Gateways to Science STAAR Edition for Grade 8
Unit Outline

Unit 1: Introduction

Approximate Teaching Time: 1 Week

Lesson		Learning Goal	TEKS Content	TEKS Process
1.1	*Gateways to Science*	Set up and organize a science notebook using a rubric.		8.1A 8.4B
1.2	Safety	Identify appropriate safety equipment and its uses.		8.1A 8.4B

Unit 2: Matter and Energy

Approximate Teaching Time: 10 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
2.1	Properties of Matter	Recognize the physical properties of matter and calculate densities of unknown objects.	8.5	8.1A–B 8.2A–B
2.2	Atomic Structure	Describe the structure of atoms and determine an element's identity by its protons or atomic number.	8.5A–B	8.2A 8.3B, D–E 8.4A
2.3	Determining Subatomic Particles	Determine the number of protons, neutrons, and electrons for an element using the Periodic Table.	8.5A–B	8.2D–E
2.4	The Bohr Model and Valence Electrons	Use Bohr models of selected elements to model atomic structure and visualize valence electrons.	8.5A–B	8.3B–D
2.5	The Periodic Table	Interpret the arrangement of the Periodic Table based on physical and chemical properties, including reactivity.	8.5B–C	8.1A–B 8.2A, D–E 8.3A, D 8.4A–B
2.6	Periodic Table Families	Interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements.	8.5C	8.2C
2.7	Compounds and Chemical Formulas	Determine the number of atoms of each element in chemical formulas.	8.5D	8.2C 8.3B
2.8	Analyzing Chemical Formulas	Determine the number of atoms of each element in chemical formulas.	8.5D	8.3B
2.9	Chemical Changes in Compounds	Investigate evidence of chemical reactions and how chemical reactions are represented in chemical equations.	8.5D–E	8.1A–B 8.2A, C–E 8.3B 8.4A–B
2.10	Chemical Equations	Recognize the coefficients, reactants, and products; identify elements; and determine the numbers of atoms found in chemical equations.	8.5D, F	8.2D 8.3B
2.11	Law of Conservation of Mass	Determine if a chemical equation is balanced and how that relates to the law of conservation of mass.	8.5E–F	8.1A–B 8.2A, C–E 8.3A–B 8.4A–B

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Unit 3: Force, Motion, and Energy

Approximate Teaching Time: 5 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
3.1	Speed, Velocity, and Acceleration	Differentiate between speed, velocity, and acceleration.	8.6B	8.1A 8.2A, C–D 8.3A 8.4A
3.2	Balanced and Unbalanced Forces	Demonstrate and calculate how unbalanced forces change the speed and direction of objects.	8.6A	8.1A–B 8.2A, C, E 8.3B, D 8.4A
3.3	Newton's Second Law of Motion	Investigate Newton's second law—the law of acceleration.	8.6C	8.1A–B 8.2A, C–E 8.3B, D 8.4A
3.4	Newton's First Law of Motion	Investigate Newton's first law—the law of inertia.	8.6C	8.1A–B 8.2B, D–E 8.3A 8.4A
3.5	Newton's Third Law of Motion	Investigate Newton's third law—the law of action and reaction.	8.6C	8.1A–B 8.2B, D–E 8.3A 8.4A
3.6	Application of Newton's Laws	Apply Newton's laws of motion in various situations.	8.6C	8.2E

Unit 4: Earth and Space, Part 1

Approximate Teaching Time: 6 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
4.1	Exploring the Electromagnetic Spectrum	Explore the different wavelengths of the electromagnetic spectrum.	8.8C	8.1A 8.2A, C 8.3C 8.4A
4.2	Distances in Space	Demonstrate how light-years measure distances in space and investigate the big bang theory.	8.8B–E	8.1A 8.2A, D–E 8.3B 8.4A
4.3	Components of the Universe	Describe components of the universe.	8.8A	8.2D 8.3B 8.4A
4.4	Characteristics of Stars and the HR Diagram	Describe the characteristics of stars, including our Sun, and use models such as the HR diagram to classify stars.	8.8A–C	8.2D–E 8.3A
4.5	Movements through Space	Demonstrate the cause and effects of the cyclic movements of Earth.	8.7A 8.8B	8.1A 8.2C, D–E 8.4A–B

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Gateways to Science STAAR Edition for Grade 8
Unit Outline

Unit 4: Earth and Space, Part 1 *continued*
Approximate Teaching Time: 6 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
4.6	Seasons	Model and illustrate how Earth is tilted on an axis and revolves around the Sun, causing changes in the seasons.	8.7A	8.1A 8.2C–E 8.3B–C 8.4A
4.7	Moon Phases	Demonstrate and predict sequences of events in the lunar cycle.	8.7B	8.1B 8.2C, E 8.3B–C 8.4A
4.8	Tides	Relate the position of the Moon to its effect on high and low tides and the position of the Moon and Sun to their effect on spring and neap tides using models and graphs.	8.7C	8.2D–E 8.3B–C

Unit 5: Earth and Space, Part 2
Approximate Teaching Time: 7 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
5.1	Unequal Heating in the Oceans	Recognize that the Sun provides the energy that drives convection, producing ocean currents.	8.10A	8.1A 8.2D 8.4A–B
5.2	Winds and Air Pressure	Investigate winds and areas of high and low pressure.	8.10A–B	8.1A 8.2C, E 8.3C 8.4A–B
5.3	Air Masses and Fronts	Identify global patterns of atmospheric movement that influence local weather including fronts.	8.10B	8.1A 8.2A, C, E 8.4A–B
5.4	Weather Maps	Interpret weather maps showing high and low pressure and fronts to predict weather, and identify the role of oceans in hurricane formation.	8.10B–C	8.2D–E
5.5	Evidence of the Plate Tectonics Theory	Describe evidence that led to the development of and support for plate tectonic theory.	8.9A	8.1A–B 8.2C, E 8.3B, D
5.6	Determining Plate Boundaries	Relate plate movements to the formation of crustal features such as volcanoes, mountains, mid-ocean ridges, and trenches.	8.9B 8.6C	8.1A–B 8.2A, D–E 8.3B
5.7	Topographic and Satellite Maps	Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.	8.9C	8.1A–B 8.2E 8.3B 8.4A

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Unit 6: Organisms and Environments

Approximate Teaching Time: 3 Weeks

Lesson		Learning Goal	TEKS Content	TEKS Process
6.1	Energy in Ecosystems	Describe the relationships between consumers and producers. Diagram the flow of energy in food webs and energy pyramids.	8.11A	8.2C–E
6.2	Relationships in Food Webs	Describe relationships between organisms within ecosystems.	8.11A	8.1A 8.2A, C–E
6.3	Biotic and Abiotic Factors in Ecosystems	Investigate how organisms and populations depend on and compete for resources within an ecosystem.	8.11B	8.1A–B 8.2A–D 8.3B–C 8.4A–B
6.4	Changes in the Environment	Explore how short- and long-term environmental changes affect organisms and their traits.	8.11C	8.1B 8.2A, C–E 8.3A
6.5	The Human Factor	Explain how humans are dependent on the ocean and how human activities have modified the ocean.	8.11D	8.2E 8.3A–B

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