

WELCOME!

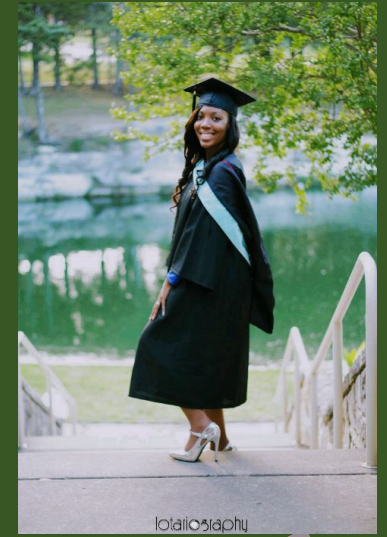
What's Coming to Science?

Mrs. Davenport





About Me!



I am a native of Dallas, Texas. She has served as a middle school science teacher, master teacher, curriculum leader, campus specialist and most currently a District Content Specialist. My educational background includes a Bachelor of Arts degree from The University of North Texas and a Masters Degree in Education from Walden University. My educational philosophy is that ALL students can learn regardless of background and socioeconomic status. I am excited about joining the LAN family as an academic content specialist and contributing my passion, knowledge and skills to enhance the LAN community.

I have been married to my husband, Brian since 2015. Outside of work I enjoy spending time with my family, friends and serving my church.

My favorite things!



My family!



Your turn: Introduce Yourself!

- Name
- How many years have you been with LAN?
- Something that you want to accomplish this year.



Icebreaker



1. Take a skittle:
2. Based on the color of your skittle answer the following questions

Purple: Favorite color

Red: Favorite food

Yellow: Dream vacation

Orange: Fun Fact

Green: What did you don this summer?



Learning Objective:

- Attendees will have a better and deeper understanding of the new science TEKS that will be implemented in the Fall of 2024.
- Attendees will be able to practice matching current science TEKS with the updated science TEKS.

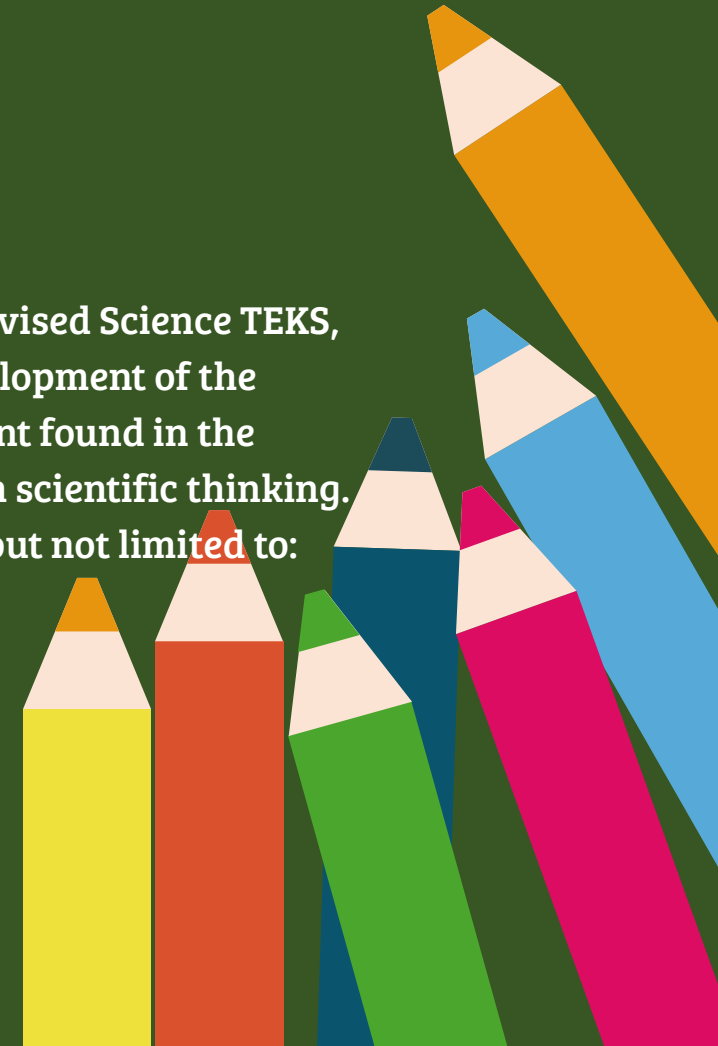


The New TEKS:

The Revised Science TEKS have been formally adopted and will be implemented in Fall 2024

A Framework for K–12 Science Education was carefully considered during the adoption of the Revised Science TEKS, allowing for a three-dimensional approach to how we teach science in Texas. This led to the development of the recurring themes and concepts (RTCs), scientific and engineering practices (SEPs), and the content found in the updated TEKS. They were designed to maintain rigor and keep student expectations current with scientific thinking. The SBOE adopted new science standards for K-8 Science and the high school courses, including but not limited to:

- Biology
- Chemistry
- Integrated Physics and Chemistry
- Physics, Environmental Systems
- Anatomy and Physiology, and
- Forensic Science.



The Biggest Challenges

- Three Dimensional Curriculum
- Vertical Alignment



The Biggest Challenges

The biggest shift with the future science TEKS is from two dimensional (2D) to three dimensional (3D) curriculum. The current science TEKS function in a 2D sense through process skills and content TEKS .The process skills focused on scientific practice (the “how” of being a scientist), while the content TEKS focused on the content (the “what”). The future TEKS will replace the process skills with Science and Engineering Practices (SEPs) and Recurring Themes and Concepts (RTCs). The three dimensions of the future science TEKS include:

- **Science and Engineering Practices (SEPs):** These are the practices that scientists use to ask and answer questions, and the practices that engineers use to define problems and design solutions. Examples include communicating information and designing solutions. (The new teaching method is centered around a phenomenon and students have to investigate and ask questions centered around the phenomenon)
Phenomenon:a fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question.
- **Recurring Themes and Concepts (RTCs):** These are big-picture concepts that span the entire field of science, not just one grade level. They are evident across grades K-12 and are relevant to all students, not just students who will major in science in college. In general, if a student who comes through the K-12 school system is able to navigate these concepts, they can truly grasp the core of what science is and how we can use it to impact the world.



Vertical Alignment

- **Vertical alignment was emphasized during the development process. In order to begin with the end in mind, the SBOE work group for high school developed their courses first in order to define what students ultimately need to take from the K-12 science curriculum. From there, the middle school and elementary courses were developed to build students up to that. Based on this format, you will find various spaces throughout K-12 where the content was either moved, added, or removed from the curriculum.**



Scientific and Engineering Practices

- Practices that scientists use to ask and answer questions,

Scientific and Engineering Practices				
	Grade 6	Grade 7	Grade 8	Biology
Planning Investigations	6.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.	7.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.	8.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.	B.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
	6.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.	7.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.	8.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.	B.1.B Apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.
	6.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.	7.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.	8.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.	B.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.
Conducting Investigations	6.1.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.	7.1.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.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.	B.1.D Use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures.



Recurring Themes and Concepts

- These are big-picture concepts that span the entire field of science, not just one grade level.

	Grade 6	Grade 7	Grade 8	Biology
Resources	6.4.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.	7.4.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.	8.4.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.	B.4.C Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in STEM in order to investigate science, technology, engineering, and mathematics (STEM) careers.
Recurring Themes and Concepts	6.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.	7.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.	8.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.	
	6.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.	7.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.	8.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.	
	6.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.	7.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.	8.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.	
	6.5.D Examine and model the parts of a system and their interdependence in the function of the system.	7.5.D Examine and model the parts of a system and their interdependence in the function of the system.	8.5.D Examine and model the parts of a system and their interdependence in the function of the system.	
	6.5.E Analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems.	7.5.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.E Analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems.	
	6.5.F Analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems.	7.5.F Analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems.	8.5.F Analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems.	
	6.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.	7.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.	8.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.	



