



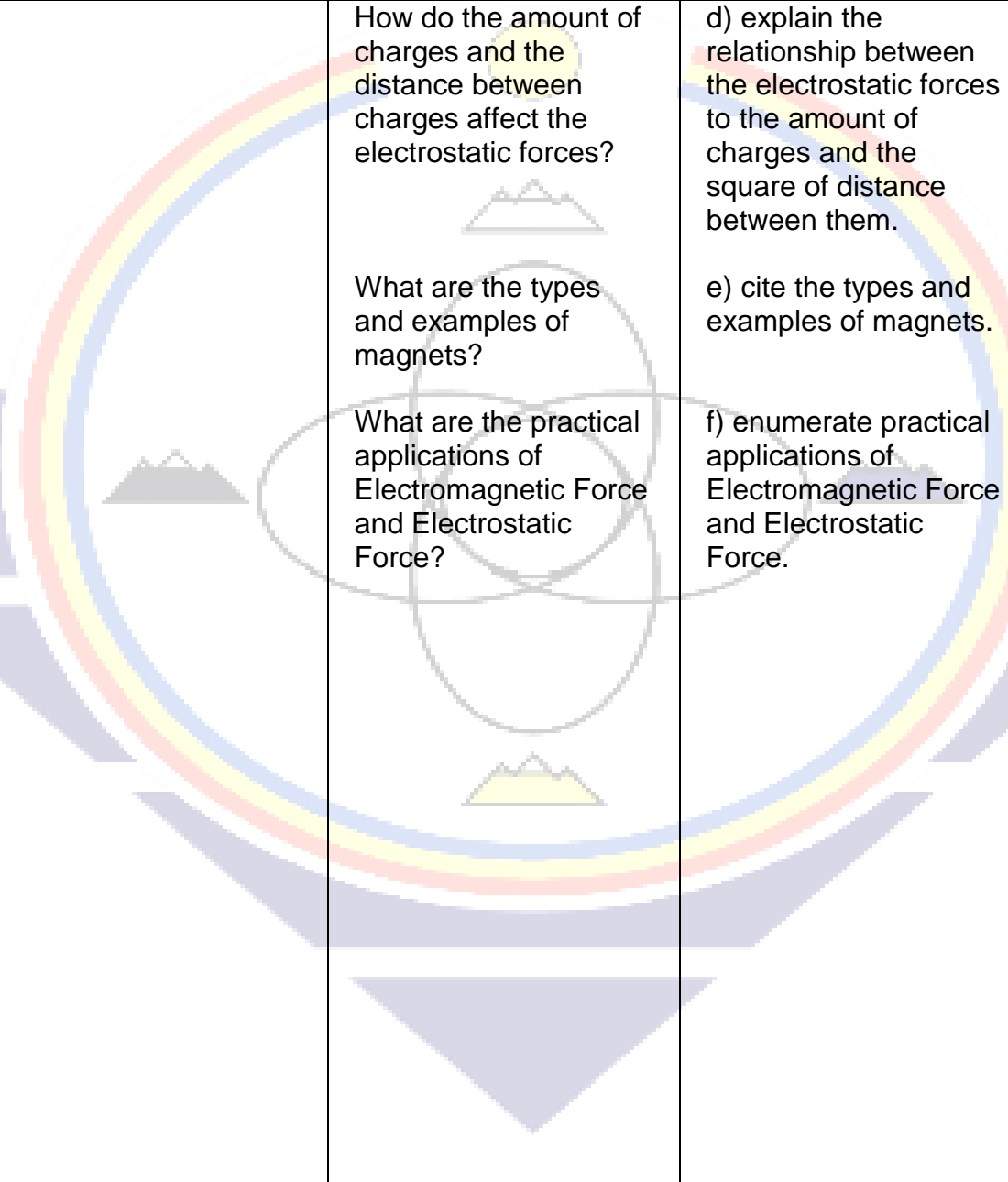
**GANADO MIDDLE SCHOOL**  
 (Ganado Unified School District No.20)  
 Navajo Route 1, Highway 264, Ganado, AZ 86505

## PACING GUIDE FOR SCIENCE 7

S.Y. 2021-2022

**JHOANNA DERRADA SANTIAGO**  
 Science 7 Teacher

Resources	AZ College and Career Readiness Standards	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
<p><b>First Quarter</b></p> <p><b>PHYSICAL SCIENCES</b></p> <p><b>Students will explore how cause and effect take place within and between a wide variety of force and motion systems from forces on individual objects to the forces that shape our Earth.</b></p>				
Projector Scientific Calculator Laptops Graphing Board SMART Board Markers Various Lab Equipment Butcher Paper Poster Board Color Pencils	<p><b>7.P2U1.1</b>            Collect and analyze data demonstrating how electromagnetic forces can be attractive or repulsive and can vary in strength.</p> <p><b>7.P2U1.2</b>            Develop and use a model to predict how forces act on objects at a distance.</p>	<p>What is a Force?</p> <p>What are the two types of Force?</p> <p>How does Contact force differ from Non-contact force?</p> <p>What are the principles behind Law of Charges and Law of Magnetism?</p>	<p><b>Students will be able to:</b></p> <p>a) describe forces, the types of forces.</p> <p>b) compare contact from non-contact forces</p> <p>c) describe the principles of Law of Charges and Law of Magnetism</p>	<p>Force</p> <p>Contact Force</p> <p>Non-contact Force (Normal, Applied, Friction, Tension, Spring, Gravity, Strong and Weak Nuclear Force)</p> <p>Electromagnetic Force</p> <p>Electrostatic Force</p> <p>Magnets</p> <p>Law of Magnetism</p>

<p><b>WEBSITES:</b>  PhET.com  Youtube.com  Slideshare.com  EdHelper.com  National Geographic.com  PhysicsLab.com</p> <p><b>BOOKS:</b>  Conceptual Physics by Paul G. Hewitt (12<sup>th</sup> Edition)  Physics by Alan Van Heuvelen, 2<sup>nd</sup> Edition (1986) Pearson Publishing Company</p>		<p>How do the amount of charges and the distance between charges affect the electrostatic forces?</p> <p>What are the types and examples of magnets?</p> <p>What are the practical applications of Electromagnetic Force and Electrostatic Force?</p>	<p>d) explain the relationship between the electrostatic forces to the amount of charges and the square of distance between them.</p> <p>e) cite the types and examples of magnets.</p> <p>f) enumerate practical applications of Electromagnetic Force and Electrostatic Force.</p>	<p>Law of Charges  Charges  Coulomb  Attractive Forces  Repulsive Force</p> <p>Magnets  Poles  Magnetic Field  Magnetic Field Lines  Poles of Magnet</p>
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<p><b>Second Quarter</b></p> <p><b>PHYSICAL SCIENCES</b></p> <p><b>Students will explore how cause and effect take place within and between a wide variety of force and motion systems from forces on individual objects to the forces that shape our Earth.</b></p>				
