5th Grade Science Pacing Guides

2019-2020

1st Semester Scientific Inquiry/ Life Science Units

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| Learning Target | Summary | Key Activities/Assessment Links | Key Vocabulary |
| **FIRST NINE WEEK**  **Scientific Inquiry**   * scientific question investigations * conduct scientific investigations * use math to collect data * analyze and interpret data * predict, model and explain * logic thinking/make connections * communicate scientific findings * use appropriate scientific tools     **Life Science - LS**  **LS1 -Organisms perform a variety of roles in an ecosystem.**  LS1 -populations of organisms can be categorized by how they obtain energy.  LS1 - Food webs can be used to identify the relationships among producers, consumers and decomposers.  **LS2 - All of the process that take place within organisms require energy**  LS2 - For ecosystems, the major source of energy is sunlight. Energy entering ecosystems as sunlight is transferred and transformed by producers into energy that organisms use through the process of photosynthesis. That energy is used or stored by the producer and can be passed from organism to organism as illustrated in food webs | The year will begin with students exploring Scientific inquiry through experiments and the design process along with learning about proper lab safety equipment and procedures.  Living Things Unit - This unit begins with an introduction to living and nonliving things and classifying things as living, non- living or once living. Next the Science Court activity develops an understanding of the characteristics of all living things. This information is used to design an aquarium ecosystem that has a combination of living and nonliving organisms and how living things rely on non-living things for survival. Energy webs are also introduced in this assignment. The last part of this unit is a project where students design a restaurant menu. The focal points are the energy consumption and consumers, producers and decomposers.  There will be 2 assessments during this unit. One pencil and paper and one Study Island.  This unit will begin with a simple understanding of food chains and food webs along with the different types of consumers such as herbivores, omnivores and carnivores. Students will learn how the skull and teeth structure of these animals are important for their survival. . Students will use their acquired knowledge to conduct an ODNR research project of some different animals of Ohio and then use the information from the research to design a possible food web of the ecosystem in which these organisms live. Next, students will be learning the process of photosynthesis through reading research, videos, discussions and creating diagrams of the process. Our last life Science lesson will be exploring the concept of symbiosis. Students will master the 3 types of symbiotic relationships (parasitism, mutualism and commensalism) The topic will be explored through a creative artwork activity where students went on an exploration in the Galapagos Islands, discovered new life forms and observed them in symbiotic relationships. In the activity they must sketch the creatures and describe in detail the type of symbiotic relationship they observed. Life Science will be followed up with a unit exam on Study Island. | **FIRST NINE WEEKS**  **Scientific Inquiry**  [Chem Games Lab Safety - Google Classroom](https://docs.google.com/document/d/1s1Wo9dvwiVrikQKlM9Ho1ZNuHpwpZlBNS7GXVU_Ab_E/edit)  [Science Safety Poster Assessment](https://docs.google.com/document/d/1TPLJH6EUsq8-mSiSw9odRa1O9nQ3jWiK-zIO9qil7K0/edit)  [Balancing Butterflies - Scientific Inquiry](https://docs.google.com/document/d/1k0a7gsPj0y0ALkb-3IxSzG7W4VpFSZBhHBnbtPslUDQ/edit)  Scientific Inquiry - Study Island Packet assignment  [Study Island - Scientific Inquiry](https://docs.google.com/document/d/1AqbJWVEpR5FJIqeVY_mJTkYt6Nt9Fn7wjQFQsq_YvcE/edit)  Back to School Scientific Investigation - Using scientific skills to explain an experiment.  