	
9(A) The student is expected to compare fission and fusion reactions in terms of the masses of the reactants and products and the amount of energy released in the nuclear reactions.	821–826, 836–838
9(B) The student is expected to investigate radioactive elements to determine half-life.	806, 817, 818, 820, 837–839, 886, 905
9(C) The student is expected to evaluate the commercial use of nuclear energy and medical uses of radioisotopes.	818, 824–829, 831, 886



Texas Essential Knowledge and Skills

Correlation of Performance Descriptions	Student Edition Pages
9(D) The student is expected to evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes.	824, 825, 838
10 The student knows common oxidation-reduction reactions.	
10(A) The student is expected to identify oxidation-reduction processes.	634–661, 663–665, 668–687, 689, 692–695, 884, 885
10(B) The student is expected to demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals.	679–682, 687, 692–694
11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.	
11(A) The student is expected to identify common elements and compounds using scientific nomenclature.	71, 81, 83, 181, 221, 223–227, 237, 238, 247, 248–251, 338, 738–740, 743–752, 763, 770–773, 814, 868, 873–877, 886
11(B) The student is expected to demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions.	100, 101, 103, 104, 106, 107, 111, 112, 115, 224–225, 227, 250–258, 262, 272–276, 278–282, 284–287, 289, 291–294, 295, 296–299, 301, 306–307, 344, 350, 440–443, 449, 450, 501, 506–508, 513, 546–549, 555, 556, 596–625, 628–633, 649, 741, 742, 752–760, 762–764, 765, 771, 772, 776, 782, 785, 793–795, 801–802, 803, 805, 811–816, 820, 837–839, 844, 845, 849, 868, 874–877, 882–886
11(C) The student is expected to explain and balance chemical and nuclear equations using number of atoms, masses, and charge.	281, 282, 284–291, 293–295, 296, 298, 299, 301, 304–307, 350, 356–363, 365–373, 375–376, 378–383, 440–443, 449–451, 506–508, 510–512, 525, 526, 556, 559–564, 566–572, 574–576, 588–593, 635, 636, 638–649, 650–653, 655, 658–663, 668–672, 685, 689, 692–695, 813–814, 816, 835, 837, 839, 848, 861, 868, 875–878, 883–886
12 The student knows the factors that influence the solubility of solutes in a solvent.	
12(A) The student is expected to demonstrate and explain effects of temperature and the nature of solid solutes on the solubility of solids.	454–461, 484, 485, 486, 577–580, 584, 585, 709, 880, 881, 883
12(B) The student is expected to develop general rules for solubility through investigations with aqueous solutions.	290, 291, 292–294, 295, 454, 456–461, 483–487, 577–585, 587, 876, 880, 881, 883
12(C) The student is expected to evaluate the significance of water as a solvent in living organisms and in the environment.	453, 624, 625, 850–854, 867
13 The student knows relationships among the concentration, electrical conductivity, and colligative properties of a solution.	
13(A) The student is expected to compare unsaturated, saturated, and supersaturated solutions.	457–461, 462–470, 484, 485, 486, 880, 881, 883
13(B) The student is expected to interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water.	471–475, 484, 485, 486, 487, 880, 881, 885



Texas Essential Knowledge and Skills

Correlation of Performance Descriptions	Student Edition Pages
13(C) The student is expected to measure and compare the rates of reaction of a solid reactant in solutions of varying concentration.	550, 551, 882
14 The student knows the properties and behavior of acids and bases.	
14(A) The student is expected to analyze and measure common household products using a variety of indicators to classify the products as acids or bases.	595–597, 619–622, 630–631, 749, 750, 884
14(B) The student is expected to demonstrate the electrical conductivity of acids and bases.	602, 603, 604, 630
14(C) The student is expected to identify the characteristics of a neutralization reaction.	295, 617–623, 626–627, 628, 631–632, 849, 877, 883, 884
14(D) The student is expected to describe effects of acids and bases on an ecological system.	600, 622, 847–849, 866–867
15 The student knows factors involved in chemical reactions.	
15(A) The student is expected to verify the law of conservation of energy by evaluating the energy exchange that occurs as a consequence of a chemical reaction.	490, 491, 498–501, 506–514, 516–519, 524–527, 538, 555, 595, 666–672, 675, 689, 692–693, 695, 881, 882, 885
15(B) The student is expected to relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.	529–535, 537–545, 548–557, 588, 592, 792, 798, 800, 802, 882



