Grade 7 Science Proficiency Scale Quarter 1

	1 – Novice	2 -Approaching	3 -Proficient	4 -Advanced
Engineering Design Process	Has been exposed to and completes some of the steps of the Engineering Design Process when solving a problem.	Completes several **but not all** of eight steps of the Engineering Design Process when solving a problem.	Completes all eight steps of the Engineering Design Process when solving a problem (ETS1-1, ETS1-2, ETS1-3, ETS1-4).	Uses the Engineering Design Process when solving a problem and uses precision, creativity, and critical thinking skills while identifying several potential impacts and limitations of the design.
Cells & Microscopes	Identifies that living things are made of cells, either one cell or many different numbers and types of cells.	Uses specific vocabulary to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells.	Conducts an investigation to Develops and uses a model to describe the function of a cell as a whole **and** describes ways that parts of cells contribute to the overall function provide evidence that living things are made of cells, either one cell or many different numbers and types of cells (LS1-1).	Conducts an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells and asks or answers driving and creative questions about the composition of living things.
Functions of Cells	Uses some provided vocabulary to describe some of the parts and functions of a cell as a whole OR ways that parts of cells contribute to the overall function.	Using specific vocabulary, describes the parts and function of a cell as a whole OR describes ways that parts of cells contribute to the overall function.	Develops and uses models to ask or answers questions about the function of a cell as a whole and describes ways that parts of a cells contribute to overall cell function (LS1-2).	Asks or answers driving and creative questions about the function of a cell as a whole and ways that parts of cells contribute to the overall function, while developing and using models.
Photosynthesis & Respiration	Has been exposed to and is working towards being able to provide some evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. Has been exposed to and is working towards being able to use vocabulary to describe how food is rearranged through chemical reactions.	Uses specific vocabulary to provide evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. Uses specific vocabulary to describe how food is rearranged through chemical reactions, forming new molecules that support growth and/or release energy as this matter moves through an organism.	Constructs a model and scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms (LS1-6) **and** describes how food is rearranged through chemical reactions, forming new molecules that support growth and/or release energy as this matter moves through an organism (LS1-7).	Asks or answers driving and creative questions about the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. Asks or answers driving and creative questions about how food is rearranged through chemical reactions, forming new molecules that support growth and release energy as this matter moves through an organism.

Grade 7 Science Proficiency Scale Quarter 2

	1 – Novice	2 - Approaching	3-Proficient	4-Advanced
Engineering Design Process	Has been exposed to and completes some of the steps of the Engineering Design Process when solving a problem.	Completes several **but not all** of eight steps of the Engineering Design Process when solving a problem.	Completes all eight steps of the Engineering Design Process when solving a problem (ETS1-1, ETS1-2, ETS1-3, ETS1-4).	Uses the Engineering Design Process when solving a problem and uses precision, creativity, and critical thinking skills while identifying several potential impacts and limitations of the design.
Cell Division	Has been exposed to examples and is working towards being able to describe why asexual reproduction results in offspring with identical genetic information and why sexual reproduction results in offspring with genetic variation.	Uses specific vocabulary to describe why asexual reproduction results in offspring with identical genetic information **and/or** why sexual reproduction results in offspring with genetic variation.	Develops and uses a model to think critically about and describe why asexual reproduction results in offspring with identical genetic information **and** why sexual reproduction results in offspring with genetic variation (LS.3-2).	Develops and uses a model to think critically about and describe why asexual reproduction results in offspring with identical genetic information **and** why sexual reproduction results in offspring with genetic variation and relates these concepts to real world situations or examples.
Genetics & Mutations	Has been exposed to and is working towards being able to describe how traits are expressed using principles of genetics and is working towards being able to use genetic terminology.	Uses specific vocabulary to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism **and/or** Describes how traits are expressed using basic principles of genetics or can use some genetic terminology.	Develops and uses a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism (LS3-1) **and** describes how traits are expressed using principles of genetics, uses genetic terminology (phenotype, genotype, dominant, recessive, homozygous, heterozygous) **and** uses Punnett squares to predict the probability of traits in offspring (LS3-2).	Asks or answers driving and creative questions about why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in various effects to the structure/function of the organism and describes how traits are expressed using principles of genetics and identify phenotype, genotype, dominant, recessive, homozygous, and heterozygous, and uses a variety of Punnett squares to predict the probability of traits in offspring.

Artificial Selection & Environmental & Genetic Factors	Has been provided with examples and is working towards being able to describe the technologies that have changed the way humans influence the inheritance of desired traits in organisms. Has been introduced to and is working towards being able to explain how environmental factors and genetic factors influence growth of organisms.	Uses vocabulary to describe the technologies that have changed the way humans influence the inheritance of desired traits in organisms. Explains, using evidence, how environmental factors **or** genetic factors influence growth of organisms.	Gathers and synthesizes information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms (LS4-5) **and** Explains, using evidence, how environmental factors and genetic factors influence growth of organisms (environmental factors include availability of food, light, space, water; genetic factors include typical size or characteristic of species) (LS1-5).	Gathers and synthesizes information **and asks or answers driving and creative questions about** the technologies that have changed the way humans influence the inheritance of desired traits in organisms. Explains, using evidence, how environmental factors and genetic factors influence growth of organisms and provides real world examples and potential benefits or limitations.

