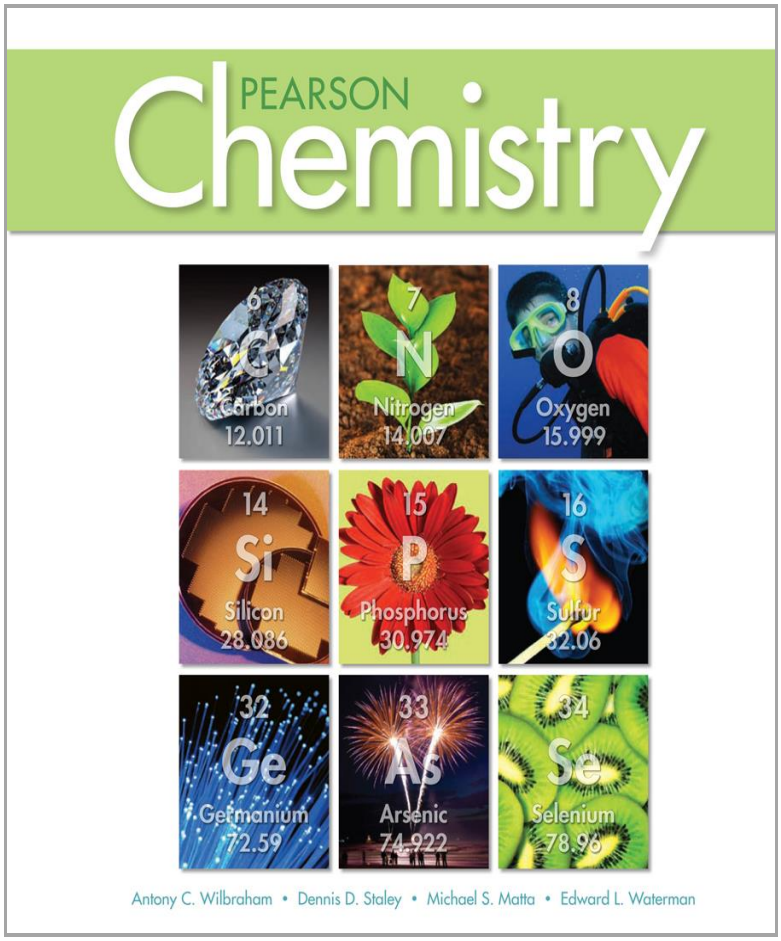
A Correlation of



©2017

to the

Georgia Standards of Excellence Chemistry

Pearson

Introduction

The following document demonstrates how ***Pearson Chemistry* ©2017** supports the Georgia Standards for Excellence in Chemistry. Correlation references are to the Student Edition (SE) and Teacher Edition (TE).

Pearson Chemistry combines proven and tested content with cutting-edge digital support and hands-on learning opportunities. This program provides you with everything you need to engage and motivate your students, as well as the tools to support the varied types of learners in your classroom.

Pearson Chemistry is built on a learning model that connects curriculum, instruction, and assessment to the "Big Ideas" of chemistry that develops deep understanding.

Pearson Chemistry provides all of the problem-solving and math support that students need to be successful in the course, with ample opportunity for practice both in the Student Edition and in the program's digital resources.

Pearson Chemistry helps you meet the unique learning styles of each student in your classroom with a variety of resources. A variety of assessment opportunities helps you monitor student progress ensure student success on high-stakes tests.

Pearsonchem.com provides cutting-edge digital content that engages students and teachers – anytime, anywhere, with numerous practice opportunities and visual support, including interactive art and animations. Online tutors step students through chemistry and math problems, expanding learning beyond the classroom.

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
SC1. Obtain, evaluate, and communicate information about the use of the modern atomic theory and periodic law to explain the characteristics of atoms and elements.	
a. Evaluate merits and limitations of different models of the atom in relation to relative size, charge, and position of protons, neutrons, and electrons in the atom.	**SE/TE:** 102-104, 105-109, 128-132 Lesson Check: 104, 109, 132 Quick Lab: 109 Chemistry & You: 133 Assessment: 152 **TE Only:** Teach for Understanding: 101, 127 Check for Understanding: 103, 107 Explain: 103, 106, 129, 130, 131 Teacher Demo: 106, 107, 129 Differentiated Instruction: 106, 130 Extend: 107, 132
b. Construct an argument to support the claim that the proton (and not the neutron or electron) defines the element's identity.	**SE/TE:** 112-114 **TE Only:** Explain: 113 Differentiated Instruction: 113
c. Construct an explanation based on scientific evidence of the production of elements heavier than hydrogen by nuclear fusion.	**SE/TE:** 891 Chemistry & You: 891
d. Construct an explanation that relates the relative abundance of isotopes of a particular element to the atomic mass of the element.	**SE/TE:** 114-115, 116-119 Lesson Check: 119 Small-Scale Lab: 120 **TE Only:** Check for Understanding: 114, 116 Explain: 115, 116, 118