Hot Pots - Education City Activity  [Back to School Scientific Investigation - Burn it up!](https://docs.google.com/document/d/1Zab4GgdBr_ITBsIXQL1v_JKhArccfMWrkBUI7ayZ0lg/edit)  [Rural Action Field Trip Activities](https://docs.google.com/document/d/1-rxWznufs-Su7FMLBoMzbpFV8cCqKf2zVlBZfKLx1Bc/edit?ts=5b96d46f)  [Balancing Butterflies - Inquiry Assessment](https://docs.google.com/document/d/1TkEvhfVsXOYyE7qAQmG3q3yarBNMLZyxgU0ufC9IGAA/edit)  [back to school scientific investigation assessment](https://docs.google.com/document/d/16fVYcW9vV-DkGVS_BfKi8gkZCy2j9LRhAsbxyky_y-E/edit)  [Field Trip Assessment - making connections](https://docs.google.com/document/d/1ZWlymI4spYyLMqXJevR4pZ8pVPMJecm0q1AOXEZwjVc/edit)  **Life Science**  Lesson 1 - Is it Alive (1)  [Living or non-living](https://docs.google.com/document/d/1CGnAQ_rzLz9w9Ms7NubNU2bIYfJBCzAWhlZSYnG_pHI/edit)  Lesson 2 - Different types of ecosystems (6) (Mr. Demaio video and Document)  [Types of Ecosystems](https://docs.google.com/document/d/1S4N4bxzBxT78Cb4-vZsAKJsfu1YaUmMDYeQv1svpnjw/edit)  **SECOND NINE WEEKS**  Lesson 3 - Aquarium Ecosystems(1,2,3,4)  [Aquarium directions](https://docs.google.com/document/d/1DjN9QHj-IfJ0Hhvmb78SqXXprbO45LhvrWcngBHtWNo/edit)  [Biotic and Abiotic Factors in Aquarium](https://docs.google.com/document/d/19mUipnv3XbDePfbJciUy2QAgVufGl0GY-3Hq7_U0tPk/edit#heading=h.2ifwt582ntlw)  [Aquarium Ecosystem Energy Web](https://docs.google.com/document/d/1r4emTK-0ji0JD7oV7u0ezE5B3hHuHTERnXmTf4Xb0KU/edit)  Lesson 4 -Food Web Intro (5)  [Mr. Demaio Producers, Consumers and Decomposers](https://docs.google.com/document/d/1y1KzVtSKNUZ9Ye8M_eZQMO_Yz17YTOUhVkRhoy1xiX8/edit)  [Video](https://drive.google.com/file/d/1ylitxgaVSZeqyp0VMZjnBpxkwkK84qOR/view)  Lesson 5 - Design a Restaurant Menu- Google Classroom Project (5)  (producers, consumers, decomposers)  [Restaurant Project Lesson](https://docs.google.com/document/d/1HBt2-rpjSBelzXSKIGsy6gJQkdiSleIyiQ9hVTzsGro/edit)  Scientific Inquiry Lessons.  A Water Candle Experiment (7)  [Using Inquiry and Scientific Method](https://docs.google.com/document/d/1O4Hf834ChzEn-GruHi4s-c99sIRHzOkaqxWPWZrprWQ/edit)  ODNR Food Web Research Project (11,12)  [ODNR Food Web Research Project](https://docs.google.com/document/d/1JtF68nGvdHGyYiLUDf3oKJTkfZM0PcgWNU1dMFBxVp8/edit)  Predator Prey Relationships (10)  [Life predator Prey](https://docs.google.com/document/d/1HGi9MvC_D-ig-td3TaZel84AnKJnmy2alVs2eR9Psus/edit)  Symbiosis activity - students will demonstrate their understanding of symbiotic relationships through research, and creative artwork. (15,16)  Symbiosis Assignment  [Symbiosis - Lost Creatures Discovery](https://docs.google.com/document/d/1dTaLoN0F_l7Z1t1AGFbrpR0ztLOOe0Jf9NOQLpmLW4M/edit)  **Assessments**  [5 Types of Ecosystem Quiz](https://docs.google.com/document/d/1cp5MRUel7E8p5SohzXRtn1Byrsdu1cfMHc9MdYa1ojY/edit)  Lesson 3 assessment  [Aquarium biotic and abiotic factors assessment](https://docs.google.com/document/d/1NKhPMJkoJ_DFrFkcqhztILCAwBbExRpshRBjS9M7Dms/edit)  Formative Assessment  [Energy Roles (PCD & Food Chains)](https://docs.google.com/document/d/1QcVa1c2jZf40QsnGc5k8HXUVbtizY8OoN0qcClzq4XQ/edit) | **Scientific Inquiry**  **Analyze, data**  **Predict, infer, model, explain, experiment, procedure, describe, observe, classify, scientific tools, equipment, design,**  **Life Science**  **Ecosystem, environment, habitat**  **Abiotic, biotic, living, nonliving, energy, sunlight, organism, producer, consumer, decomposer, photosynthesis, herbivore, omnivore, carnivore, predator, prey, competition, adaptation, population, community, symbiosis, commensalism, mutualism, parasitism, parasite, host,** |