Grade 7 Science Proficiency Scale Quarter 3

	1 – Novice	2 -Approaching	3 -Proficient	4 -Advanced
Engineering Design Process	Has been exposed to and completes some of the steps of the Engineering Design Process when solving a problem.	Completes several **but not all** of eight steps of the Engineering Design Process when solving a problem.	Completes all eight steps of the Engineering Design Process when solving a problem (ETS1-1, ETS1-2, ETS1-3, ETS1-4).	Uses the Engineering Design Process when solving a problem and uses precision, creativity, and critical thinking skills while identifying several potential impacts and limitations of the design.
Biological Evolution, Genetic Variation, & Natural Selection	Has been exposed and is working towards being able to use specific vocabulary to discuss evolutionary relationship as evidenced from embryology and the fossil record. Has been introduced to and is working towards being able to explain how natural selection may lead to increases and decreases of specific traits in populations over time.	Uses specific vocabulary to describe the existence, diversity, extinction, and change of life forms throughout the history of life on Earth OR uses specific vocabulary to describe the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships and to describe similarities in the embryological development OR uses specific vocabulary to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	Constructs an explanation to infer evolutionary relationships based on patterns, referencing both the anatomical similarities and differences (among modern organisms and between modern and fossil organisms) (LS4-2) and similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy (LS4-3). Constructs an <u>explanation based on evidence</u> that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment (LS4-4) **and** utilizes mathematical representations to explain of how natural selection may lead to increases and decreases of specific traits in populations over time (LS4-6).	Applies a variety of scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships and compares patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy and supports comparison with examples. Constructs an <u>explanation based on evidence</u> that **asks or answers driving and creative questions about** how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. Utilizes mathematical representations **and asks or answers driving and creative questions about** how natural selection may lead to increases and decreases of specific traits in populations over time.
Body Systems	Has been exposed to and is working towards being able to use specific vocabulary to explain how the body is a system of interacting subsystems composed of groups of cells.	Uses specific vocabulary to explain how the body is a system of interacting subsystems composed of groups of cells.	<u>Uses arguments supported by evidence</u> to explain how the body is a system of interacting subsystems composed of groups of cells (LS1-3).	<u>Uses arguments supported by evidence</u> **and asks or answers driving and creative questions** about how the body is a system of interacting subsystems composed of groups of cells.

Grade 7 Science Proficiency Scale Quarter 4

	1 – Novice	2 -Approaching	3 -Proficient	4 -Advanced
Engineering Design Process	Has been exposed to and completes some of the steps of the Engineering Design Process when solving a problem.	Completes several **but not all** of eight steps of the Engineering Design Process when solving a problem.	Completes all eight steps of the Engineering Design Process when solving a problem (ETS1-1, ETS1-2, ETS1-3, ETS1-4).	Uses the Engineering Design Process when solving a problem and uses precision, creativity, and critical thinking skills while identifying several potential impacts and limitations of the design.
Cycle of Matter & Flow of Energy, Ecosystems & Population	Has been exposed to and is working towards being able to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. Has been exposed to and is working towards being able to explain the effects of resource availability on organisms and populations of organisms and is working towards being able to describe the changes to physical or biological components of an ecosystem affect populations.	Uses specific vocabulary to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem **and/or** uses specific vocabulary to explain the effects of resource availability on organisms and populations of organisms in an ecosystem and to describe the changes to physical or biological components of an ecosystem affect populations.	Develops a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem (LS2-3) **and** Analyzes and <u>interprets data to provide evidence</u> for the effects of resource availability on organisms and populations of organisms in an ecosystem (LS2-1), **and** <u>constructs an argument supported by empirical evidence</u> that changes to physical or biological components of an ecosystem affect populations (LS2-4).	Develops a model to describe cycling of energy and **asks or answers driving and creative questions about** the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. Analyzes and <u>interprets data to provide evidence</u> for the effects of resource availability on organisms and populations of organisms in an ecosystem and <u>Constructs an argument supported by empirical evidence</u> **and asks or answers driving and creative questions** about the effects of resource availability on organisms and populations of organisms in an ecosystem and the changes to physical or biological components of an ecosystem affect populations.
Relationships in Ecosystems	Has been introduced to patterns of interactions among organisms across multiple ecosystems and is working towards using specific vocabulary to describe patterns of interactions among organisms across multiple ecosystems.	Uses specific vocabulary to describe patterns of interactions among organisms across multiple ecosystems or solutions for maintaining biodiversity and ecosystem services **and/or** uses specific vocabulary to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	Constructs an explanation that predicts patterns of interactions among organisms across multiple ecosystems (LS2-2) **AND** evaluates competing design solutions for maintaining biodiversity and ecosystem services (LS2-5). Uses argument based on empirical evidence and scientific reasoning to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively (LS1-4).	Constructs an explanation **and asks or answers driving and creative questions about** the patterns of interactions among organisms across multiple ecosystems **AND** solutions for maintaining biodiversity and ecosystem services. Considers human impact to biodiversity and shows respect for organisms and ecosystems.