Correlation to Performance Descriptions

Chemistry: Matter and Change		
Contents	Pages	Texas Essential Knowledge and Skills
Chapter 1 Introduction to Chemistry		
1.1 The Stories of Two Chemicals	2–6	1(A), 2(E), 3(C), 3(E), 5(A)
1.2 Chemistry and Matter	7–9	3(D), 4(A), 4(C)
1.3 Scientific Methods	10–13	3(A), 3(C), 3(E)
1.4 Scientific Research	14–23	1(A), 2(A), 2(B), 2(D), 2(E), 3(A), 3(C), 3(E), 4(A), 5(A), 5(C)
Chapter 2 Data Analysis		
2.1 Units of Measurement	24–30	1(A), 2(B), 2(C), 3(C), 3(E), 4(A)
2.2 Scientific Notation and Dimensional Analysis	31–35	2(C)
2.3 How reliable are measurements?	36–42	2(C), 2(D)
2.4 Representing Data	43–53	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(C), 4(A)
Chapter 3 Matter—Properties and Changes		
3.1 Properties of Matter	54–60	1(A), 2(A), 2(D), 3(D), 4(A), 4(B), 4(C), 5(A)
3.2 Changes in Matter	61–65	2(C), 4(B), 5(A), 5(C)
3.3 Mixtures of Matter	66–69	1(A), 4(C)
3.4 Elements and Compounds	70–85	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 3(C), 3(E), 4(A), 4(B), 4(C), 4(D), 5(A), 6(C), 11(A)
Chapter 4 The Structure of the Atom		
4.1 Early Theories of Matter	86–91	1(A), 2(E), 3(A), 3(C), 3(E)
4.2 Subatomic Particles and the Nuclear Atom	92–97	3(C), 3(E), 6(A)
4.3 How Atoms Differ	98–104	1(A), 2(B), 2(D), 3(E), 4(D), 6(A), 11(B)
4.4 Unstable Nuclei and Radioactive Decay	105–115	1(A), 2(A), 2(B), 2(D), 3(A), 3(C), 3(D), 3(E), 4(D), 5(A), 6(A), 6(B), 11(B)
Chapter 5 Electrons in Atoms		
5.1 Light and Quantized Energy	116–126	1(A), 2(B), 2(E), 3(C), 3(E), 5(A)
5.2 Quantum Theory and the Atom	127–134	3(A), 3(C), 3(E), 5(A), 6(A)
5.3 Electron Configurations	135–149	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(D), 3(E), 5(A), 6(A), 8(A)
Chapter 6 The Periodic Table and Periodic Law		
6.1 Development of the Modern Periodic Table	150–158	1(A), 2(D), 2(E), 3(A), 3(E), 4(C), 4(D), 6(C)
6.2 Classification of the Elements	159–162	3(D), 4(D), 6(A)
6.3 Periodic Trends	163–177	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(A), 3(C), 3(E), 4(A), 4(C), 4(D), 6(A), 6(C)



