

**Side-by-Side Comparison of the Texas Educational Knowledge and Skills (TEKS)
and Louisiana Grade Level Expectations (GLEs)**

SCIENCE: Chemistry

TEKS	Comments	Louisiana GLE
(Chem.1) Scientific Processes. The student, for at least 40% of instructional time, conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.		
(Chem.1.A) demonstrate safe practices during field and laboratory investigations;	<i>Approximate</i>	SI GLE 10. Given a description of an experiment, identify appropriate safety measures (SI-H-A7)
(Chem.1.B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.	<i>Approximate</i>	Chem GLE 47. Assess environmental issues related to the storage, containment, and disposal of wastes associated with energy production and use (PS-H-G4)
(Chem.2) Scientific Processes. The student uses scientific methods during field and laboratory investigations.		
(Chem.2.A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology;	<i>Approximate</i>	SI GLE GLE 1. Write a testable question or hypothesis when given a topic (SI-H-A1) SI GLE GLE 3. Plan and record step-by-step procedures for a valid investigation, select equipment and materials, and identify variables and controls (SI-H-A2) SI GLE GLE 4. Conduct an investigation that includes multiple display data appropriately (SI-H-A2) SI GLE GLE 6. Use technology when appropriate to enhance laboratory investigations and presentations of findings (SI-H-A3)
(Chem.2.B) collect data and make measurements with precision;	<i>Approximate</i>	Chem GLE 1. Convert metric system units involving length, mass, volume, and time using dimensional analysis (i.e., factor-label method) (PS-H-A1) Chem GLE 2. Differentiate between accuracy and precision and evaluate percent error (PS-H-A1) Chem GLE 3. Determine the significant figures based on precision of measurement for stated quantities (PS-H-A1)
(Chem.2.C) express and manipulate chemical quantities using scientific conventions and mathematical procedures such as dimensional analysis, scientific notation, and significant figures;	<i>Approximate</i>	Chem GLE 1. Convert metric system units involving length, mass, volume, and time using dimensional analysis (i.e., factor-label method) (PS-H-A1)

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		Chem GLE 3. Determine the significant figures based on precision of measurement for quantities (PS-H-A1) Chem GLE 4. Use scientific notation to express large and small numbers (PS-H-A1)
(Chem.2.D) organize, analyze, evaluate, make inferences, and predict trends from data;	<i>Implied</i>	SI GLE GLE 5. Utilize mathematics, organizational tools, and graphing skills to solve problems (SI-H-A3) SI GLE GLE 9. Write and defend a conclusion based on logical analysis of experimental data (SI-H-A6) (SI-H-A2) SI GLE GLE 11. Evaluate selected theories based on supporting scientific evidence (SI-H-B1) SI GLE GLE 15. Analyze the conclusion from an investigation by using data to determine its validity (SI-H-B4)
(Chem.2.E) communicate valid conclusions.	<i>Implied</i>	SI GLE GLE 7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations) (SI-H-A4) SI GLE GLE 9. Write and defend a conclusion based on logical analysis of experimental data (SI-H-A6) (SI-H-A2)
(Chem.3) Scientific Processes. The student uses critical thinking and scientific problem solving to make informed decisions.		Science as Inquiry The Abilities Necessary to Do Scientific Inquiry
(Chem.3.A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;	<i>Implied</i>	SI GLE GLE 11. Evaluate selected theories based on supporting scientific evidence (SI-H-B1) SI GLE GLE 12. Cite evidence that scientific investigations are conducted for many different reasons (SI-H-B2) SI GLE GLE 13. Identify scientific evidence that has caused modifications in previously accepted theories (SI-H-B2) SI GLE GLE 15. Analyze the conclusion from an investigation by using data to determine its validity (SI-H-B4) SI GLE 16. Use the following rules of evidence to examine experimental results: <ul style="list-style-type: none"> • (a) Can an expert's technique or theory be tested, has it been tested, or is it simply a subjective, conclusive approach that cannot be reasonably assessed for reliability? • (b) Has the technique or theory been subjected to peer review and