<p>Projector Scientific Calculator Laptops Graphing Board SMART Board Markers Various Lab Equipment Butcher Paper Poster Board Color Pencils</p> <p><b>WEBSITES:</b> PhET.com Youtube.com Slideshare.com EdHelper.com National Geographic.com PhysicsLab.com</p>	<p><b>7.P3U1.3</b> Plan and carry out an investigation that can support an evidence-based explanation of how objects on Earth are affected by gravitational force.</p>	<p>What is a Gravity?</p> <p>How does Gravity differ from Electromagnetic Force?</p> <p>What are the factors that affect the pull of gravity towards an object?</p> <p>How do masses and distance between objects affect the pull of gravity towards an object?</p> <p>What is the contribution of Isaac Newton behind Gravity?</p>	<p>Students will be able to:</p> <p>a) Describe Gravity.</p> <p>b) Compare Gravity from Electromagnetic Force.</p> <p>c) Identify the factors that affect the pull of Gravity towards an object,</p> <p>d) Explain the relationship among masses of objects and distance between them to Gravitational Force.</p> <p>e) Describe the contribution of Isaac Newton behind the Force of Gravity.</p>	<p>Gravity Electromagnetic Force Gravitational Potential Energy</p> <p>Direct Proportion Inverse Square Proportion Mass Distance</p> <p>Isaac Newton Law of Universal Gravitation Centripetal Force Centrifugal Force</p>

<p><b>BOOKS:</b></p> <p>Conceptual Physics by Paul G. Hewitt (12<sup>th</sup> Edition)</p> <p>Physics by Alan Van Heuvelen, 2<sup>nd</sup> Edition (1986) Pearson Publishing Company</p>	<p><b>7.P3U1.4</b> Use non-algebraic mathematics and computational thinking to explain Newton's laws of motion.</p>	<p>What is Law of Universal Gravitation?</p> <p>What is the importance of Gravity in the Solar System?</p> <p>What are the common applications of Gravity in daily life activities?</p> <p>What are the Kinematic Quantities?</p> <p>How do Kinematic Quantities differ from one another?</p> <p>What is a Fundamental and Derived Quantity?</p> <p>What is a Scalar and Vector Quantity?</p> <p>How to Graph Distance and Time?</p>	<p>f) Describe the Law of Universal Gravitation.</p> <p>e) Explain the principle behind Law of Universal Gravitation.</p> <p>g) Give the importance of Gravity in the Solar System.</p> <p>h) Enumerate the practical applications of Gravity in daily life activities.</p> <p>a) Identify the Kinematic Quantities.</p> <p>b) Compare the different Kinematic Quantities.</p> <p>c) Compare and contrast Fundamental and Derived Quantities.</p> <p>d) Compare and Contrast Scalar and Vector Quantities.</p> <p>e) Cite ways on how to graph distance and time.</p>	<p>Solar System Planets Rotation Revolution</p> <p>Kinematic Quantities (mass, distance/length, temperature, time, amount of substance, electric current, volume, speed, acceleration, force, weight, pressure)</p> <p>Fundamental Quantity Vector Quantity</p> <p>Scalar Quantity Vector Quantity</p> <p>Distance Time Slope</p>