Correlation to Performance Descriptions

Chemistry: Matter and Change		
Contents	Pages	Texas Essential Knowledge and Skills
Chapter 7 The Elements		
7.1 Properties of s-Block Elements	178–185	1(A), 2(B), 2(E), 3(D), 3(E), 4(C), 4(D), 5(A)
7.2 Properties of p-Block Elements	186–196	3(B), 3(C), 3(E), 4(C), 4(D), 5(A), 8(C)
7.3 Properties of d-Block and f-Block Elements	197–209	1(A), 2(A), 2(B), 2(E), 3(B), 3(C), 3(E), 4(C), 4(D), 5(A), 6(A)
Chapter 8 Ionic Compounds		
8.1 Forming Chemical Bonds	210–214	1(A), 2(B), 2(E), 4(C), 4(D), 5(A), 6(A), 8(A), 8(B)
8.2 The Formation and Nature of Ionic Bonds	215–220	4(C), 4(D), 5(A), 6(A), 8(A), 8(B), 8(C), 11(B)
8.3 Names and Formulas of Ionic Compounds	221–227	3(D), 4(D), 6(A), 8(A), 8(C), 11(A), 11(B)
8.4 Metallic Bonds and Properties of Metals	228–239	1(A), 2(A), 2(B), 2(D), 2(E), 4(C), 4(D), 5(A), 5(C), 6(A), 8(A), 8(B), 8(C), 11(A)
Chapter 9 Covalent Bonding		
9.1 The Covalent Bond	240–247	1(A), 4(C), 5(A), 5(B), 8(A), 8(B), 8(C), 11(A)
9.2 Naming Molecules	248–251	3(D), 8(C), 11(A)
9.3 Molecular Structures	252–258	8(A), 8(C), 11(B)
9.4 Molecular Shape	259–262	1(A), 8(A), 8(C), 11(B)
9.5 Electronegativity and Polarity	263–275	1(A), 2(A), 2(B), 2(E), 3(C), 3(E), 4(A), 4(C), 4(D), 8(A), 8(C), 8(D), 11(B)
Chapter 10 Chemical Reactions		
10.1 Reactions and Equations	276–283	1(A), 2(D), 5(A), 11(B), 11(C)
10.2 Classifying Chemical Reactions	284–291	2(D), 2(E), 5(A), 8(B), 11(B), 11(C), 12(B)
10.3 Reactions in Aqueous Solutions	292–307	1(A), 2(A), 2(B), 2(D), 2(E), 3(D), 4(C), 5(A), 5(C), 8(B), 11(B), 11(C), 12(B), 14(C)
Chapter 11 The Mole		
11.1 Measuring Matter	308–312	2(B), 2(C), 4(C)
11.2 Mass and the Mole	313–319	2(C), 4(C)
11.3 Moles of Compounds	320–327	2(C), 4(C), 8(C)
11.4 Empirical and Molecular Formulas	328–337	1(A), 2(B), 2(C), 2(D), 3(D), 4(C)
11.5 The Formula for a Hydrate	338–351	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 3(C), 8(B), 8(C), 11(A), 11(B), 11(C)
Chapter 12 Stoichiometry		
12.1 What is stoichiometry?	352–357	1(A), 2(C), 2(D), 3(D), 5(A), 11(C)
12.2 Stoichiometric Calculations	358–363	1(A), 2(B), 2(C), 11(C)
12.3 Limiting Reactants	364–369	2(C), 3(B), 11(C)
12.4 Percent Yield	370–383	1(A), 1(B), 2(A), 2(B), 2(C), 2(D), 3(B), 3(C), 5(A), 11(C)



