TEXAS ESSENTIAL KNOWLEDGE AND SKILLS (TEKS) FOR

SCIENCE
(Subject Area)

Objective: SCIENTIFIC CONCEPTS

The student is expected to:	K	1	2	3	4	5	6	7	8	Biology	IPC	Chemistry	Physics
Describe properties of objects and characteristics of organism	√ I	D	D	D	M	T				M	M		
Sort objects and events based on properties and patterns	I	√ D	D	D	M	T					M		
Classify and sequence organism, objects, and events based on properties and patterns	I	D	√ D	D	M	T					M		
Observe and identify patterns including seasons, growth, and day and night and predict what happens next	√ I	D	D	D	M	T							
Recognize and copy patterns seen in charts and graphs	√ I	√ D	√ M	R	R	T					M		
Gather information including temperature, magnetism, hardness, and mass using appropriate tools to identify physical properties of matter	I	D	D	√ D	M	T					M		
Identify matter as liquids, solids, and gases	I	D	D	√ D	M	T					M		
Identify patterns of change such as in weather, metamorphosis, and objects in the sky	I	D	D	D	√ M	T							
Illustrate that certain characteristics of an object can remain constant even when the object is rotated like a spinning top, translated like a skater moving in a straight line, or reflected on a smooth surface	I	D	D	D	√ M	T					M		
Use reflections to verify that a natural object has symmetry	I	D	D	D	√ M	T							

Observe and record changes in the states of matter caused by the addition or reduction of heat	I	D	D	D	√ M	T					M		
Conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy	I	D	D	D	√ M	T					M		
Sort organisms and objects into groups according to their parts and describe how the groups are formed	√ I	√ D	D	D	M	T					M		
Record observations about parts of plants including leaves, roots, stems, and flowers	√ I	√ D	M	R	R	T				M			
Observe and record the functions of plant parts	I	D	√ D	D	M	T				M			
Record observations about parts of animals including wings, feet, heads, and tails	√ I	√ D	M	R	R	T				M			
Observe and record the functions of animal parts	I	D	√ D	D	M	T				M			
Identify parts that, when separated from the whole, may result in the part or the whole not working, such as cars without wheels and plants without roots	√ I	√ D	√ D	D	M	T							
Manipulate parts of objects such as toys, vehicles, or construction sets that, when put together, can do things they cannot do by themselves	√ I	√ D	√ D	D	M	T					M		
Observe and identify simple systems such as a sprouted seed and a wooden toy car		I	D	√ D	M	T					M		
Observe a simple system and describe the role of various parts such as a yo-yo and string	I	D	D	√ D	M	T					M		
Identify and describe the roles of some organisms in living systems such as plants in a schoolyard and parts in nonliving systems such as a light bulb in a circuit		I	D	D	√ M	T					M		
Predict and draw conclusions about what happens when part of a system is removed	I	D	D	D	√ M	T					M		

Observe, describe, and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement	√ **I**	√ **D**	√ **D**	**D**	**M**	**T**					**M**		
Identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature	√ **I**	√ **D**	√ **D**	**D**	**M**	**T**					**M**		
Observe and record weather changes from day to day and over seasons	√ **I**	√ **D**	√ **D**	**D**	**M**	**T**							
Observe and record stages in the life cycle of organisms in their natural environment	√ **I**	√ **D**	**D**	**D**	**M**	**T**				**M**			
Demonstrate a change in the motion of an object by giving the object a push or a pull	**I**	**D**	√ **D**	√ **D**	**M**	**T**					**M**		
Identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers		**I**	**D**	√ **D**	**M**	**T**							
Identify a particular organism or object as living or nonliving	√ **I**	√ **D**	**M**	**R**	**R**	**T**				**M**			
Identify characteristics of living organisms	**I**	**D**	√ **M**	**R**	**R**	**T**				**M**			
Identify characteristics of nonliving objects	**I**	**D**	√ **M**	**R**	**R**	**T**					**M**		
Group organisms and objects as living or nonliving	√ **I**	√ **D**	**M**	**R**	**R**	**T**							
Identify basic needs of living organisms	√ **I**	√ **D**	√ **M**	**R**	**R**	**T**				**M**			
Give examples of how living organisms depend on each other	√ **I**	√ **D**	√ **M**	**R**	**R**	**T**				**M**			
Identify ways that the Earth can provide resources for life	√ **I**	**D**	**D**	**D**	**M**	**T**				**M**			
Observe and describe the habitats of organisms within an ecosystem	**I**	**D**	**D**	√ **D**	**M**	**T**				**M**			
Observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space		**I**	**D**	√ **D**	**M**	**T**				**M**			