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		<p>How to solve and graph the following quantities?  a) Distance and time  b) Speed versus time</p> <p>How to solve the following quantities: distance and displacement; speed and velocity; acceleration; force and weight?</p> <p>How does weight differ from a mass?</p> <p>What are the steps in solving problems related to Scalar and Vector Quantities?</p> <p>How to construct a Free Body Diagram?</p> <p>What is the principle behind Law of Inertia?</p> <p>How do mass and force applied affect the motion of an object?</p>	<p>f) Explain how to solve and graph distance and time; speed and time.</p> <p>g) Cite ways to solve problems related to distance and displacement; speed and velocity; acceleration; force and weight.</p> <p>h) Compare and contrast mass and weight.</p> <p>i) Give ways or steps on how to solve problems related to Scalar and Vector Quantities.</p> <p>j) Explain how to construct Free Body Diagrams.</p> <p>k) Law of Inertia.</p> <p>l) Explain the relationship among mass, force and motion of an object.</p>	<p>Speed  Distance  Time  Graph</p> <p>Displacement  Velocity  Force  Weight</p> <p>Mass  Weight</p> <p>Scalar Quantity  Vector Quantity  Resultant Vector  Component Method</p> <p>Forces  Free Body Diagram</p> <p>Law of Inertia  Net Force  Seat Belt Law</p> <p>Mass  Force  Motion</p>
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		<p>Does zero net force means object is at rest?</p> <p>What is the principle behind Law of Acceleration?</p> <p>When do we say that a body has positive and negative acceleration?</p> <p>What is the difference between acceleration and deceleration?</p> <p>What is the relationship between acceleration and mass; acceleration and force?</p> <p>What are the practical applications of Law of Acceleration?</p> <p>What is the principle behind Law of Interaction/ Action-Reaction?</p> <p>How does action force differ from reaction force?</p>	<p>m) Explain whether zero net force means object moves or not.</p> <p>n) Describe the principle behind Law of Acceleration.</p> <p>o) Compare positive acceleration (acceleration) from negative acceleration (deceleration).</p> <p>p) Identify the relationship between acceleration and mass; acceleration and force applied to an object.</p> <p>q) Give practical applications of Law of Acceleration.</p> <p>r) Describe the principle of Law of Interaction/Action-Reaction.</p> <p>s) Compare Action Force from Reaction Force.</p>	<p>Net Force At rest In motion</p> <p>Law of Acceleration Acceleration Deceleration</p> <p>Mass Force Acceleration Direct Proportion Inverse Proportion</p> <p>Law of Interaction/ Action-Reaction Action Force Reaction Force</p>
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		What are the practical applications of Law of Interaction/Action-Reaction?		
