

5th Grade Science Q2

The purpose of this document is to clarify what students should know and be able to do each grading period.

The **Competencies** listed in the table below are developed from the Texas Essential Knowledge and Skills (TEKS) for that grade level. The chart defines which quarter the Competency is reported (Q1 = Grading Period 1, Q2 = Grading Period 2, etc.)

Teachers will report on the competencies using the **Learning Progressions** which are comprised of four proficiency levels (developing (DV), progressing (PG), proficient (PG) and advanced (AV)) and defines the knowledge and skills students will master on their pathway to proficiency. The Learning Progressions for each Competency are below the yearlong outline of the Competencies. Following the Learning Progression are the Competency Success Criteria which define what a student knows and is able to do related to that competency at the end of a unit or quarter.

Students who receive a mark of “**Proficient**” meet the grade level expectation for that Competency.

Competencies	Q 1	Q 2	Q 3	Q 4
C1 – Uses data for Scientific Explanations The student analyzes and interprets information and is able to construct reasonable explanations from observed and inferred evidence.	X	X	X	X
C2 - Physical Properties of Matter and Mixtures The student classifies matter based on physical properties, and identifies whether or not the physical properties of ingredients in mixtures change.	X			
C3 – Force and Energy The student explores the uses of energy, and designs an experimental investigation that tests the effects of forces on objects.	X	X		
C4 – Changes on Earth’s Surface The student describes how wind, water and ice cause slow changes on Earth's surface.		X		
C5 – Formation of Sedimentary Rocks The student explores how sedimentary rocks and fossil fuels are formed.		X		
C6 – Water Cycle, Weather and Climate The student explains water cycle interactions and differentiates between weather and climate.			X	
C7 – Earth’s Cycles The student demonstrates the effects of Earth’s rotation.			X	
C8 – Interaction with ecosystems and changes in ecosystems The student observes the interactions and predicts changes within ecosystems.				X

5th Grade Science Competencies and Progressions

C9 – Structures and Functions of organisms The student compares the structures and functions of organisms and differentiates between inherited traits and learned behaviors.				X
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Learning Progression for Competency 1: Uses data for Scientific Explanations

The student analyzes and interprets information and is able to construct reasonable explanations from observed and inferred evidence.

Developing	Progressing	Proficient	Advanced
Interprets data and patterns to construct some explanations that can be observed or measured Makes an inaccurate claim Evidence is inappropriate or does not support the claim May attempt to connect the claim and evidence using a scientific concept, but the concept is not relevant	Interprets data and patterns to construct reasonable explanations that can be observed and measured Makes an accurate but vague or incomplete claim in writing or orally Uses some specific data (exact words and/or numbers) as evidence to support the claim Connects the claim and evidence using only relevant scientific concepts Create reasoning by connecting some of the claim and evidence to explain a scientific concept	Analyzes and interprets information and is able to construct reasonable explanations from observed and inferred evidence Makes an accurate and complete claim that answers the question, in writing and orally Uses enough evidence to support the claim based on data Uses only relevant specific data (exact words and/or numbers) as evidence to support the claim Connects the claim and evidence using only relevant scientific concepts Explains why the evidence supports the claim Creates reasoning by connecting the claim and evidence to explain a scientific concept	Analyzes data to formulate reasonable explanations, communicates valid conclusions supported by the data, and predicts trends Recognizes alternative explanations and provides appropriate counterevidence. Communicates valid conclusions in both written and verbal forms, using academic language.

Success Criteria for Proficient in Scientific Explanations:

The student can:

- make an accurate claim based on data.
- identify pieces of evidence that support the claim.
- create reasoning by connecting the claim and evidence to explain a scientific concept.
- provide feedback to peers about their claim, evidence, and reasoning.

Learning Progression for Competency 3: Force and Energy

The student explores the uses of energy, and designs an experimental investigation that tests the effects of forces on objects.

Developing	Progressing	Proficient	Advanced
Differentiates among the forms of energy, including mechanical, sound, electrical, light, and thermal Provides examples of objects that use or produce light energy Demonstrates that electricity flows in a closed path, creating an electrical circuit Explains the effects that forces such as push and pull, gravity, friction, and magnetism, have on objects After a being provided with a description of what is being investigated, discusses an experimental investigation with peers that can test what is planned	Describes the uses of energy with everyday objects, including mechanical, sound, electrical, light, and thermal Explains that light energy travels in a straight line Explains that light behaves differently when it strikes different objects After being provided with a description of what is being investigated, designs an experimental investigation with peers that can test what is planned	Manipulates, explores, and provides examples of objects that use different forms of energy Demonstrates, predicts, and explains that light energy travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted Demonstrates how the flow of electricity in closed circuits can produce light, heat, or sound After a being provided with a description of what is being investigated, designs an experimental investigation that can test what is planned	Constructs models to demonstrate how light energy can be reflected or refracted Constructs models to mimic everyday objects that use electricity to produce light, heat, or sound Designs and conducts investigations to demonstrate the effects that unbalanced forces have on the position and direction of objects. Draws conclusions based on data and/or diagrams showing movement of an object over time

Success Criteria for Proficient in Force and Energy:

The student can:

- manipulate, explore, and provide examples of objects that use different forms of energy.
 - o mechanical energy
 - o light energy
 - o thermal energy
 - o electrical energy
 - o sound energy
- demonstrate, predict, and explain how light behaves.
 - o when it strikes an object and is reflected light
 - o when it travels through one medium to another and is refracted
- demonstrate how the flow of electricity in closed circuits can produce light, heat, or sound.
- after a being provided with a description of what is being investigated, designs an experimental investigation that can test what is planned.
- after being provided with a description of a well-designed investigation, determines what is being investigated.

Learning Progression for Competency 4: Changes on Earth's Surface

The student describes how wind, water, and ice cause slow changes on Earth's surface.

Developing	Progressing	Proficient	Advanced
Understands the processes of weathering, erosion and deposition	Explains ways in which wind, water, and ice can change the shape of the land	Recognizes how landforms are formed or changed over time by wind, water, and ice.	Makes observations and or measurements to provide evidence of the effects of weathering or the rate of erosion by water, wind or ice, and connect it to the formation of landforms

Success Criteria for Proficient in Changes on Earth's Surface:

The student can:

- recognize how landforms (sand dunes, deltas, canyons, and valleys) are formed over time by wind, water, and ice through the processes of
 - o weathering
 - o erosion
 - o deposition
- analyze models, pictures, and diagrams that demonstrate how slow changes to Earth's surface affect landforms over time by wind, water, and ice through processes of
 - o weathering
 - o erosion
 - o deposition

Learning Progression for Competency 5: Formation of Sedimentary Rocks

The student explores how sedimentary rocks and fossil fuels are formed.

Developing	Progressing	Proficient	Advanced
Knows sedimentary rock is made up of layers of sediment Knows the 3 fossil fuels	Understands and can explain why that fossil fuels and sedimentary rocks are nonrenewable resources Understands fossil fuels are formed over millions of years from the deposition of organic materials in layers	Recognizes how actions of sediments, over time, form sedimentary rocks Describes how organic matter trapped in sedimentary rock can become a fossil fuel	Develops a model to explain the formation of sedimentary rocks and fossil fuels Describes how the uses of fossil fuels affect the environment

Success Criteria for Proficient in Formation of Sedimentary Rocks:

The student can:

- recognize how actions of sediments, over time, form sedimentary rocks.
 - o deposition
 - o compaction
 - o cementation
- describe how organic matter trapped in sedimentary rock can become a fossil fuel.

