

Wylie ISD Curriculum

	11A Identify common elements and compounds using scientific nomenclature	<ul style="list-style-type: none"> ▪ Name and write formulas for ionic compounds and polyatomic ions ▪ Name and write formulas for molecular compounds ▪ Describe and apply the Law of Definite Composition
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Subject Area	Science	Bundle #:	5
Grade/Level	Chemistry	Weeks:	13-15
Overview			

TEKS - Texas Knowledge & Skills		
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
<p>5 TSW know that energy transformations occur during physical or chemical changes in matter.</p> <p>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p>	<p>5B Identify and measure energy transformations and exchanges involved in chemical reactions</p> <p>11B Demonstrate the use of symbols, formulas, and equations in describing interactions of matter.</p> <p>11C Explain and balance chemical and nuclear equations using number of</p>	<p>Suggested bundle length: 10 days</p> <ul style="list-style-type: none"> • Analyze indicators of a chemical reaction <ul style="list-style-type: none"> ▪ Energy change ▪ Production of gas ▪ Precipitate • Recognize chemical reactions • Explain evidences of a chemical reaction • Apply the symbols used in a chemical equation <ul style="list-style-type: none"> ▪ + ▪ → ▪ ↔ • Describe states of substances with subscript symbols <ul style="list-style-type: none"> ▪ Solid (s) ▪ Liquid (l) ▪ Gas (g) ▪ Aqueous (aq) • Translate word equations into chemical formula equations • Write word equations from formula equations • Recognize and distinguish the type of reaction taking place, given the reactants and products: <ul style="list-style-type: none"> ▪ Synthesis (combination) ▪ Decomposition (analysis) ▪ Single replacement (single displacement) ▪ Double replacement (double displacement) ▪ Combustion • Explain the relationship of chemical equation balancing to the law of conservation of matter

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	atoms, masses, and charge.	<ul style="list-style-type: none"> • Write and balance equations when both reactants and products are given • Use activity series of metals to predict single replacement
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Subject Area	Science	Bundle #:	6
Grade/Level	Chemistry	Weeks:	16-18

Overview

TEKS - Texas Knowledge & Skills		
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
<p>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p>	<p>11C Explain and balance chemical and nuclear equations using number of atoms, masses, and charge.</p>	<ul style="list-style-type: none"> • Use and apply the Law of Conservation of Mass • Apply the Mole theory to chemical equations <ul style="list-style-type: none"> ▪ Avogadro's constant • Calculate <ul style="list-style-type: none"> ▪ Gram formula mass ▪ Percent composition ▪ Mole ratio ▪ Mass to Mass stoichiometry • Explain <ul style="list-style-type: none"> • Empirical formulas <ul style="list-style-type: none"> ○ Molecular formulas • Limiting reactant • Explain the relationship of chemical equation balancing to the law of conservation of matter • Write and balance equations when both reactants and products are given • Use the activity series of metals to predict single replacement

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<p>15 The student knows factors involved in chemical reactions.</p>	<p>5B TSW identify and measure energy transformations and exchanges involved in chemical reactions</p> <p>5C Measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases.</p> <p>15A TSW verify the law of conservation of energy by evaluating the energy exchange that occurs as a consequence of a chemical reaction.</p> <p>15B TSW relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.</p>	<ul style="list-style-type: none"> • Calculate heat of reaction(Products – Reactants= delta H) • Calculate heat transfer using calorimetry. <ul style="list-style-type: none"> ◦ $Q=(m)(\Delta T)(C_p)$ • Explain the energy and entropy changes that are associated with phase changes. <ul style="list-style-type: none"> ▪ Heat of fusion ▪ Heat of vaporization • Graph energy changes and relationships. • Apply intermolecular forces and energy of particles to motion, shape, and volume of solids, liquids, and gases • Distinguish between an endothermic and an exothermic reaction • Interpret energy diagrams. • Describe effect of reaction rate, according to: <ul style="list-style-type: none"> ▪ The exposed surface area of the reactants ▪ The concentration of the reactants ▪ Temperature ▪ Catalyst/inhibitor ▪ Agitation/Collision • Describe the importance of the collision theory to reaction rates • Describe how catalysts/inhibitor can be used to affect the rate of a reaction
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	<p>13B Interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water</p> <p>13C Measure and compare the rates of reaction of a solid reactant in solutions of varying concentration</p>	<ul style="list-style-type: none">▪ Concentrated▪ Unsaturated▪ Saturated▪ Supersaturated • Differentiate between molarity (M) and molality (m)• Calculate the concentration of a solution in<ul style="list-style-type: none">▪ Molarity (M) • Describe and demonstrate how adding a nonvolatile solute affects colligative properties.<ul style="list-style-type: none">▪ Vapor pressure▪ Freezing point▪ Boiling point of a solution• Differentiate between strong and weak electrolytes.• Contrast strong and weak electrolytes vs concentrated and dilute solutions. • Explain how properties affects solubility<ul style="list-style-type: none">○ Temperature○ Surface area○ Agitation○ Nature of substance○ concentration• Explain the relation between pressure and solubility of a gas<ul style="list-style-type: none">▪
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Subject Area	Science	Bundle #:	9
Grade/Level	Chemistry	Weeks:	25-27
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p>11The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p> <p>14 The student knows the properties and behavior of acids and bases</p>	<p>11A identify common elements and compounds using scientific nomenclature</p> <p>14A Analyze and measure common household products using a variety of indicators to classify the products as acids or bases.</p> <p>14B Demonstrate the electrical conductivity of acids and bases</p> <p>14C Identify the characteristics of a neutralization reaction.</p> <p>14D Describe effects of acids and bases on an ecological system.</p>	<p>Suggested bundle length: 10 days</p> <ul style="list-style-type: none"> • Write formulas for common acids and bases including: <ul style="list-style-type: none"> ○ HCL, HNO₃, H₂SO₄ ○ H₃PO₄, CH₃COOH, ○ NH₃, NaOH, KOH • Differentiate between strong and weak acids and bases in terms of degree of ionization and concentrated versus dilute • Compare the properties of acids, bases, and salts according to <ul style="list-style-type: none"> ▪ The formation of hydronium or hydroxide • Describe the concentration of solutions in terms of pH and pOH • Analyze solution pH using indicators with emphasis on household products • Describe electrical conductivity with reference to presence of ions • Apply conductivity to battery use. • Describe reactants and products of neutralization reactions • Explain how titration is used as a neutralization process • Describe the role of buffers • Describe the effects of acids and bases on living systems. 	