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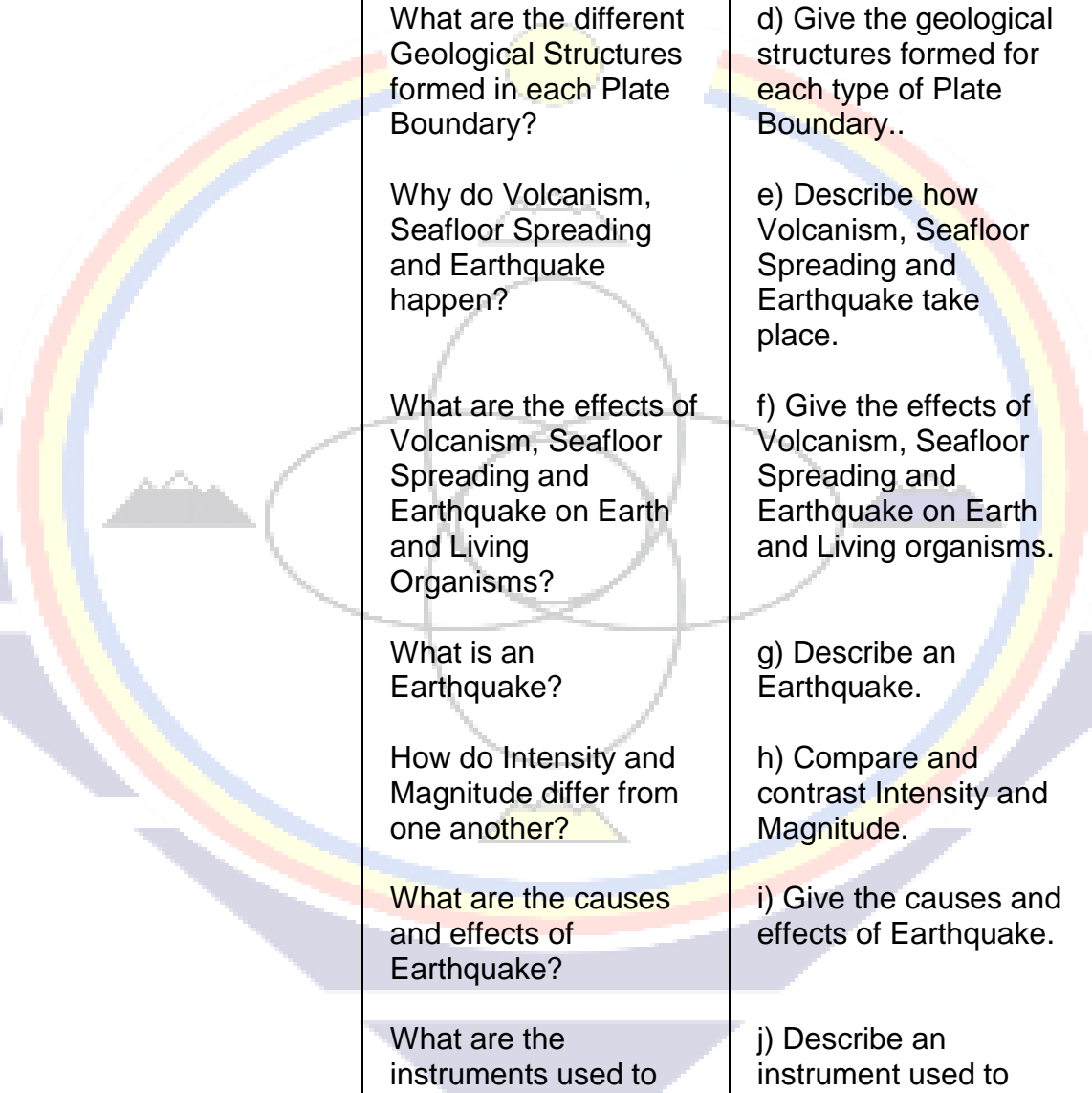
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**Third Quarter**  
**EARTH AND SPACE SCIENCE**  
**LIFE SCIENCES**

**EARTH AND SPACE SCIENCES:**  
Students develop an understanding of the patterns of energy flow along with matter cycling within and among Earth's systems.

**LIFE SCIENCES:**  
Students develop an understanding of the structure and function of cells.

<b>7th Grade Science Textbook</b> Projector Scientific Calculator Laptops Graphing Board SMART Board Markers Various Lab Equipment Butcher Paper Poster Board Color Pencils	<b>7.E1U1.6</b> Construct a model to explain how the distribution of fossils and rocks, continental shapes, and seafloor structures provides evidence of the past plate motions.	What is Plate Tectonics Theory?  Who are the proponents of Plate Tectonics and Continental Drift Theories?	<b>Students will be able to:</b> a) Explain Plate Tectonics Theory.  b) identify the scientists behind Plate Tectonics Theory and Continental Drift Theory.	Plate Tectonics Theory Continental Drift Theory  Convergent Boundary Divergent Boundary Transform Fault Convection Current Subduction Subduction Zone
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<p><b>WEBSITES:</b>  PhET.com  Youtube.com  Slideshare.com  EdHelper.com  National Geographic.com  PhysicsLab.com</p> <p><b>BOOKS:</b></p> <p>Earth's Changing Surface, SCIENCE EXPLORER, 2007  Prentice Hall</p> <p>Integrated Science, Glencoe 2012  McGraw Hill</p> <p>HOLT Science and Technology, Weather and Climate</p> <p>Science Fusion, Holt McDougal Space Science, 2012  Houghton Mifflin Publishing Company</p>		<p>How do Plate Boundaries differ from one another?</p> <p>What are the different Geological Structures formed in each Plate Boundary?</p> <p>Why do Volcanism, Seafloor Spreading and Earthquake happen?</p> <p>What are the effects of Volcanism, Seafloor Spreading and Earthquake on Earth and Living Organisms?