Describe environmental changes in which some organism would thrive, become ill, or perish		I	D	√ D	M	T				M			
Describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home	I	D	D	√ D	M	T				M			
Observe and identify characteristics among species that allow each to survive and reproduce		I	D	√ D	√ M	T				M			
Analyze how adaptive characteristics help individuals within a species to survive and reproduce		I	D	√ D	√ M	T				M			
Identify the kinds of species that lived in the past and compare them to existing species	I	D	D	D	√ M	T				M			
Identify some inherited traits of plants		I	D	√ D	M	T				M			
Identify some inherited traits of animals		I	D	√ D	M	T				M			
Distinguish between inherited traits and learned characteristics			I	D	√ M	T				M			
Identify and provide examples of inherited traits and learned characteristics			I	D	√ M	T				M			
Observe and describe properties of rocks, soil, and water	√ I	D	D	D	M	T							
Give examples of ways that rocks, soil, and water are useful	√ I	D	D	D	M	T							
Identify and describe a variety of natural sources of water including streams, lakes, and oceans	I	√ D	D	D	M	T							
Observe and describe differences in rocks and soil samples	I	√ D	D	D	M	T							
Identify how rocks, soil, and water are used and how they can be recycled		√ I	D	D	M	T							
Describe and illustrate the water cycle			√										

	I	D	M	R	R	T							
Identify uses of natural resources		I	√ D	D	M	T					M		
Identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources		I	D	√ D	M	T					M		
Identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants			I	√ D	√ M	T							
Identify and observe effects of events that require time for changes to be noticeable including growth, erosion, dissolving, weathering, and flow		I	D	D	√ M	T					M		
Draw conclusions about “what happened before” using fossils or charts and tables	I	D	D	D	√ M	T							
Summarize the effects of the oceans on land		I	D	D	√ M	T							
Identify the planets in our solar system and their position in relation to the Sun		I	D	√ D	M	T							
Describe the characteristics of the Sun		I	D	√ D	√ M	T							

Describe some cycles, structures, and processes that are found in a simple system						√ **I**							
Describe some interactions that occur in a simple system						√ **I**					**M**		
Identify and describe a system that results from the combination of two or more systems such as in the solar system							√ **D**						
Describe how the properties of a system are different from the properties of its parts							√ **D**				**M**		
Describe how systems may reach an equilibrium such as when a volcano erupts								√ **D**			**M**		
Observe and describe the role of ecological succession in maintaining an equilibrium in an ecosystem								√ **D**	√ **M**				
Describe interactions among systems in the human organism									√ **M**	**M**			
Identify feedback mechanisms that maintain equilibrium of systems such as body temperature, turgor pressure, and chemical reactions									√ **M**	**M**			
Describe interactions within ecosystems									√ **M**	**M**			
Identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles						√ **I**							
Identify the significance of the water, carbon, and nitrogen cycle						√ **I**				**M**	**M**		
Describe and compare life cycles of plants and animals						√ **I**				**M**			
Identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force							√ **I**				**M**		
Demonstrated that changes in motion can be measured and graphically represented							√ **I**				**M**		

Identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity							√ **D**						
Demonstrate basic relationships between force and motion using simple machines including pulleys and levers								√ **I**			**M**		
Demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force								√ **D**			**M**		
Relate forces to basic processes in living organisms including the flow of blood and the emergence of seedlings								√ **I**					
Demonstrate how unbalanced forces cause changes in the speed or direction of an object's motion									√ **D**		**M**		
Recognize that waves are generated and can travel through different media									√ **D**		**M**		
Describe the structure and parts of an atom									√ **I**		**M**		
Identify the properties of an atom including mass and electrical charge									√ **I**		**M**		
Classify matter based on its physical properties including magnetism, physical state, and the ability to conduct or insulate heat, electricity, and sound						√ **I**					**M**		
Demonstrate that some mixtures maintain the physical properties of their ingredients						√ **I**					**M**		
Identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving sugar in water						√ **I**					**M**		
Observe and measure characteristic properties of substances that remain constant such as boiling points and melting points						√ **I**					**M**		
Demonstrate that new substances can be made when two or more substances are chemically							√		√				

combined and compare the properties of the new substances to the original substances							**D**		**M**		**M**		
Classify substances by their physical and chemical properties							√ **D**				**M**		
Identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood								√ **D**			**M**		
Describe physical properties of elements and identify how they are used to position an element on the periodic table								√ **I**			**M**		
Recognize that compounds are composed of elements								√ **I**			**M**		
Recognize the importance of formulas and equations to express what happens in a chemical reaction									√ **I**		**M**		
Identify that physical and chemical properties influence the development and application of everyday materials such as cooking surfaces, insulation, adhesives, and plastics									√ **D**		**M**		
Differentiate among forms of energy including light, heat, electrical, and solar energy						√ **I**					**M**		
Define matter and energy							√ **D**				**M**		
Explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin							√ **D**						
Describe energy flow in living systems including food chains and food webs							√ **D**			**M**			
Illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water								√ **D**			**M**		
Identify that radiant energy from the Sun is transferred into chemical energy through the process of photosynthesis								√ **I**		**M**			
Illustrate interactions between matter and energy including specific heat									√ **D**		**M**		

Describe interactions among solar, weather, and ocean systems									√ **D**				
Identify and demonstrate that loss or gain of heat energy occurs during exothermic and endothermic chemical reactions									√ **I**		**M**		
Identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses						√ **I**					**M**		
Demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects						√ **I**					**M**		
Identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy							√ **D**				**M**		
Compare methods used for transforming energy in devices such as water heaters, cooling systems, or hydroelectric and wind power plants							√ **D**				**M**		
Research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible							√ **D**				**M**		
Differentiate between structure and function							√ **D**				**M**		
Determine that all organisms are composed of cells that carry on functions to sustain life							√ **D**			**M**			
Identify how structure complements function at different levels of organization including organs, organ systems, organisms, and populations							√ **D**			**M**			
Identify the systems of the human organism and describe their functions								√ **D**		**M**			
Describe how organisms maintain stable internal conditions while living in changing external environments								√ **D**		**M**			

Compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem						√ **I**				**M**			
Analyze and describe adaptive characteristics that result in an organism's unique niche in an ecosystem						√ **I**				**M**			
Predict some adaptive characteristics required for survival and reproduction by an organism in an ecosystem						√ **I**				**M**			
Identify some changes in traits that can occur over several generations through natural occurrence and selective breeding							√ **D**			**M**			
Identify cells as structures containing genetic material							√ **D**			**M**			
Interpret the role of genes in inheritance							√ **D**			**M**			
Identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring								√ **D**		**M**			
Compare traits of organisms of different species that enhance their survival and reproduction								√ **D**		**M**			
Distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material								√ **D**		**M**			
Identify that change in environmental conditions can affect the survival of individuals and of species									√ **D**	**M**			
Distinguish between inherited traits and other characteristics that result from interactions with the environment									√ **D**	**M**			
Make predictions about possible outcomes of various genetic combinations of inherited characteristics									√ **M**	**M**			
Identify traits that are inherited from parent to offspring in plants and animals						√ **I**				**M**			