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
e. Construct an explanation of light emission and the movement of electrons to identify elements.	**SE/TE:** 138-145 Assessment: 152-153 Quick Lab: 142 Small-Scale Lab: 149 **TE Only:** Explain: 139, 140, 143, 145 Differentiated Instruction: 140 Class Activity: 141
f. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms (i.e. including atomic radii, ionization energy, and electronegativity).	**SE/TE:** 46-47, 160-162, 164-166, 167-173, 174-182 Lesson Check: 166, 173, 182 Quick Lab: 180 Small-Scale Lab: 184 Assessment: 186-190 STEM Activity - Periodic Patterns: 906 **TE Only:** Explain: 46, 161, 162, 164, 166, 168, 170, 172, 175, 177, 178, 179, 182 Teacher Demo: 161, 171, 177, 178, 179 Differentiated Instruction: 162, 165, 169, 171, 177, 179 Check for Understanding: 164, 170, 176, 178 Class Activity: 165, 176 Explore: 181 Performance Tasks: 185
g. Develop and use models, including electron configuration of atoms and ions, to predict an element's chemical properties.	**SE/TE:** 170-173, 194-199, 209-210 Lesson Check: 173, 199, 212 Small-Scale Lab: 200 Assessment: 214-216 **TE Only:** Explain: 170, 172, 195, 196, 198 Check for Understanding: 170, 196 Teacher Demo: 171, 195 Differentiated Instruction: 171, 195, 197 Class Activity: 197

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
SC2. Obtain, evaluate, and communicate information about the chemical and physical properties of matter resulting from the ability of atoms to form bonds.	
a. Plan and carry out an investigation to gather evidence to compare the physical and chemical properties at the macroscopic scale to infer the strength of intermolecular and intramolecular forces.	**SE/TE:** 250-251 Small-Scale Lab: 254 **TE Only:** Explain: 251 Differentiated Instruction: 251 Teacher Demo: 252
b. Construct an argument by applying principles of inter- and intra- molecular forces to identify substances based on chemical and physical properties.	**SE/TE:** 222, 225, 247-250, 250-253 Lesson Check: 253 (#32) Assessment: 257 (#68) Small-Scale Lab: 254 **TE Only:** Explain: 223, 248, 251 Differentiated Instruction: 223, 251 Class Activity: 249 Teacher Demo: 250, 252 Check for Understanding: 252
c. Construct an explanation about the importance of molecular-level structure in the functioning of designed materials. (*Clarification statement:* Examples could include why electrically conductive materials are often made of metal, flexible but durable materials are made up of long chained molecules, and pharmaceuticals are designed to interact with specific receptors.)	**SE/TE:** 211-212, 750-751, 764, 806-807, 814, 819, 822-823, 846 Lesson Check: 212 (#21) Chemistry & You: 239 Quick Lab: 750 **TE Only:** Teacher Demo: 211 Differentiated Instruction: 211 Extend: 212, 751 Performance Tasks: 753

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
d. Develop and use models to evaluate bonding configurations from nonpolar covalent to ionic bonding. (*Clarification statement*: VSEPR theory is not addressed in this element.)	**SE/TE:** 201-206, 209-212, 222-225, 226-234, 247 Quick Lab: 207, 238 Lesson Check: 207, 225, 238 Assessment: 214, 215 (#47-51), 256 (#39, 46) **TE Only:** Check for Understanding: 202, 205, 210, 229, 232 Explain: 202, 223, 228, 230, 232 Class Activity: 203, 204, 205, 227, 229 Differentiated Instruction: 204, 227, 231 Teacher Demo: 210, 211, 234, 235 Performance Tasks: 213
e. Ask questions about chemical names to identify patterns in IUPAC nomenclature in order to predict chemical names for ionic (binary and ternary), acidic, and inorganic covalent compounds.	**SE/TE:** 274-275, 278, 281-282, 285-288 Quick Lab: 279 Lesson Check: 279 (#25), 283 (#30), 288 (#41-45) Assessment: 298 (#72, 73, 76), 299 (#82-84) **TE Only:** Class Activity: 274, 275 Explain: 275, 281
SC3. Obtain, evaluate, and communicate information about how the Law of Conservation of Matter is used to determine chemical composition in compounds and chemical reactions.	
a. Use mathematics and computational thinking to balance chemical reactions (i.e., synthesis, decomposition, single replacement, double replacement, and combustion) and construct an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.	**SE/TE:** 356-367 Lesson Check: 367 Assessment: 377 (#38-44), 378 (#49-52, 54-55, 58) **TE Only:** Explain: 357, 359, 361, 362, 363 Check for Understanding: 358, 362 Differentiated Instruction: 357, 364 Teacher Demo: 360, 362, 365, 366
b. Plan and carry out an investigation to determine that a new chemical has been formed by identifying indicators of a chemical reaction (e.g., precipitate formation, gas evolution, color change, water production, and changes in energy to the system).	**SE/TE:** Small-Scale Lab: 374 **TE Only:** Teacher Demo: 360, 362, 365, 366 Small-Scale Lab: 374