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| First Semester Block I Can Statements |
| • Explain that all living things require energy to live  • Explain that plants make their own food from the sun's energy and they are producers  • Illustrate that plants use the sun's energy for photosynthesis  • Identify that plants are the foundation to all food webs  • Compare the similarities and differences between consumers, producers and decomposers  • Compare food chains to food webs  •Describe and identify the symbiotic relationships between organisms  • Determine if the symbiotic relationship is mutualism, commensalism or parasitism  • Describe a predator/prey relationship  \*Demonstrate how energy flows between herbivores,carnivores and omnivores  \*Describe that energy flows through a food web through herbivores, carnivores and omnivores  \*Predict and infer how predation will affect a population  \* conduct proper scientific investigations using problem solving strategies  \*use math to collect data from scientific investigations  \*analyze and interpret data from proper scientific investigations  \*predict, model and explain outcomes to proper scientific investigations and concepts  \*Use logic thinking/make connections to Science content  \*communicate scientific findings using data tables, charts, graph or written and oral presentations  \*use appropriate scientific tools to conduct or explain a scientific investigation |

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| **3RD NINE WEEKS**  Physical Science - PS  **PS2 -Light and sound are forms of energy that behave in predictable ways**    PS2 -light travels and maintains its direction until it interacts with an object or moves from one medium to another then it can be reflected, refracted or absorbed  PS2 - Sound is produced by vibrating objects and requires a medium through which to travel. The rate of vibration is related to the pitch of the sound.  **PS1 - The amount of change in movement of an object is based on the mass of the object and the amount of force exerted.**  PS 1 - Movement can be measured by speed. Speed is distance divided by time.  PS1- Any change in speed or direction requires a force. The speed is affected by the mass and amount of force applied.  **4TH NINE WEEKS**  Earth Science- ES  **ESS1 - The solar system includes the sun and all celestial bodies that orbit the sun. Each planet has unique characteristics**.    ESS1 - The distance from the sun, size and composition and movement of each planet is unique. Planets revolve around the sun in elliptical orbits. Some planets have moons. Comets, asteroids and meteoroids orbit the sun.  **ESS2 - The sun is one of many stars that exist in the universe**  ESS2 - The sun appears to be the largest star in the sky because it is the closest star to Earth. Some stars are larger than the sun and some stars are smaller than the sun.  **ESS3 - Most of the cycles and patterns of motion between the Earth and the sun are predictable.**  ESS3 - Earth’s revolution around the sun takes approximately 365 days. Earth completes one rotation on its axis in a 24 hour period, producing day and night. This rotation makes the sun, stars and moon appear to change position in the sky.  **THE CURRICULUM WILL BE FINISHED BY THE MIDDLE TO END OF MARCH AND THE REMAINDER OF THE YEAR WILL BE SPENT ON REINFORCING AND STRENGTHENING AREAS OF WEAKNESS AND CLEARING UP PRIOR MISCONCEPTIONS.**  **THIS SECTION IS SUBJECT TO CHANGE YEARLY BASED ON STUDENT SUCCESS.