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		publication? • (c) What is the known or potential rate of error of the technique or theory when applied? • (d) Were standards and controls applied and maintained? • (e) Has the technique or theory been generally accepted in the scientific community? (SI-H-B5) (SI-H-B1) (SI-H-B4)
(Chem.3.B) make responsible choices in selecting everyday products and services using scientific information;	<i>Not specifically addressed in LA GLEs</i>	
(Chem.3.C) evaluate the impact of research on scientific thought, society, and the environment;	<i>Implied</i>	SI GLE 14. Cite examples of scientific advances and emerging technologies and how they affect society (e.g., MRI, DNA in forensics) (SI-H-B3)
(Chem.3.D) describe the connection between chemistry and future careers;	<i>Not specifically addressed in LA GLEs</i>	
(Chem.3.E) research and describe the history of chemistry and contributions of scientists.	<i>Implied</i>	Chem GLE 8. Analyze the development of the modern atomic theory from a historical perspective (PS-H-B1)
(Chem.4) Science Concepts. The student knows the characteristics of matter.		The Structure and Properties of Matter
(Chem.4.A) differentiate between physical and chemical properties of matter;	<i>Implied (Partially addressed in PS GLE 11 in Physical Science, Grade 9.)</i>	Chem GLE 15. Predict the physical and chemical properties of an element based only on its location in the periodic table (PS-H-C2) Chem GLE 17. Use the periodic table to compare electronegativities and ionization energies of elements to explain periodic properties, such as atomic size (PS-H-C2)
(Chem.4.B) analyze examples of solids, liquids, and gases to determine their compressibility, structure, motion of particles, shape, and volume;	<i>Not specifically addressed in LA GLEs (This concept is partially addressed in Grade 9, PS GLE 20.)</i>	
(Chem.4.C) investigate and identify properties of mixtures and pure substances;	<i>Implied</i>	Chem GLE 14. Identify unknowns as elements, compounds, or mixtures based on physical properties (e.g., density, melting point, boiling point, solubility) (PS-H-C1)
(Chem.4.D) describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior.	<i>Approximate</i>	Chem GLE 15. Predict the physical and chemical properties of an element based only on its location in the periodic table (PS-H-C2) Chem GLE 17. Use the periodic table to compare electronegativities and ionization energies of elements to explain periodic properties, such as atomic size (PS-H-C2)
(Chem.5) Science Concepts. The student knows that energy transformations occur during physical or chemical changes in matter.		
(Chem.5.A) identify changes in matter, determine the nature of the change, and examine the forms of	<i>Approximate</i>	Chem GLE 43. Graph and compute the energy changes that occur when a substance, such as water, goes from a solid to a liquid state,

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energy involved;		and then to a gaseous state (PS-H-D6)
(Chem.5.B) identify and measure energy transformations and exchanges involved in chemical reactions;	<i>Approximate</i>	Chem GLE 31. Describe chemical changes and reactions using diagrams and descriptions of the reactants, products, and energy changes (PS-H-D1) Chem GLE 44. Measure and graph energy changes during chemical reactions observed in the laboratory (PS-H-D6)
(Chem.5.C) measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases.	<i>Approximate</i>	Chem GLE 43. Graph and compute the energy changes that occur when a substance, such as water, goes from a solid to a liquid state, and then to a gaseous state (PS-H-D6)
(Chem.6) Science Concepts. The student knows that atomic structure is determined by nuclear composition, allowable electron cloud, and subatomic particles.		Atomic Structures
(Chem.6.A) describe the existence and properties of subatomic particles;	<i>Implied</i>	Chem GLE 9. Draw accurate valence electron configurations and Lewis dot structures for selected molecules, ionic and covalent compounds, and chemical equations (PS-H-B1)
(Chem.6.B) analyze stable and unstable isotopes of an element to determine the relationship between the isotope's stability and its application;	<i>Implied</i>	Chem GLE 12. Describe the uses of radioactive isotopes and radiation in such areas as plant and animal research, health care, and food preservation (PS-H-B2)
(Chem.6.C) summarize the historical development of the periodic table to understand the concept of periodicity.	<i>Implied</i>	Chem GLE 8. Analyze the development of the modern atomic theory from a historical perspective (PS-H-B1)
(Chem.7) Science Concepts. The student knows the variables that influence the behavior of gases		The Structure and Properties of Matter
(Chem.7.A) describe interrelationships among temperature, particle number, pressure, and volume of gases contained within a closed system;	<i>Implied</i>	Chem GLE 29. Predict the properties of a gas based on gas laws (e.g., temperature, pressure, volume) (PS-H-C7)
(Chem.7.B) illustrate the data obtained from investigations with gases in a closed system and determine if the data are consistent with the Universal Gas Law.	<i>Implied</i>	Chem GLE 29. Predict the properties of a gas based on gas laws (e.g., temperature, pressure, volume) (PS-H-C7)
(Chem.8) Science Concepts. The student knows how atoms form bonds to acquire a stable arrangement of electrons.		Atomic Structure, The Structure & Properties of Matter
(Chem.8.A) identify characteristics of atoms involved in chemical bonding;	<i>Implied</i>	Chem GLE 13. Identify the number of bonds an atom can form given the number of valence electrons (PS-H-B3) Chem GLE 22. Predict the kind of bond that will form between two elements based on electronic structure and electronegativity of the elements (e.g., ionic, polar, nonpolar) (PS-H-C5) Chem GLE 23. Model chemical bond formation by using Lewis dot