Combined K-12 Example

In Kindergarten, students learn to “identify, describe, and predict the **patterns** of day and night and their observable characteristics” (K.9.A) Their teacher regularly uses the words **pattern** and **changes** during students’ investigations to help students internalize these big concepts. In 1st Grade, students “describe and predict the **patterns** of seasons of the year such as order of occurrence and **changes** in nature” (1.9) and in 4th grade, students study “**patterns of change** in the observable appearance of the Moon from Earth” (4.9.B). This lays the foundation for scientific understanding all the way through high school. For example, in HS physics, students study the motion of various objects to look for **patterns** in graphs of position vs. time, velocity vs. time, and acceleration vs. time (Physics.5.A,C). They also look for **patterns** in the characteristics of waves, including velocity, frequency, amplitude, and wavelength (Physics.8.C) and how **changing** one characteristic alters the others. By using the Recurring Themes of **patterns** and **change** over multiple years and topics, students learn that these concepts can be used to understand and describe phenomena from a variety of scientific disciplines.

LET'S TAKE A LOOK.... Category 1

Current TEKS Matter and Energy

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.
5B	Identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity.
5C	Interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements.
5D	Recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts.
5E	Investigate how evidence of chemical reactions indicates that new substances with different properties are formed and how that relates to the law of conservation of mass.

← **Removed**

		6A	Explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures. (NEW)
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.		
5B	Identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity.		
		6B	Use the periodic table to identify the atoms involved in chemical reactions. (NEW)
5C	Interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements.		
5D	Recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts.		
		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. (NEW)
		6D	Compare and contrast the properties of acids and bases, including pH relative to water. (NEW)
5E	Investigate how evidence of chemical reactions indicates that new substances	6E	Investigate how mass is conserved in chemical reactions and relate conservation of mass to
	with different properties are formed and how that relates to the law of conservation of mass.		the rearrangement of atoms using chemical equations, including photosynthesis.

2024 TEKS Matter and its Properties

6A	Explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures.
6B	Use the periodic table to identify the atoms involved in chemical reactions.
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.
6D	Compare and contrast the properties of acids and bases, including pH relative to water.
6E	Investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis.

← **NEW!!**

BRAIN



Practice

- The blue strip represents the current TEKS
- The green strip represents the 2024 TEKS

With a partner, try to match the current TEKS with the new 2024 TEKS.



Let's Dive Deeper.....Category 2

Current TEKS Force and Motion

6A	Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.
6B	Differentiate between speed, velocity, and acceleration.
6C	Investigate and describe applications of Newton's three laws of motion such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.

Modified and moved to 7.7B

2024 TEKS Force and Motion

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.
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.
8A	Compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum.
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.

New

Modified and moved from 8.8C

(6)	Force, motion, and energy. The student knows that there is a relationship between force, motion, and energy. The student is expected to:	(7)	Force, motion, and energy. The student understands the relationship between force and motion within systems. The student is expected to
6A	Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.		
		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. (NEW)
6B	Differentiate between speed, velocity, and acceleration (Modified and moved to 7.7B)		
6C	Investigate and describe applications of Newton's three laws of motion such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.	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.
		(8)	Force, motion, and energy. The student knows how energy is transferred through waves. The student is expected to:
		8A	Compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum. (Modified and moved from previous 8.8C in Earth and Space Strand)
		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. (Modified and moved from previous 8.8C in Earth and Space Strand)

Keep Diving.....Category 3

(7)	Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. The student is expected to:		
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 (Modified and moved to 6.9A)		
7B	Demonstrate and predict the sequence of events in the lunar cycle		
7C	Relate the positions of the Moon and Sun to their effect on ocean tides. (Modified and moved to 6.9B)		
(8)	Earth and space. The student knows characteristics of the universe. The student is expected to:	(9)	Earth and space. The student describes the characteristics of the universe and the relative scale of its components. The student is expected to:
8A	Describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification	9A	Describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram
8B	Recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star	9B	Categorize galaxies as spiral, elliptical, and irregular and locate Earth's solar system within the Milky Way galaxy
8C	Identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe. (Modified and moved to Force and Motion strand in new 8.8A and 8.8B)		
8D	Research how scientific data are used as evidence to develop scientific theories to describe the origin of the universe.	9C	Research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.
(9)	Earth and space. The student knows that natural events can impact Earth systems. The student is expected to:		
9A	Describe the historical development of evidence that supports plate tectonic theory. Modified and moved to 7.10A)		
9B	Relate plate tectonics to the formation of crustal features. Modified and moved to 7.10B)		
9C	Interpret topographic maps and satellite views to identify land and erosional		