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
c. Use mathematics and computational thinking to apply concepts of the mole and Avogadro's number to conceptualize and calculate • percent composition • empirical/molecular formulas • mass, moles, and molecules relationships • molar volumes of gases	**SE/TE:** 306-315, 317-323, 325-333 Lesson Check: 315, 323, 333 Small-Scale Lab: 324 Quick Lab: 328 Chemistry & You: 316 Assessment: 338-341 **TE Only:** Explain: 307, 308, 309, 310, 311, 312, 318, 319, 320, 322, 323, 326, 331, 332, 333 Differentiated Instruction: 308, 313, 330 Check for Understanding: 310, 314, 332 Teacher Demo: 313, 321 Class Activity: 314, 330
d. Use mathematics and computational thinking to identify and solve different types of reaction stoichiometry problems (i.e., mass to moles, mass to mass, moles to moles, and percent yield) using significant figures. (*Clarification statement:* For elements c and d emphasis is on use of mole ratios to compare quantities of reactants or products and on assessing students' use of mathematical thinking and not on memorization and rote application of problem-solving techniques.)	**SE/TE:** 384-389, 390-398, 400-406, 408 Lesson Check: 389, 398, 408 Chemistry & You: 397, 407 Small-Scale Lab: 399 Quick Lab: 404 Assessment: 411-415 **TE Only:** Explain: 385, 386, 388, 391, 393, 394, 401, 402, 406 Class Activity: 396, 403, 405 Differentiated Instruction: 386, 396, 401, 402 Teacher Demo: 387, 392, 401 Check for Understanding: 387, 394 Chemistry & You: 397, 407
e. Plan and carry out an investigation to demonstrate the conceptual principle of limiting reactants.	**SE/TE:** Quick Lab: 404 **TE Only:** Teacher Demo: 401 Class Activity: 403

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
SC4. Obtain, evaluate, and communicate information about how to refine the design of a chemical system by applying engineering principles to manipulate the factors that affect a chemical reaction.	
a. Plan and carry out an investigation to provide evidence of the effects of changing concentration, temperature, and pressure on chemical reactions. (*Clarification statement:* Pressure should not be tested experimentally.)	**SE/TE:** 598-601 Quick Lab: 600 Lesson Check: 601 (#2) Assessment: 638 (#56, 57) STEM Activity - Rate of Change During a Reaction: 908 **TE Only:** Explain: 598, 601 Teacher Demo: 599
b. Construct an argument using collision theory and transition state theory to explain the role of activation energy in chemical reactions. (*Clarification statement:* Reaction coordinate diagrams could be used to visualize graphically changes in energy (direction flow and quantity) during the progress of a chemical reaction.)	**SE/TE:** 596-597 Lesson Check: 601 (#4) Assessment: 638 (#54, 55) **TE Only:** Explain: 596 Use Visuals: 597
c. Construct an explanation of the effects of a catalyst on chemical reactions and apply it to everyday examples.	**SE/TE:** 596-597, 600-601 Lesson Check: 601 (#5) STEM Activity - Producing Sulfuric Acid: 909 **TE Only:** Explain: 596, 601 Use An Analogy: 596
d. Refine the design of a chemical system by altering the conditions that would change forward and reverse reaction rates and the amount of products at equilibrium. (*Clarification statement:* Emphasis is on the application of LeChâtelier's principle.)	**SE/TE:** 612-615 Lesson Check: 620 (#25) **TE Only:** Explain: 612, 613 Teacher Demo: 612, 615 Check for Understanding: 614 Chemistry & You: 614 Differentiated Instruction: 615

