

## 25-26 8th Grade Science

### TEKS by Unit

<b>Unit 1: Investigating Chemical Reactions (14 Days Plus Test and Feedback Day)</b>		
8.6A	Explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures.	NT
7.6B	use the periodic table to identify the atoms and the number of each kind within a chemical formula;	RC 1
6.6C	identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life;	RC 1
6.6D	compare the density of substances relative to various fluids; and	RC 1
7.6C	distinguish between physical and chemical changes in matter;	RC 1
6.6E	identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.	RC 1
8.6B	Use the periodic table to identify the atoms involved in chemical reactions.	
8.6E	Investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis.	RC 1
6.8B	describe how energy is conserved through transfers and transformations in systems such as <del>electrical circuits, food webs, amusement park rides, or photosynthesis;</del> and	RC2
<b>Unit 2: Investigating Force and Motion (15 Days Plus Test and Feedback Day)</b>		
8.7A	Calculate and analyze how the acceleration of an object is dependent upon the net force acting on the object and the mass of the object using Newton's Second Law of Motion.	RC 2
8.7B	Investigate and describe how Newton's three laws of motion act simultaneously within systems such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.	RC 2
7.7A	calculate average speed using distance and time measurements from investigations;	RC 2
7.7B	distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction;	RC 2
7.7C	measure (record) and interpret an object's motion using distance-time graphs;	RC 2
6.7A	identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications;	RC 2
6.7B	calculate the net force on an object in a horizontal or vertical direction <u>using diagrams</u> and determine if the forces are balanced or unbalanced;	RC 2
6.8B	describe how energy is conserved through transfers and transformations in systems such as <del>electrical circuits, food webs, amusement park rides, or photosynthesis;</del> and	RC2
<b>Unit 3: Investigating Energy and Waves (10 Days Plus Test and Feedback Day)</b>		
8.8A	Compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum.	RC 2
8.8B	Explain the use of electromagnetic waves in applications such as radiation therapy, wireless technologies, fiber optics, microwaves, ultraviolet sterilization, astronomical observations, and X-rays.	NT
7.8A	investigate methods of thermal energy transfer into and out of systems, including conduction, convection, and radiation;	RC 2
7.8C	explain the relationship between temperature and the kinetic energy of the particles within a substance.	RC 2
6.8C	explain how energy is transferred through transverse and longitudinal waves.	RC 2

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**Unit 4: The Universe (12 Days Plus Test and Feedback Day)**

8.9A	Describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram.	RC 3
8.9B	Categorize galaxies as spiral, elliptical, and irregular and locate Earth's solar system within the Milky Way galaxy.	RC 3
8.9C	Research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.	NT
7.9B	describe how gravity governs motion within Earth's solar system; and	RC 3
6.9A	model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons; and	RC 3
6.9B	describe and predict how the positions of the Earth, Sun, and Moon cause daily, spring, and neap cycles of ocean tides due to gravitational forces.	RC 3

**Unit 5: Changing Earth (8 Days Plus Optional Quiz)**

6.10B	model and describe the layers of Earth, including the inner core, outer core, mantle, and crust; and	RC 3
7.10A	describe the evidence that supports that Earth has changed over time, including fossil evidence, plate tectonics, and superposition; and	RC 3
7.10B	describe how plate tectonics causes ocean basin formation, earthquakes, mountain building, and volcanic eruptions, including super volcanoes and hot spots.	RC 3

**Unit 6: Earth's Water and Human Activity (4 Days)**

7.11A	analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed; and	RC 3
7.11B	describe human dependence and influence on ocean systems and explain how human activities impact these systems.	RC 3

**Unit 7: Global Weather Systems (9 Days Plus Test and Feedback Day)**

8.10A	describe how energy from the Sun, hydrosphere, and atmosphere interact and influence weather and climate;	RC 3
8.10B	Identify global patterns of atmospheric movement and how they influence local weather.	RC 3
8.10C	Describe the interactions between ocean currents and air masses that produce tropical cyclones, including typhoons and hurricanes.	RC 3

**Unit 8: From Cells to Organisms (7 Days Plus Test and Feedback Day)**

6.13A	describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;	RC 4
8.13A	Identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells.	RC 4
7.13A	identify and model the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, urinary, reproductive, integumentary, nervous, immune, and endocrine systems;	RC 4

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#### Unit 9: Traits of Organisms (7 Days Plus Test and Feedback Day)

8.13B	Describe the function of genes within chromosomes in determining inherited traits of offspring.	RC 4
8.13C	Describe how variations of traits within a population lead to structural, behavioral, and physiological adaptations that influence the likelihood of survival and reproductive success of a species over generations.	RC 4
7.13C	compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time; and	RC 4
7.13D	describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations.	RC 4

#### Unit 010: Investigating Ecosystems (9 Days)

6.12A	investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition;	RC 4
7.12A	diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids; and	RC 4
6.8B	describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, or photosynthesis; and	RC 2
8.12A	Explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems.	NT
8.12B	Describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity.	RC 4
8.12C	Describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem.	RC 4

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#### Unit 11: Investigating Properties of Matter (5 Days Plus Test and Feedback Day)

8.6C	Describe the properties of cohesion, adhesion, and surface tension in water and relate to observable phenomena such as the formation of droplets, transport in plants, and insects walking on water.	
8.6D	Compare and contrast the properties of acids and bases, including pH relative to water.	

#### Unit 12: Investigating Climate Change (4 Days)

8.11A	Use scientific evidence to describe how natural events, including volcanic eruptions, meteor impacts, abrupt changes in ocean currents, and the release and absorption of greenhouse gases influence climate.	
8.11B	Use scientific evidence to describe how human activities, including the release of greenhouse gases, deforestation, and urbanization, can influence climate.	
8.11C	Describe the carbon cycle.	

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### TEKS by Unit

**These TEKS are embedded in all units.  
Specific TEKS will be noted in Lesson Plans.**

8.1	Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
8.1.A	ask questions and define problems based on observations or information from text, phenomena, models, or investigations;
8.1.B	use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;
8.1.C	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;
8.1.D	use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses , and lab notebooks or journals ;
8.1.E	collect quantitative data using the International System of Units (SI) and qualitative data as evidence;
8.1.F	construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data;
8.1.G	develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and
8.1.H	distinguish between scientific hypotheses, theories, and laws.
8.2	Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
8.2.A	identify advantages and limitations of models such as their size, scale, properties, and materials;
8.2.B	analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations;
8.2.C	use mathematical calculations to assess quantitative relationships in data; and
8.2.D	evaluate experimental and engineering designs.
8.3	Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
8.3.A	develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;
8.3.B	communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and
8.3.C	engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.
8.4	Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

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8.4.A	relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content;
8.4.B	make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used; and
8.4.C	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.
8.5	Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:
8.5.A	identify and apply patterns to understand and connect scientific phenomena or to design solutions;
8.5.B	identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;
8.5.C	analyze how differences in scale, proportion, or quantity affect a system's structure or performance;
8.5.D	examine and model the parts of a system and their interdependence in the function of the system;
8.5.E	analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems;
8.5.F	analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems; and
8.5.G	analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.