</p> <p>What is an Earthquake?</p> <p>How do Intensity and Magnitude differ from one another?</p> <p>What are the causes and effects of Earthquake?</p> <p>What are the instruments used to measure Earthquake?</p>	<p>c) Compare and contrast the three (3) plate boundaries.</p> <p>d) Give the geological structures formed for each type of Plate Boundary..</p> <p>e) Describe how Volcanism, Seafloor Spreading and Earthquake take place.</p> <p>f) Give the effects of Volcanism, Seafloor Spreading and Earthquake on Earth and Living organisms.</p> <p>g) Describe an Earthquake.</p> <p>h) Compare and contrast Intensity and Magnitude.</p> <p>i) Give the causes and effects of Earthquake.</p> <p>j) Describe an instrument used to measure Earthquake.</p>	<p>Mountains  Volcanoes  Mid-Atlantic Ridge  Rift Valleys  Trenches</p> <p>Volcanism  Seafloor Spreading  Earthquake</p> <p>Earthquake  Epicenter  Focus  Fault  Tension  Magnitude  Intensity  Modified-Mercalli Scale  Richter Scale  Seismogram  Seismograph</p>
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	<p><b>7.E1U2.7</b> Analyze and interpret data to construct an explanation for how advances in technology has improved weather prediction.</p>	<p>What is the difference between weather and climate?</p> <p>What are the factors that affect weather and climate?</p> <p>How does the tilt of the Earth on its axis affects the weather and climate?</p> <p>What is a season?</p> <p>What are the factors that make the seasons change?</p> <p>How does equinox differ from a solstice?</p>	<p>k) Compare and contrast weather and climate.</p> <p>l) Identify the factors that affect weather and climate.</p> <p>m) Explain how the tilt of the Earth on its axis affect the weather and climate.</p> <p>n) Describe a season.</p> <p>o) Give the different factors that cause the seasons change.</p> <p>p) Compare and contrast equinox and solstice.</p>	<p>Weather Climate Axis Rotation Revolution Sun Earth Planets</p> <p>Season Tilt Equator Tropic of Cancer Tropic of Capricorn Arctic Circle Antarctic Circle International Dateline Prime Meridian Tropical Region Arctic Region. Winter Spring Summer Fall</p> <p>Equinox Solstice</p>