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		diagrams for ionic, polar, and nonpolar compounds (PS-H-C5)
(Chem.8.B) investigate and compare the physical and chemical properties of ionic and covalent compounds;	<i>Implied</i>	Chem GLE 24. Describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds (PS-H-C5)
(Chem.8.C) compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances;	<i>Not specifically addressed in LA GLEs</i>	
(Chem.8.D) describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds.	<i>Implied</i>	Chem GLE 24. Describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds (PS-H-C5)
(Chem.9) Science Concepts. The student knows the processes, effects, and significance of nuclear fission and nuclear fusion.		Atomic Structures
(Chem.9.A) 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;	<i>Approximate (Comparing fission and fusion is addressed in Grade 9 Physical Science with PS GLE 9.)</i>	Chem GLE 11. Calculate the amount of radioactive substance remaining after a given number of half-lives has passed (PS-H-B2) Chem GLE 10. Differentiate among alpha, beta, and gamma emissions (PS-H-B2)
(Chem.9.B) investigate radioactive elements to determine half-life;	<i>Implied</i>	Chem GLE 11. Calculate the amount of radioactive substance remaining after a given number of half-lives has passed (PS-H-B2)
(Chem.9.C) evaluate the commercial use of nuclear energy and medical uses of radioisotopes;	<i>Implied</i>	Chem GLE 12. Describe the uses of radioactive isotopes and radiation in such areas as plant and animal research, health care, and food preservation (PS-H-B2)
(Chem.9.D) evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes.	<i>Approximate</i>	Chem GLE 47. Assess environmental issues related to the storage, containment, and disposal of wastes associated with energy production and use (PS-H-G4)
(Chem.10) Science Concepts. The student knows common oxidation-reduction reactions.		Chemical Reactions
(Chem.10.A) identify oxidation-reduction processes	<i>Approximate</i>	Chem GLE 36. Identify the substances gaining and losing electrons in simple oxidation-reduction reactions (PS-H-D3)
(Chem.10.B) demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals.	<i>Not specifically addressed in LA</i>	
(Chem.11) Science Concepts. The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.		Physical Science - Measurement and Symbolic Representation
(Chem.11.A) identify common elements and compounds using scientific nomenclature;	<i>Approximate</i>	Chem GLE 5. Write and name formulas for ionic and covalent compounds (PS-H-A2)
(Chem.11.B) demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions;	<i>Approximate</i>	Chem GLE 6. Write and name the chemical formula for the products that form from the reaction of selected reactants (PS-H-A2) Chem GLE 7. Write a balanced symbolic equation from a word equation (PS-H-A2)