**  **PLEASE REFER TO LESSON PLANS FOR DETAILS** | **3RD NINE WEEKS**  Light can travel through some materials and empty space. Shadows form when light cannot pass through a material. The medium through which light interacts with determines if it is absorbed, reflected or refracted. Absorbed light causes temperature to increase. Some common objects used to bend light are prisms, magnifying lenses and water. When we see color we see the reflected light    Sound is created by vibrations, the speed of the vibration changes the pitch of the sound we hear. Sound must travel through a medium to be heard such as a solid, liquid or gas. Sound can be absorbed and reflected into medium. Sound travels slower than light.  - In this unit we are having Rural Action come in as guest teachers to provide an introduction to light, sound, speed and motion. There will be a 3 day unit, each day activities will focus on one of the topics. This will be used as an introduction to Physical Science topics which will be reinforced in the following week in more detail. Students will be given a packet of background information that they will use for each station. They will attempt to make Science connections to the activities using proper and accurate vocabulary Then students will work on a hyper doc for several days making connections to light, sound and speed.  **4TH NINE WEEKS**  Our solar system has many different planets that orbit around the sun. Each planets has its own size and composition making it unique. There are millions of different stars in our solar system ours is just the closest to Earth. Earth's orbit and rotation and tilt are what cause us to have day/night and seasons. In this unit students will be creating digital presentations of our place in space along with our solar system and the celestial bodies that are part of our solar system, including comets, meteors and asteroids. Students will have the opportunity to create various 3 dimensional models of our solar system in this unit | **3RD NINE WEEKS**  [Light, Sound, Motion, Speed Background](https://docs.google.com/document/d/1Fhq6LxQMQ5SQJyBabgaTQAKa0XKvLRpKxcx9po1xf58/edit)  .Rural Action Activities (1,2,3,4,5)  [3 day Rural Action Activities](https://docs.google.com/document/d/1W9BzV6i7_XjhdruUxphZXldgDBFRoA1i_GREG09dqNE/edit?ts=5c78307a) (1-5)  Hyperdoc - Rural Action  .[Rural Action - Light, Sound Speed Activities Follow Up](https://docs.google.com/document/d/1TpHWy10AqRPnhWTyX6KahvvpSpI-Og9d1BObpvRqZKk/edit) (1-5)  Properties of Light - Bill Nye  [Bill Nye Light - Doc for Video](https://docs.google.com/document/d/12xlv9klhmLhvYZ5tEJDjALRsNVu5w5oC3xO-kpDZTjQ/edit) (1)  Study Jams - Light Reflection, Refraction, Absorption. (1)  [Sound Absorption, Reflection, Assessment](https://docs.google.com/drawings/d/1V6GtqJKuBoqDFuA55AQuj0_H8LTuZDnRaySuzbjoSDk/edit)  [Sound Energy Check for Understanding](https://docs.google.com/drawings/d/1uGDnJeGqZjjWN5SNVEASGKX-_R9vXUjs9s7-qxvgGkQ/edit)  [Sound Pitch Activity](https://docs.google.com/drawings/d/1zxgSYCBwVam1H0eqeNOrrwghczl8qVgZRF0Qs9YpVUU/edit)  [Force and Motion Review/Assessment](https://docs.google.com/drawings/d/1X9SshV7a3h-it5xIggeXDIWbbQhScUO7lpTl0fUZ9ec/edit)  [Force and Motion Assessment](https://docs.google.com/drawings/d/1dSQFrM3MOuqdv1Gvt0Y0xHSMiEyCuDdRG6GNKwbXLx4/edit)  **4TH NINE WEEKS**  Introduction - what do you know about space.  [A Trip through the Milky Way Our place in Space](https://docs.google.com/document/d/1dy7qL_-eGrXZe8-CAwg-OPA3l3fEFBZ65LnSwA_QprM/edit)  [A Trip through the Milky Way - Our Solar System Project](https://docs.google.com/document/d/1dy7qL_-eGrXZe8-CAwg-OPA3l3fEFBZ65LnSwA_QprM/edit)  [Our Place in Space Assessment](https://docs.google.com/drawings/d/1VPdJJjQpoHBNJGr6GMi9IgECzSJDk3qgFXtfDK5nAdQ/edit)  [Mars - Scientific Inquiry Hyperdoc Investigation](https://docs.google.com/document/d/1Bde1eTRdUcCvUQIG7BFDSCBr8JWN6c73K3k1VyaOOcg/edit)  [Comets, Meteors and Asteroids Video