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		<p>What are the common weather instruments?</p> <p>How do this weather instruments work/function?</p>	<p>q) Enumerate the common weather instruments.</p> <p>r) Describe how each weather instrument works/functions.</p>	<p>Thermometer</p> <p>Barometer</p> <p>Rain Gauge</p> <p>Radar</p> <p>Sonar</p> <p>Satellite</p>
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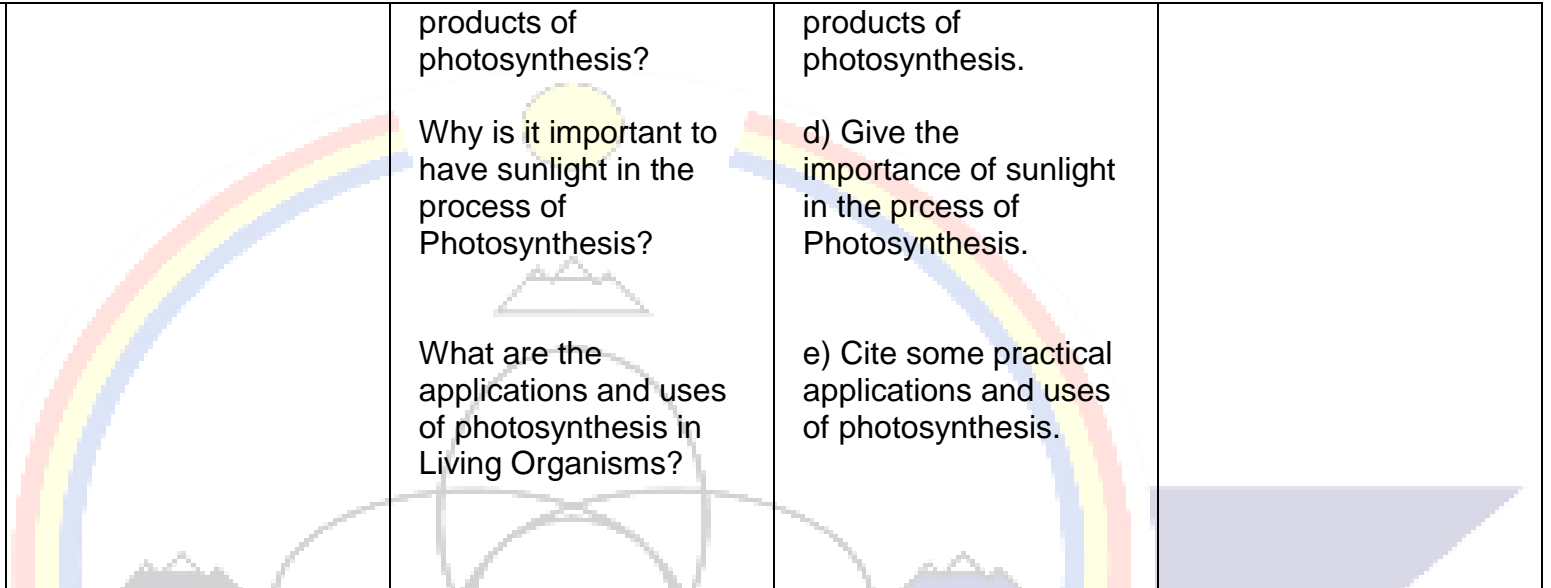
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**Fourth Quarter**  
**LIFE SCIENCES**

**Students develop an understanding of the structure and function of cells.**

<p>Projector</p> <p>Scientific Calculator</p> <p>Laptops</p> <p>Graphing Board</p> <p>SMART Board</p> <p>Markers</p> <p>Various Lab Equipment</p> <p>Butcher Paper</p> <p>Poster Board</p> <p>Color Pencils</p>	<p><b>7.L1U1.10</b></p> <p>Develop and use a model to explain how cells, tissues, and organ systems maintain life (animals).</p>	<p>What are the different main systems of the Human Body?</p> <p>What are the parts and functions of the following systems of the human body?</p> <p>a) Integumentary System</p> <p>b) Muscular System</p> <p>c) Skeletal System</p>	<p><b>Students will be able to:</b></p> <p>a) Identify the mains systems of the human body.</p> <p>b) Give the parts and functions of the following human body systems:</p> <p>a) Integumentary System</p> <p>b) Muscular System</p> <p>c) Skeletal System</p>	<p>Integumentary System</p> <p>Muscular System</p> <p>Skeletal System</p> <p>Digestive System</p> <p>Respiratory System</p> <p>Circulatory System</p> <p>Excretory System</p> <p>Nervous System</p> <p>Immune System</p>