Give examples of learned characteristics that result from the influence of the environment						√ **I**				**M**			
Identify and observe actions that require time for changes to be measurable, including growth, erosion, dissolving, weathering, and flow						√ **I**				**M**			
Draw conclusions about "what happened before" using data such as from tree-growth rings and sedimentary rock sequences						√ **I**							
Identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources						√ **I**							
Summarize the rock cycle							√ **M**						
Identify relationships between groundwater and surface water in a watershed							√ **D**						
Describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in weather change							√ **D**						
Describe and predict the impact of different catastrophic events on the Earth								√ **D**					
Analyze effects of regional erosional deposition and weathering								√ **D**					
Make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible resources								√ **D**					
Predict land features resulting from gradual changes such as mountain building, beach erosion, land subsidence, and continental drift									√ **M**				
Analyze how natural or human events may have contributed to the extinction of some species									√ **M**	**M**			
Describe how human activities have modified soil, water, and air quality									√ **M**				

Interpret how land forms are the result of a combination of constructive and destructive forces such as deposition of sediment and weathering						√ **I**							
Describe processes responsible for the formation of coal, oil, gas, and minerals						√ **I**							
Identify the physical characteristics of the Earth and compare them to the physical characteristics of the moon						√ **I**							
Identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth						√ **I**					**M**		
Identify characteristics of objects in our solar system including the Sun, planets, meteorites, comets, asteroids, and moons							√ **D**						
Describe types of equipment and transportation needed for space travel							√ **D**						
Relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon								√ **D**					
Describe characteristics of the universe such as stars and galaxies									√ **M**				
Explain the use of light years to describe distances in the universe									√ **M**				
Research and describe historical scientific theories of the origin of the universe									√ **M**				
Analyze and predict the sequence of events in the lunar and rock cycles									√ **M**				
Relate the role of oceans to climatic changes									√ **M**				
Predict the results of modifying the Earth's nitrogen, water, and carbon cycles									√ **M**				
Identify responses in organisms to internal stimuli such as hunger or thirst							√ **I**			**M**			
Identify responses in organism to external							√						

stimuli such as the presence or absence of heat or light							**I**			**M**			
Identify components of an ecosystem to which organisms may respond							√ **D**			**M**			
Analyze changes in organisms such as a fever or vomiting that may result from internal stimuli								√ **D**					
Identify responses in organisms to external stimuli found in the environment such as the presence or absence of light								√ **D**		**M**			
Identify components of an ecosystem								√ **D**		**M**			
Observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources								√ **D**		**M**			
Describe how different environments support different varieties of organisms								√ **D**		**M**			
Observe and describe the role of ecological succession in ecosystems								√ **D**		**M**			
Verify that vibrating an object can produce sound						√ **I**							

Identify the parts of prokaryotic and eukaryotic cells										√ **M**			
Investigate and identify cellular processes including homeostasis, permeability, energy production, transportation of molecules, disposal of wastes, function of cellular parts, and synthesis of new molecules										√ **M**			
Compare the structures and functions of viruses to cells and describe the role of viruses in causing diseases and conditions such as acquired immune deficiency syndrome, common colds, smallpox, influenza, and warts										√ **M**			
Identify and describe the role of bacteria in maintaining health such as in digestion and in causing diseases such as in streptococcus infections and diphtheria										√ **M**			
Compare cells from different parts of plants and animals including roots, stems, leaves, epithelia, muscles, and bones to show specialization of structure and function										√ **M**			
Identify cell differentiation in the development of organisms										√ **M**			
Sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole										√ **M**			
Describe components of deoxyribonucleic acid (DA), and illustrate how information for specifying the traits of an organism is carried in the DNA										√ **M**			
Explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA)										√ **M**			
Identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes										√ **M**			

Compare genetic variations observed in plants and animals										√ **M**			
Compare the processes of mitosis and meiosis and their significance to sexual and asexual reproduction										√ **M**			
Identify and analyze karyotypes										√ **M**			
Identify evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities, and embryology										√ **M**			
Illustrate the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction										√ **M**			
Collect and classify organisms at several taxonomic levels such as species, phylum, and kingdom using dichotomous keys										√ **M**			
Analyze relationships among organisms and develop a model of a hierarchical classification system based on similarities and differences using taxonomic nomenclature										√ **M**			
Identify characteristics of kingdoms including monerans, protests, fungi, plants, and animals										√ **M**			
Compare the structures and functions of different types of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids										√ **M**			
Compare the energy flow in photosynthesis to the energy flow in cellular respiration										√ **M**			
Investigate and identify the effects of enzymes on food molecules										√ **M**			
Analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment										√ **M**			
Interpret the functions of systems in organisms including circulatory, digestive, nervous,										√			

endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune										**M**			
Compare the interrelationships of organ systems to each other and to the body as a whole										√ **M**			
Analyze and identify characteristics of plant systems and subsystems										√ **M**			
Identify and describe the relationships between internal feedback mechanisms in the maintenance of homeostasis										√ **M**			
Investigate and identify how organisms, including humans, respond to external stimuli										√ **M**			
Analyze the importance of nutrition, environmental conditions, and physical exercise on health										√ **M**			
Summarize the role of microorganisms in maintaining and disrupting equilibrium including diseases in plants and animals and decay in an ecosystem										√ **M**			
Analyze the flow of energy through various cycles including the carbon, oxygen, nitrogen, and water cycles										√ **M**			
Interpret interactions among organisms exhibiting predation, parasitism, commensalisms, and mutualism										√ **M**			
Compare variations, tolerances, and adaptations of plants and animals in different biomes										√ **M**			
Identify and illustrate that long-term survival of species is dependent on a resource base that may be limited										√ **M**			
Investigate and explain the interactions in an ecosystem including food chains, food webs, and food pyramids										√ **M**			
Evaluate the significance of structural and										√			

physiological adaptations of plants to their environments										**M**			
Survey and identify methods of reproduction, growth, and development of various types of plants										√ **M**			
Calculate speed, momentum, acceleration, work, and power in systems such as in the human body, moving toys, and machines											√ **ID**		√ **RM**
Investigate and describe applications of Newton's laws such as in vehicle restraints, sports activities, geological processes, and satellite orbits											√ **ID**		
Analyze the effects caused by changing force or distance in simple machines as demonstrated in household devices, the human body, and vehicles											√ **ID**		
Investigate and demonstrate mechanical advantage and efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps											√ **ID**		
Generate and interpret graphs describing motion including the use of real-time technology													√ **M**
Analyze examples of uniform and accelerated motion including linear, projectile, and circular													√ **M**
Develop and interpret a free-body diagram for force analysis													√ **M**
Identify and describe motion relative to different frames of reference													√ **M**
Demonstrate wave types and their characteristics through a variety of activities such as modeling with ropes and coils, activating tuning forks, and interpreting data on seismic waves											√ **ID**		√ **M**

Demonstrate wave interactions including interference, polarization, reflection, refraction, and resonance within various materials											√ **ID**		
Identify uses of electromagnetic waves in various technological applications such as fiber optics, optical scanners, and microwaves											√ **ID**		√ **M**
Demonstrate the application of acoustic principles such as in echolocation, musical instruments, noise pollution, and sonograms											√ **ID**		
Interpret the role of wave characteristics and behaviors found in medicinal and industrial applications													√ **M**
Describe the law of conservation of energy											√ **ID**		√ **M**
Observe and describe examples of kinetic and potential energy and their transformations													√ **M**
Investigate and demonstrate the movement of heat through solids, liquids, and gases by convection, conduction, and radiation											√ **ID**		√ **M**
Analyze the efficiency of energy conversions that are responsible for the production of electricity such as from radiant, nuclear, and geothermal sources, fossil fuels such as coal, gas, oil, and the movement of water or wind											√ **ID**		√ **M**
Investigate and compare economic and environmental impacts of using various energy sources such as rechargeable or disposable batteries and solar cells											√ **ID**		√ **M**
Measure the thermal and electrical conductivity of various materials and explain results											√ **ID**		√ **M**
Analyze the effects of heating and cooling processes in systems such as weather, living, and mechanical											√ **ID**		√ **M**
Evaluate different methods of heat energy													√