Correlation to Performance Descriptions

Chemistry: Matter and Change		
Contents	Pages	Texas Essential Knowledge and Skills
Chapter 13 States of Matter		
13.1 Gases	384–392	1(A), 2(D), 2(E), 3(E), 4(A), 4(B), 4(C), 7(A)
13.2 Forces of Attraction	393–395	4(B), 4(C)
13.3 Liquids and Solids	396–403	1(A), 2(E), 3(D), 4(B), 4(C), 5(C), 8(C)
13.4 Phase Changes	404–417	1(A), 2(B), 2(D), 2(E), 3(C), 4(B), 4(C), 5(A), 5(C), 7(A)
Chapter 14 Gases		
14.1 The Gas Laws	418–427	1(A), 2(C), 2(E), 3(B), 3(D), 3(E), 4(B), 5(B), 5(C), 7(A)
14.2 The Combined Gas Law and Avogadro's Principle	428–433	2(C), 3(E), 4(B), 5(C), 7(A)
14.3 The Ideal Gas Law	434–439	1(A), 2(A), 2(C), 2(E), 3(A), 4(B), 7(A), 7(B), 8(D)
14.4 Gas Stoichiometry	440–451	1(A), 2(A), 2(B), 2(C), 2(D), 3(C), 4(B), 5(C), 7(A), 7(B), 11(B), 11(C)
Chapter 15 Solutions		
15.1 What are solutions?	452–461	1(A), 2(B), 2(C), 2(E), 3(D), 4(C), 5(A), 7(A), 12(A), 12(B), 12(C), 13(A)
15.2 Solution Concentration	462–470	2(C), 13(A)
15.3 Colligative Properties of Solutions	471–475	1(A), 2(B), 2(C), 2(E), 4(C), 5(C), 13(B)
15.4 Heterogeneous Mixtures	476–487	1(A), 2(A), 2(B), 2(C), 2(D), 3(C), 4(A), 4(C), 5(A), 8(B), 8(C), 12(A), 12(B), 13(A), 13(B)
Chapter 16 Energy and Chemical Change		
16.1 Energy	488–495	1(A), 1(B), 2(B), 2(C), 2(E), 3(C), 4(C), 5(A), 5(C), 15(A)
16.2 Heat in Chemical Reactions and Processes	496–500	2(C), 3(D), 4(C), 5(A), 5(B), 11(B), 15(A)
16.3 Thermochemical Equations	501–505	1(A), 2(B), 2(C), 2(D), 2(E), 5(A), 5(B), 5(C), 11(B), 15(A)
16.4 Calculating Enthalpy Change	506–512	2(C), 4(C), 5(B), 11(B), 11(C), 15(A)
16.5 Reaction Spontaneity	513–527	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 4(C), 5(A), 5(B), 5(C), 11(B), 11(C), 15(A)
Chapter 17 Reaction Rates		
17.1 A Model for Reaction Rates	528–535	2(A), 2(C), 2(D), 2(E), 5(A), 5(B), 8(A), 15(B)
17.2 Factors Affecting Reaction Rates	536–541	1(A), 2(B), 2(D), 3(C), 5(A), 5(B), 15(A), 15(B)
17.3 Reaction Rate Laws	542–545	2(C), 3(D), 5(A), 15(B)
17.4 Instantaneous Reaction Rates and Reaction Mechanisms	546–557	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(A), 5(A), 5(B), 11(B), 11(C), 13(C), 15(A), 15(B)



Correlation to Performance Descriptions

Chemistry: Matter and Change		
Contents	Pages	Texas Essential Knowledge and Skills
Chapter 18 Chemical Equilibrium		
18.1 Equilibrium: A State of Dynamic Balance	558–568	1(A), 2(E), 3(E), 5(A), 7(A), 11(C)
18.2 Factors Affecting Chemical Equilibrium	569–574	1(A), 2(B), 2(E), 3(D), 3(E), 5(A), 5(B), 7(A), 11(C)
18.3 Using Equilibrium Constants	575–593	1(A), 2(A), 2(B), 2(C), 2(E), 3(C), 5(A), 5(B), 7(A), 11(C), 12(A), 12(B), 15(B)
Chapter 19 Acids and Bases		
19.1 Acids and Bases: An Introduction	594–601	1(A), 2(E), 3(D), 4(C), 11(B), 14(A), 14(B), 14(D), 15(A)
19.2 Strengths of Acids and Bases	602–607	1(A), 2(E), 4(C), 11(B), 14(B)
19.3 What is pH?	608–616	4(C), 11(B)
19.4 Neutralization	617–633	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 4(C), 11(B), 12(C), 14(A), 14(B), 14(C), 14(D)
Chapter 20 Redox Reactions		
20.1 Oxidation and Reduction	634–643	1(A), 2(B), 2(E), 3(D), 4(D), 5(A), 8(A), 10(A), 11(C)
20.2 Balancing Redox Reactions	644–649	4(C), 5(A), 8(B), 10(A), 11(B), 11(C)
20.3 Half-Reactions	650–661	1(A), 2(A), 2(B), 2(D), 2(E), 3(C), 5(A), 8(A), 8(B), 10(A), 11(C)
Chapter 21 Electrochemistry		
21.1 Voltaic Cells	662–672	1(A), 2(E), 5(A), 5(B), 10(A), 11(C), 15(A)
21.2 Types of Batteries	673–682	1(A), 2(E), 3(C), 3(D), 3(E), 5(A), 5(B), 10(A), 10(B), 15(A)
21.3 Electrolysis	683–695	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 3(C), 3(E), 5(A), 5(B), 10(A), 10(B), 11(C), 15(A)
Chapter 22 Hydrocarbons		
22.1 Alkanes	696–705	1(A), 3(C), 3(D), 3(E), 4(C), 8(A), 8(C)
22.2 Cyclic Alkanes and Alkane Properties	706–710	3(D), 3(E), 4(C), 8(A), 8(B), 8(C), 12(A)
22.3 Alkenes and Alkynes	711–716	1(A), 4(C), 5(A), 8(A), 8(B), 8(C)
22.4 Isomers	717–721	3(E), 4(C), 8(A), 8(B), 8(C)
22.5 Aromatic Hydrocarbons and Petroleum	722–735	1(A), 2(A), 2(B), 2(C), 2(E), 3(B), 3(C), 3(E), 4(C), 5(A), 5(C), 8(A), 8(B), 8(C)
Chapter 23 Substituted Hydrocarbons and Their Reactions		
23.1 Functional Groups	736–742	1(A), 2(E), 8(B), 8(C), 11(B)
23.2 Alcohols, Amines, and Ethers	743–746	8(B), 8(C), 8(D), 11(A)
23.3 Carbonyl Compounds	747–753	1(A), 2(E), 8(B), 8(C), 8(D), 11(A), 11(B), 14(A)
23.4 Reactions of Organic Compounds	754–760	8(B), 8(C), 11(B)
23.5 Polymers	761–773	1(A), 2(A), 2(B), 2(C), 2(D), 2(E), 3(B), 3(C), 3(D), 8(A), 8(B), 8(C), 11(A), 11(B)