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
SC5. Obtain, evaluate, and communicate information about the Kinetic Molecular Theory to model atomic and molecular motion in chemical and physical processes.	
a. Plan and carry out an investigation to calculate the amount of heat absorbed or released by chemical or physical processes. (*Clarification statement:* Calculation of the enthalpy, heat change, and Hess's Law are addressed in this element.)	**SE/TE:** 562-567, 578-579 Lesson Check: 568, 582 (#38, 41) Small-Scale Lab: 583 **TE Only:** Teacher Demo: 557, 566 Check for Understanding: 563, 579 Class Activity: 563 Explain: 564, 565, 579
b. Construct an explanation using a heating curve as evidence of the effects of energy and intermolecular forces on phase changes.	**SE/TE:** 569-575 Quick Lab: 571 Lesson Check: 575 **TE Only:** Class Activity: 570 Explain: 572, 573, 574 Teacher Demo: 572 Check for Understanding: 572 Differentiated Instruction: 573
c. Develop and use models to quantitatively, conceptually, and graphically represent the relationships between pressure, volume, temperature, and number of moles of a gas.	**SE/TE:** 450-454, 456-463, 464-466, 467-468 Lesson Check: 454, 463, 468 Quick Lab: 467 Assessment: 480-484 **TE Only:** Explain: 451, 452, 453, 454, 457, 458, 460, 461, 462, 465, 468 Teacher Demo: 452, 458 Differentiated Instruction: 455, 458, 460 Class Activity: 460

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
SC6. Obtain, evaluate, and communicate information about the properties that describe solutions and the nature of acids and bases.	
a. Develop a model to illustrate the process of dissolving in terms of solvation versus dissociation.	**SE/TE:** 494-495, 496-497, 664-665 Lesson Check: 501 (#10, 11, 13) **TE Only:** Explain: 495, 665 Differentiated Instruction: 495, 665 Check for Understanding: 496
b. Plan and carry out an investigation to evaluate the factors that affect the rate at which a solute dissolves in a specific solvent.	**SE/TE:** 518-519, 520-521 Lesson Check: 524 (#3, 5, 8) Assessment: 548 (#54) **TE Only:** Explain: 520, 521 Check for Understanding: 520 Differentiated Instruction: 521 Teacher Demo: 522
c. Use mathematics and computational thinking to evaluate commercial products in terms of their concentrations (i.e., molarity and percent by mass).	**SE/TE:** 525-531 Lesson Check: 531 Chemistry & You: 533 Assessment: 548 **TE Only:** Explain: 526, 528, 529, 530 Class Activity: 527, 528 Teacher Demo: 530
d. Communicate scientific and technical information on how to prepare and properly label solutions of specified molar concentration.	**SE/TE:** 525 (Figure 16.8), 528 (Figure 16.10) Small-Scale Lab: 545 **TE Only:** Class Activity: 527, 528 Explain: 529 Teacher Demo: 530

Georgia Standards of Excellence Chemistry	Pearson Chemistry ©2017
e. Develop and use a model to explain the effects of a solute on boiling point and freezing point.	**SE/TE:** 534-537, 540-544 Lesson Check: 537, 544 Assessment: 548-549 **TE Only:** Explain: 535, 537, 542 Class Activity: 536 Check for Understanding: 536, 542
f. Use mathematics and computational thinking to compare, contrast, and evaluate the nature of acids and bases in terms of percent dissociation, hydronium ion concentration, and pH. (*Clarification statement:* Understanding of the mathematical relationship between negative logarithm of the hydrogen concentration and pH is not expected in this element. Only a conceptual understanding of pH as related to acid/basic conditions is needed.)	**SE/TE:** 651, 653, 656, 660-661, 664-669 Lesson Check: 662 (#18-21), 669 (#27, 28) Quick Lab: 662 Small-Scale Lab: 670 STEM Activity - Producing Sulfuric Acid: 909 **TE Only:** Explain: 654, 656, 665, 666, 667 Extend: 655 Teacher Demo: 660 Differentiated Instruction: 660, 665, 666
g. Ask questions to evaluate merits and limitations of the Arrhenius and Bronsted-Lowry models of acid and bases.	**SE/TE:** 646-651 Lesson Check: 652 (#3, 4) Assessment: 684 (#52) **TE Only:** Explain: 647, 648, 649, 650, 651 Teacher Demo: 647 Extend: 648 Differentiated Instruction: 648, 650 Check for Understanding: 649, 651
h. Plan and carry out an investigation to explore acid-base neutralization.	**SE/TE:** 672-675 **TE Only:** Teacher Demo: 674 Check for Understanding: 674