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(Chem.11.C) explain and balance chemical and nuclear equations using number of atoms, masses, and charge.		Chem GLE 7. Write a balanced symbolic equation from a word equation (PS-H-A2)
(Chem.12) Science Concepts. The student knows the factors that influence the solubility of solutes in a solvent.	<i>Implied</i>	The Structure and Properties of Matter
(Chem.12.A) demonstrate and explain effects of temperature and the nature of solid solutes on the solubility of solids;	<i>Implied</i>	Chem GLE 21. Design and conduct a laboratory investigation in which physical properties are used to separate the substances in a mixture (PS-H-C4)
(Chem.12.B) develop general rules for solubility through investigations with aqueous solutions;	<i>Implied</i>	Chem GLE 14. Identify unknowns as elements, compounds, or mixtures based on physical properties (e.g., density, melting point, boiling point, solubility) (PS-H-C1) Chem GLE 21. Design and conduct a laboratory investigation in which physical properties are used to separate the substances in a mixture (PS-H-C4)
(Chem.12.C) evaluate the significance of water as a solvent in living organisms and in the environment.	<i>Not specifically addressed in LA GLEs</i>	
(Chem.13) Science Concepts. The student knows relationships among the concentration, electrical conductivity, and colligative properties of a solution.		The Structure and Properties of Matter
(Chem.13.A) compare unsaturated, saturated, and supersaturated solutions;	<i>Not specifically addressed in LA GLEs</i>	
(Chem.13.B) interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water;	<i>Implied</i>	Chem GLE 19. Predict the conductivity of a solution (PS-H-C3)
(Chem.13.C) measure and compare the rates of reaction of a solid reactant in solutions of varying concentration.	<i>Approximate (Grade 9, Physical Science GLE 25. is comparable.)</i>	Chem GLE 31. Describe chemical changes and reactions using diagrams and descriptions of the reactants, products, and energy changes (PS-H-D1)
(Chem.14) Science Concepts. The student knows the properties and behavior of acids and bases.		Chemical Reactions
(Chem.14.A) analyze and measure common household products using a variety of indicators to classify the products as acids or bases;	<i>Implied (See also Grade 9, Physical Science GLE 23.)</i>	Chem GLE 32. Determine the concentration of an unknown acid or base by using data from a titration with a standard solution and an indicator (PS-H-D2)
(Chem.14.B) demonstrate the electrical conductivity of acids and bases;	<i>Not specifically addressed in LA GLEs</i>	
(Chem.14.C) identify the characteristics of a neutralization reaction;	<i>Implied</i>	Chem GLE 32. Determine the concentration of an unknown acid or base by using data from a titration with a standard solution and an indicator (PS-H-D2) Chem GLE 35. Predict products (with phase notations) of simple reactions, including acid/base, oxidation/reduction, and formation of precipitates (PS-H-D3)

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(Chem.14.D) describe effects of acids and bases on an ecological system.	<i>Implied</i>	Chem GLE 45. Give examples of common chemical reactions, including those found in biological systems (PS-H-D7)
(Chem.15) Science Concepts. The student knows factors involved in chemical reactions.		Chemical Reactions
(Chem.15.A) verify the law of conservation of energy by evaluating the energy exchange that occurs as a consequence of a chemical reaction;	<i>Implied</i>	Chem GLE 30. Solve problems involving heat flow and temperature changes by using known values of specific heat and latent heat of phase change (PS-H-C7) Chem GLE 31. Describe chemical changes and reactions using diagrams and descriptions of the reactants, products, and energy changes (PS-H-D1)
(Chem.15.B) relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.	<i>Implied</i>	Chem GLE 37. Predict the direction of a shift in equilibrium in a system as a result of stress by using LeChatalier's principle (PS-H-D4)
		LA Chemistry GLE's not addressed in TX (16 out of 60)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 8. Give an example of how new scientific data can cause an existing scientific explanation to be supported, revised, or rejected (SI-H-A5)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 16. Predict the stable ion(s) an element is likely to form when it reacts with other specified elements (PS-H-C2)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 18. Given the concentration of a solution, calculate the predicted change in its boiling and freezing points (PS-H-C3)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 20. Express concentration in terms of molarity, molality, and normality (PS-H-C3)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 25. Name selected structural formulas of organic compounds (PS-H-C6)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 26. Differentiate common biological molecules, such as carbohydrates, lipids, proteins, and nucleic acids by using structural formulas (PS-H-C6)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 27. Investigate and model hybridization in carbon compounds (PS-H-C6)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 28. Name, classify, and diagram alkanes, alkenes, and alkynes (PS-H-C6)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 33. Calculate pH of acids, bases, and salt solutions based on the concentration of hydronium and hydroxide ions (PS-H-D2)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 34. Describe chemical changes by developing word equations, balanced formula equations, and net ionic equations (PS-H-D3)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 38. Relate the law of conservation of matter to the rearrangement of atoms in a balanced chemical equation (PS-H-D5)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 39. Conduct an investigation in which the masses of the reactants and products from a chemical reaction are calculated (PS-H-

TEKS	Comments	Louisiana GLE
		D5)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 40. Compute percent composition, empirical formulas, and molecular formulas of selected compounds in chemical reactions (PS-H-D5)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 41. Apply knowledge of stoichiometry to solve mass/mass, mass/volume, volume/volume, and mole/mole problems (PS-H-D5)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 42. Differentiate between activation energy in endothermic reactions and exothermic reactions (PS-H-D6)
	<i>Not specifically addressed in TX TEKS</i>	Chem GLE 46. Identify and compare intermolecular forces and their effects on physical and chemical properties (PS-H-E1)