

# Gateways to Science STAAR Edition, Grade 8

## TEKS Scientific Processes—Lesson Checklist

TEKS	Lessons
8.1A Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards	1.1 Gateways to Science 1.2 Safety
8.1B Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials	2.1 Properties of Matter
8.2A Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology	2.1 Properties of Matter
8.2B Design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology	2.1 Properties of Matter
8.2C Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers	2.6 Periodic Table Families 2.9 Chemical Changes in Compounds
8.2D Construct tables and graphs, using repeated trials and means, to organize data and identify patterns	2.3 Determining Subatomic Particles
8.2E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends	2.3 Determining Subatomic Particles
8.3A In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	2.5 The Periodic Table
8.3B Use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature	2.2 Atomic Structure 2.4 The Bohr Model and Valence Electrons 4.7 Moon Phases 5.6 Evidence of the Plate Tectonics Theory
8.3C Identify advantages and limitations of models such as size, scale, properties, and materials	2.2 Atomic Structure 2.4 The Bohr Model and Valence Electrons 4.7 Moon Phases 5.6 Evidence of the Plate Tectonics Theory
8.3D Relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content	2.4 The Bohr Model and Valence Electrons

\*Process skills are embedded in all lessons but only indicated upon first introduction.

# Gateways to Science STAAR Edition, Grade 8 TEKS Scientific Processes—Lesson Checklist

TEKS	Lessons
8.4A Use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrosopes, timing devices, and other equipment as needed to teach the curriculum	2.2 Atomic Structure 2.5 The Periodic Table 2.9 Chemical Changes in Compounds
8.4B Use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher	1.1 <i>Gateways to Science</i> 1.2 Safety

\*Process skills are embedded in all lessons but only indicated upon first introduction.

# Gateways to Science STAAR Edition, Grade 8

## TEKS Science Concepts—Lesson Checklist

TEKS	Lessons
<b>Matter and Energy</b>	
8.5 The student knows that matter is composed of atoms and has chemical and physical properties	2.1 Properties of Matter
8.5A Describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud	2.2 Atomic Structure 2.3 Determining Subatomic Particles 2.4 The Bohr Model and Valence Electrons
8.5B Identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity	2.2 Atomic Structure 2.3 Determining Subatomic Particles 2.4 The Bohr Model and Valence Electrons 2.5 The Periodic Table
8.5C Interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements	2.5 The Periodic Table 2.6 Periodic Table Families
8.5D Recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts	2.7 Compounds and Chemical Formulas 2.8 Analyzing Chemical Formulas 2.9 Chemical Changes in Compounds 2.10 Chemical Equations
8.5E Investigate how evidence of chemical reactions indicate that new substances with different properties are formed	2.9 Chemical Changes in Compounds 2.11 Law of Conservation of Mass
8.5F Recognize whether a chemical equation containing coefficients is balanced or not and how that relates to the law of conservation of mass	2.10 Chemical Equations 2.11 Law of Conservation of Mass

# Gateways to Science STAAR Edition, Grade 8

## TEKS Science Concepts—Lesson Checklist

TEKS	Lessons
<b>Force, Motion, and Energy</b>	
8.6A Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion	3.2 Balanced and Unbalanced Forces
8.6B Differentiate between speed, velocity, and acceleration	3.1 Speed, Velocity, and Acceleration
8.6C Investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches	3.3 Newton's Second Law of Motion 3.4 Newton's First Law of Motion 3.5 Newton's Third Law of Motion 3.6 Application of Newton's Laws
<b>Earth and Space</b>	
8.7A Model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun causing changes in seasons	4.5 Movements through Space 4.6 Seasons
8.7B Demonstrate and predict the sequence of events in the lunar cycle	4.7 Moon Phases
8.7C Relate the position of the Moon and Sun to their effect on ocean tides	4.8 Tides
8.8A Describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Herzsprung-Russell diagram for classification	4.3 Components of the Universe 4.4 Characteristics of Stars and the HR Diagram
8.8B Recognize that the Sun is a medium-sized star near the edge of a disc-shaped galaxy of stars and that the Sun is many thousands of times closer to Earth than any other star	4.2 Distances in Space 4.4 Characteristics of Stars and the HR Diagram 4.5 Movements through Space
8.8C Explore how different wavelengths of the electromagnetic spectrum such as light and radio waves are used to gain information about distances and properties of components in the universe	4.1 Exploring the Electromagnetic Spectrum 4.4 Characteristics of Stars and the HR Diagram
8.8D Model and describe how light years are used to measure distances and sizes in the universe	4.2 Distances in Space
8.8E Research how scientific data are used as evidence to develop scientific theories to describe the origin of the universe	4.2 Distances in Space
<b>Earth and Space</b>	
8.9A Describe the historical development of evidence that supports plate tectonic theory	5.5 Evidence of the Plate Tectonics Theory

# Gateways to Science STAAR Edition, Grade 8

## TEKS Science Concepts—Lesson Checklist

8.9B	Relate plate tectonics to the formation of crustal features	5.6 Determining Plate Boundaries 3.6 Application of Newton's Laws
8.9C	Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering	5.7 Topographic and Satellite Maps
<b>TEKS</b>		<b>Lessons</b>
<b>Earth and Space</b>		
8.10A	Recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds and ocean currents	5.1 Unequal Heating in the Oceans 5.2 Winds and Air Pressure
8.10B	Identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts	5.3 Air Masses and Fronts 5.4 Weather Maps
8.10C	Identify the role of the oceans in the formation of weather systems such as hurricanes	5.4 Weather Maps
<b>Organisms and Environments</b>		
8.11A	Describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems	6.1 Energy in Ecosystems 6.2 Relationships in Food Webs
8.11B	Investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition	6.3 Biotic and Abiotic Factors in Ecosystems
8.11C	Explore how short- and long-term environmental changes affect organisms and traits in subsequent populations	6.4 Changes in the Environment
8.11D	Recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems	6.5 The Human Factor