Assignment](https://docs.google.com/document/d/11M2Nv_hIBbzBV80vKrZk04UUmht_C9XV7ak3J6aTaHQ/edit) | **Physical Science**  **Light, Sunlight, energy, ray, shadow, temperature, transparent, translucent, opaque, medium, reflect, refract, absorb,**  **Sound, vibration, solid, liquid, gas, pitch, echo, absorb, reflect,**  **Motion, force, speed, distance, time, increase, decrease,**  **Space and Earth Science**  **Space, solar system, planets, sun, celestial bodies, characteristics, composition, orbit, revolve, rotate, spin, axis, elliptical, galaxy, star, counter clockwise, moon, comet, meteor, asteroid** |

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| Second Semester Block I Can Statements |
| \*Illustrate that light travels in a straight line  \*Infer that light moves in predictable ways  \*Explain that light has the ability to travel through some but not all materials  \* Describe that light may be reflected, refracted or absorbed  \* Display that when light is absorbed by a material it heats up  \* Explain that light may refract "change direction" when it passes from material to material such as water and air  \* Illustrate that a magnifying glass, prisms and water are common materials that refract light  \*Explain that shiny surfaces will reflect light  \* Describe that the colors we see are reflected white light  \* Explain that sound is generated by vibration  \*Predict and infer how the speed of a vibration will change its pitch  \*Describe that sound must have a medium such as a solid, liquid, or gas to travel through  \*Identify that sound may bounce off of or be absorbed by different materials  \*Explain that the motion of an object can change by speeding up, slowing down or changing direction  \*Determine that the greater the force the greater the change its speed and motion  \* Explain that it takes force to move an object  \*Calculate speed by dividing distance by time  \*Identity that when an object speeds up it covers more distance in a given time  \*Identify that when an object slows down it covers less distance in a given time  \* Identify a planet by its composition and distance from the sun  \*Illustrate that the planets orbit around the sun in elliptical patterns  \*Identify that some planets have moons  \* Explain that the planets orbit the sun because of its gravitational force  \*Explain that moons orbit planets because of the gravitational forces  \* Describe asteroids as rocky metallic bodies that orbit the sun but are too small to become planets  \* Identify meteor as a chunk of metallic rock that enters the Earth's atmosphere  \* Describe a comet as a chunk of ice and gas that orbits the Earth but is not part of any planet  \*Infer that the sun is the closest star to the Earth  \*Explain that the sun is a medium sized star and the only one in our solar system  \*Explain that many stars are larger and many are smaller than our sun  \*Explain that it takes 365 days for the Earth to revolve around the sun  \* Explain that it takes the Earth 24 hours to rotate once on its axis  \*Describe that Earth's rotation is what makes the stars, sun and moon appear in different places  \*Identify that climate changes may cause severe weather such as hurricanes, monsoons and even dry and rainy seasons  \*conduct proper scientific investigations using problem solving strategies  \*use math to collect data from scientific investigations  \*analyze and interpret data from proper scientific investigations  \*predict, model and explain outcomes to proper scientific investigations and concepts  \*Use logic thinking/make connections to Science content  \*communicate scientific findings using data tables, charts, graph or written and oral presentations  \*use appropriate scientific tools to conduct or explain a scientific investigation |