	features and predict how these features may be reshaped by weathering.		
(10)	Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems	(10)	Earth and space. The student knows that interactions between Earth, ocean, and weather systems impact climate. The student is expected to
10A	Recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds	10A	Describe how energy from the Sun, hydrosphere, and atmosphere interact and influence weather and climate.
10B	Identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts	10B	Identify global patterns of atmospheric movement and how they influence local weather.
10C	Identify the role of the oceans in the formation of weather systems such as hurricanes.	10C	Describe the interactions between ocean currents and air masses that produce tropical cyclones, including typhoons and hurricanes
		(11)	Earth and space. The student knows that natural events and human activity can impact global climate. The student is expected to:
		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. (NEW)
		11B	Use scientific evidence to describe how human activities, including the release of greenhouse gases, deforestation, and urbanization, can influence climate. (NEW)
		11C	Describe the carbon cycle. (NEW)

Current TEKS Earth and Space

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.
7B	Demonstrate and predict the sequence of events in the lunar cycle
7C	Relate the positions of the Moon and Sun to their effect on ocean tides.
8A	Describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification
8B	Recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star
8C	Identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe.
8D	Research how scientific data are used as evidence to develop scientific theories to describe the origin of the universe.
9A	Describe the historical development of evidence that supports plate tectonic theory.
9B	Relate plate tectonics to the formation of crustal features.
9C	Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.
10A	Recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds
10B	Identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts
10C	Identify the role of the oceans in the formation of weather systems such as hurricanes.

2024 TEKS Earth and Space

9A	Describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram.
9B	Categorize galaxies as spiral, elliptical, and irregular and locate Earth's solar system within the Milky Way galaxy.
9C	Research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.
10A	Describe how energy from the Sun, hydrosphere, and atmosphere interact and influence weather and climate.
10B	Identify global patterns of atmospheric movement and how they influence local weather.
10C	Describe the interactions between ocean currents and air masses that produce tropical cyclones, including typhoons and hurricanes
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.
11B	Use scientific evidence to describe how human activities, including the release of greenhouse gases, deforestation, and urbanization, can influence climate.
11C	Describe the carbon cycle.

Professional Divers.....Category 4

Current TEKS Organisms and Environments

11A	Investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as quantity of light, water, range of temperatures, or soil composition.
11B	Explore how short- and long-term environmental changes affect organisms and traits in subsequent populations
11C	Recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems.

Moved to 6.12A

Modified and moved to 6.13C

Modified and moved to 7.11B

2024 TEKS Organisms and Environments

12A	Explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems.
12B	Describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity.
12C	Describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem.
13A	Identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells.
13B	Describe the function of genes within chromosomes in determining inherited traits of offspring.
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.

New

Modified and moved from 7.10C

Modified and moved from 7.10B

Modified and moved from 7.12D

Modified and moved from 7.14C

Modified and moved from 7.11C

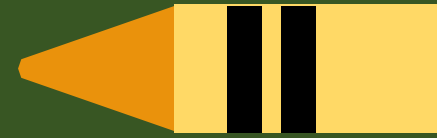
(11)	Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to	(12)	Organisms and environments. The student understands stability and change in populations and ecosystems. The student is expected to:
11A	Investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as quantity of light, water, range of temperatures, or soil composition. (Moved to 6.12A)		
		12A	Explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems (NEW)
		12B	Describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity. (Modified and moved from 7.10C)
		12C	Describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem. (Modified and moved from 7.10B)
11B	Explore how short- and long-term environmental changes affect organisms and traits in subsequent populations (Modified and moved to 6.13C)		
11C	Recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems. (Modified and moved to 7.11B)		
		(13)	Organisms and environments. The student knows how cell functions support the health of an organism and how adaptation and variation relate to survival. The student is expected to:
		13A	Identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells. (Modified and moved from 7.12D)
		13B	Describe the function of genes within chromosomes in determining inherited traits of offspring. (Modified and moved from 7.14C)
		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. (Modified and moved from 7.11C)

The Future.....



Don't let the future TEKS catch you by surprise!!

THANK



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Stand tall. Keep your head
high. Smile. Laugh.
Give hugs... Lots of hugs.
You are a teacher.
You are a hero.