transfer that result in an increasing amount of disorder													**M**
Investigate and compare series and parallel circuits											√ **ID**		√ **M**
Analyze the relationship between an electric current and the strength of its magnetic field using simple electromagnets											√ **ID**		
Identify the influence of ass and distance on gravitational forces													√ **M**
Research and describe the historical development of the concepts of gravitational, electrical, and magnetic force													√ **M**
Identify and analyze the influences of charge and distance on electric forces													√ **M**
Demonstrate the relationship between electricity and magnetism													√ **M**
Identify examples of electrical and magnetic forces in everyday life													√ **M**
Describe the photoelectric effect													√ **M**
Explain the line spectra from different gas-discharge tubes													√ **M**
Investigate and identify properties of fluids including density, viscosity, and buoyancy											√ **ID**		
Analyze examples of solids, liquids, and gases to determine their compressibility, structure, motion of particles, shape, and volume												√ **M**	
Research and describe the historical development of the atomic theory											√ **ID**		
Describe the existence and properties of subatomic particles												√ **M**	
Relate the chemical behavior of an element including bonding, to its placement on the periodic table											√ **ID**		
Summarize the historical development of the												√	

periodic table to understand the concept of periodicity												**M**	
Identify constituents of various materials or objects such as metal salts, light source, fireworks displays, and stars using spectral-analysis techniques											√ **ID**		
Classify samples of matter form everyday life as being elements, compounds, or mixtures											√ **ID**		
Differentiate between physical and chemical properties of matter												√ **M**	
Investigate and identify properties of mixtures and pure substances												√ **M**	
Describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior												√ **M**	
Distinguish between physical and chemical changes in matter such as oxidation, digestion, changes in states, and stages in the rock cycle											√ **ID**		
Identify changes in matter, determine the nature of the change, and examine the forms of energy involved												√ **M**	
Analyze energy changes that accompany chemical reactions such as those occurring in heat packs, cold packs, and glow sticks to classify them as endergonic or exergonic reactions											√ **ID**	√ **M**	
Measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases												√ **M**	
Investigate and identify the law of conservation of mass											√ **ID**		
Describe types of nuclear reactions such as fission and fusion and their roles in applications such as medicine and energy production											√ **ID**	√ **M**	

Investigate radioactive elements to determine half-life												√ **M**	
Evaluate the commercial use of nuclear energy and medical uses of radioisotopes												√ **M**	
Evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes												√ **M**	
Research and describe the environmental and economic impact of the end products of chemical reactions.											√ **ID**		
Analyze stable and unstable isotopes of an elements to determine the relationship between the isotope's stability and its application												√ **M**	
Relate the structure of water to its function as the universal solvent											√ **ID**	√ **M**	
Relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity											√ **ID**		
Compare unsaturated, saturated, and supersaturated solutions												√ **M**	
Interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water												√ **M**	
Measure and compare the rates of reaction of a solid reactant in solutions of varying concentration												√ **M**	
Simulate the effects of acid rain on soil, buildings, statues, or microorganisms											√ **ID**		
Analyze and measure common household products using a variety of indicators to classify the products as acids or bases												√ **M**	
Demonstrate the electrical conductivity of acids and bases												√ **M**	
Identify the characteristics of a neutralization reaction												√ **M**	

Describe effects of acids and bases on an ecological system												√ **M**	
Demonstrate how various factors influence solubility including temperature, pressure, and nature of the solute and solvent											√ **ID**	√ **M**	
Demonstrate how factors such as particle size, influence the rate of dissolving											√ **ID**		
Describe interrelationships among temperature, particle number, pressure, and volume of gases contained within a closed system												√ **M**	
Illustrate the data obtained from investigations with gases in a closed system and determine if the data are consistent with the Universal Gas Law												√ **M**	
Identify characteristics of atoms involved in chemical bonding												√ **M**	
Investigate and compare the physical and chemical properties of ionic and covalent compounds												√ **M**	
Compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances												√ **M**	
Describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds												√ **M**	
Identify oxidation-reduction processes												√ **M**	
Demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals												√ **M**	
Identify common elements and compounds using scientific nomenclature												√ **M**	
Demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions												√ **M**	

Explain and balance chemical and nuclear equations using number of atoms, masses, and charge												√ **M**	
Verify the law of conservation of energy by evaluation the energy exchange that occurs as a consequence of a chemical reaction												√ **M**	
Relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst												√ **M**	