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<p><b>WEBSITES:</b> PhET.com Youtube.com Slideshare.com EdHelper.com National Geographic.com PhysicsLab.com</p> <p><b>BOOKS:</b></p> <p>General Zoology Book By Robert L. Storer, Tracy I. (1965) McGraw Hill Publishing Company</p> <p>Fundamentals of Ecology, 5<sup>th</sup> Edition by Eugene Odum</p>	<p><b>7.L1U1.11</b> Construct an explanation for how organisms maintain internal stability and evaluate the effect of the external factors on organisms' internal stability.</p> <p><b>7.L2U1.12</b> Construct an explanation for how some plant cells convert light energy into food energy.</p>	<p>d) Digestive System e) Respiratory System f) Circulatory System g) Excretory System h) Nervous System i) Immune System</p> <p>How organisms maintain internal stability?</p> <p>What are the effects of the external factors on organism's internal stability?</p> <p>What is photosynthesis?</p> <p>What are the raw materials and end</p>	<p>d) Digestive System e) Respiratory System f) Circulatory System g) Excretory System h) Nervous System i) Immune System</p> <p>a) Identify the different ways on how organisms maintain internal stability.</p> <p>b) Give the different effects of the external factors on organisms' internal stability.</p> <p>a) Describe Photosynthesis.</p> <p>b) Explain the process of Photosynthesis.</p> <p>c) Identify the raw materials and end</p>	<p>Homeostasis Internal Stability Cold Weather Warm Weather Bacterial infection Viral Infection External conditions</p> <p>Photosynthesis Raw Materials End Products Water Sunlight Chlorophyll Chloroplast Carbon Dioxide Oxygen Starch Glucose</p>
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		<p>products of photosynthesis?</p> <p>Why is it important to have sunlight in the process of Photosynthesis?</p> <p>What are the applications and uses of photosynthesis in Living Organisms?</p>	<p>products of photosynthesis.</p> <p>d) Give the importance of sunlight in the process of Photosynthesis.</p> <p>e) Cite some practical applications and uses of photosynthesis.</p>	
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