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		<ul style="list-style-type: none"> Describe the effect of acid rain on the environment.
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Subject Area	Science	Bundle #:	10
Grade/Level	Chemistry	Weeks:	28-30

Overview

TEKS - Texas Knowledge & Skills		
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
<p>10 The student knows common oxidation-reduction reactions.</p>	<p>10A TSW identify oxidation-reduction processes</p>	<p>Suggested bundle length: 8 days</p> <ul style="list-style-type: none"> Describe and differentiate between common oxidation and reduction Identify which substances will behave as oxidizing or reducing agents Illustrate reduction oxidation concepts using the equation format Demonstrate electrochemical cells. <ul style="list-style-type: none"> Explain why corrosion occurs in metals and prevent it Explain the importance of electroplating metals Demonstrate electroplating <ul style="list-style-type: none"> Use the periodic table to determine <ul style="list-style-type: none"> Ion formation Oxidation numbers Balance Redox equations by number of electrons.
	<p>10B TSW demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals</p>	
<p>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter.</p>	<p>11A TSW identify common elements and compounds using scientific nomenclature</p>	

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		gases and the behavior of "real" gases
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Subject Area	Science	Bundle #:	12
Grade/Level	Chemistry	Weeks:	34-36

Overview

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TEKS - Texas Knowledge & Skills

Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
<p>6 The student knows that atomic structure is determined by nuclear composition, allowable electron cloud, and subatomic particles.</p>	<p>6A TSW describe the existence and properties of subatomic particles.</p>	<p>Suggested bundle length: 10 days</p> <ul style="list-style-type: none"> • Describe particles, properties, and location of subatomic particles <ul style="list-style-type: none"> ▪ Protons ▪ Neutrons ▪ Electrons ▪ Alpha particles ▪ Beta Particles • Identify in atoms and common ions <ul style="list-style-type: none"> ▪ Mass number ▪ Atomic number ▪ Charge ▪ Number of protons ▪ Neutrons ▪ Electrons of an atom and some common ions
<p>11 The student knows that balanced chemical equations are used to interpret and describe the interactions of matter</p>	<p>6B TSW analyze the stable and unstable isotopes of an element to determine the relationship between the isotope's stability and it's application</p> <p>11B Demonstrate the use of symbols, formulas, and equations in describing interactions of matter.</p>	<ul style="list-style-type: none"> • Examine half life of common elements to determine usefulness • Discuss use of carbon dating and radio isotope tracers.
	<p>11C Explain and balance chemical and</p>	<ul style="list-style-type: none"> • Use hyphen notation and nuclear symbol (superscript mass number and subscript atomic number with charge on the right as a superscript) • Recognize chemical and nuclear reactions • Describe the symbols used in a chemical equation

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<p>9 The student knows the processes, effects, and significance of nuclear fission and nuclear fusion.</p>	<p>nuclear equations using number of atoms, masses, and charge.</p> <p>9A 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.</p> <p>9B Investigate radioactive elements to determine half-life.</p> <p>9C Evaluate the commercial use of nuclear energy and medical uses of radioisotopes.</p> <p>9D Evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes.</p>	<ul style="list-style-type: none"> • Write and balance equations when both reactants and products are given • Write and balance equations when you must predict the products based on reaction type • Write equations to describe the changes resulting fission and fusion. • Describe the relationship between the neutron/proton ratio and the different decay modes. • Explain how decay rate is measured in terms of half-life • Solve half -life problems • Applications in medicine • The processes of nuclear fission in power plants. • The effects of radiation exposure • Compare and contrast solutions to environmental issues associated with the storage, containment, and disposal of nuclear wastes. • Describe radiation detection methods.
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