Correlation to Performance Descriptions

Chemistry: Matter and Change		
Contents	Pages	Texas Essential Knowledge and Skills
Chapter 24 The Chemistry of Life		
24.1 Proteins	774–780	1(A), 2(A), 2(B), 3(C), 4(C), 8(A), 8(C), 8(D), 11(B)
24.2 Carbohydrates	781–783	4(C), 5(A), 8(C), 11(B)
24.3 Lipids	784–787	1(A), 2(B), 2(E), 4(C), 5(A), 8(C), 8(D), 11(B)
24.4 Nucleic Acids	788–791	3(A), 3(E), 4(C), 8(C), 8(D)
24.5 Metabolism	792–803	1(A), 2(A), 2(B), 2(D), 3(D), 4(C), 5(A), 5(B), 8(B), 8(C), 8(D), 11(B), 15(B)
Chapter 25 Nuclear Chemistry		
25.1 Nuclear Radiation	804–809	1(A), 3(A), 3(E), 5(A), 6(A), 6(B), 9(B), 11(B)
25.2 Radioactive Decay	810–814	5(A), 6(A), 6(B), 11(A), 11(B), 11(C)
25.3 Transmutation	815–820	2(B), 2(D), 3(C), 5(A), 6(B), 9(B), 9(C), 11(B), 11(C)
25.4 Fission and Fusion of Atomic Nuclei	821–826	3(E), 5(A), 9(A), 9(C), 9(D)
25.5 Applications and Effects of Nuclear Reactions	827–839	1(A), 2(A), 2(B), 2(C), 2(D), 3(A), 3(B), 3(C), 3(D), 3(E), 5(A), 6(A), 6(B), 9(A), 9(B), 9(D), 11(B), 11(C)
Chapter 26 Chemistry in the Environment		
26.1 Earth's Atmosphere	840–849	1(A), 1(B), 2(A), 2(E), 3(A), 3(C), 3(D), 4(C), 5(A), 11(B), 11(C), 14(C), 14(D)
26.2 Earth's Water	850–854	1(B), 3(C), 5(A), 5(C)
26.3 Earth's Crust	855–857	4(C), 4(D), 5(A), 8(B)
26.4 Cycles in the Environment	858–869	1(A), 1(B), 2(A), 2(B), 2(D), 3(A), 3(B), 3(C), 4(C), 5(A), 5(C), 8(C), 11(A), 11(B), 11(C), 12(C), 14(D)
Appendix A	871–886	2(C), 2(D), 4(B), 4(C), 4(D), 5(A), 5(B), 5(C), 6(A), 6(B), 7(A), 7(B), 8(A), 8(B), 8(C), 8(D), 9(B), 9(C), 10(A), 11(A), 11(B), 11(C), 12(A), 12(B), 13(A), 13(B), 13(C), 14(A), 14(C), 15(A), 15(B)
Appendix B	887–911	2(C), 2(D), 2(E), 4(B), 4(C), 7(A), 9(B)