

Dennis-Yarmouth Regional School District
Science Scope and Sequence
Grade 5

Unit Name	Unit Description / Overview	Stage 1: Desired Results Enduring Understandings - Students will understand that...	Essential Questions	Standards
Master Unit 1 Where Do Organisms Get the Energy They Need to Survive?	Students engage in investigations about photosynthesis and plant growth. Students use the online environment to read a story, reflect on their understanding through writing, and use models and test variables. Students learn about where earth's water comes from and goes to and produce and interpret data tables and graphs to show how a plant grows under different conditions. Students create a digital lab book where they collect snapshots of their investigations and activities and reflect on their understanding of concepts.	The materials that make up a plant come mostly from carbon dioxide in the air and from water, not from the soil. Plants get the water they need as water cycles through the Earth's systems (the geosphere (solid earth), the hydrosphere (the earth's waters), and atmosphere (air surrounding the earth), and the biosphere (where plants and animals live)) through the processes of evaporation, precipitation, condensation, transpiration, and runoff. Plants get the materials they need for growth and reproduction mostly through a process called photosynthesis. Photosynthesis requires light energy (from the Sun) for a part of air (carbon dioxide) and water to combine to form sugar (glucose) and oxygen. The sugars can be immediately used or stored for growth or later use, such as flower and seed production. There is a relationship between environmental conditions and plant growth. The energy and materials that animals need for their bodies come from plants and can be traced back to the sun. Models can use symbols to represent parts and processes in scientific contexts.	How does a small seed turn into a large plant? How do plants get the material and energy required for growth?	5-ESS2-1. Use a model to describe the cycling of water through a watershed through evaporation, precipitation, absorption, surface runoff, and condensation. 5-ESS3-1. Obtain and combine information about ways communities reduce human impact on the Earth's resources and environment by changing an agricultural, industrial, or community practice or process. 5-LS1-1. Ask testable questions about the process by which plants use air, water, and energy from sunlight to produce sugars and plant materials needed for growth and reproduction. 5-LS2-1. Develop a model to describe the movement of matter among producers, consumers, decomposers, and the air, water, and soil in the environment to (a) show that plants produce sugars and plant materials, (b) show that animals can eat plants and/or other animals for food, and (c) show that some organisms, including fungi and bacteria, break down dead organisms and recycle some materials back to the air and soil. 5-PS3-1. Use a model to describe that the food animals digest (a) contains energy that was once energy from the sun, and (b) provides energy and nutrients for life processes, including body repair, growth, motion, body warmth, and reproduction. 5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. SL.5.4 Report on a topic text procedure or solution to a mathematical problem or present an opinion sequencing ideas logically and using appropriate facts and relevant descriptive details to support main ideas or themes; speak clearly at an understandable pace and use appropriate vocabulary. PS W.5.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
Master Unit 2 Earth's Systems + Earth and Human Activity	Students learn about the cycling of water through a watershed, and about the relative amounts of fresh and salt water on the Earth. They research examples of man's impact on the Earth and ways we can reduce harmful impacts.	Water is distributed around the Earth. Amount of water on Earth never changes and the amount available for human consumption is small.	How do people use water? Do you think we need water to survive? Where do we get the water we need?	5-ESS2-1. Use a model to describe the cycling of water through a watershed through evaporation, precipitation, absorption, surface runoff, and condensation. 5-ESS2-2. Describe and graph the relative amounts of salt water in the ocean; fresh water in lakes, rivers, and ground water; and fresh water frozen in glaciers and polar ice caps to provide evidence about the availability of fresh water in Earth's biosphere. 5-ESS3-1. Obtain and combine information about ways communities reduce human impact on the Earth's resources and environment by changing an agricultural, industrial, or community practice or process. 5-ESS3-2(MA). Test a simple system designed to filter particulates out of water and propose one change to the design to improve it.

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Master Unit 3 Earth's Place in the Universe	This unit builds upon observations in earlier grades of the Sun, Moon, and Stars from the perspective of Earth in order to understand Earth's place in space and celestial movement. In grade 5, students begin learning more sophisticated ways to explain celestial movement with relation to earth. Lessons represent a learning progression of the big ideas related to celestial motion. They will build their conceptual knowledge through observations, analysis, and discussion. At the end of the unit students will develop a model to explain Earth's relationship to the Sun, Moon, and Stars. They will also present arguments as to why the Sun is a star that appears larger and brighter than other stars and Earth's gravitational force causes objects to fall towards Earth's center.	A star is a luminous fixed point in the sky composed mostly of gas and is held together by its own gravity. Our Sun appears larger than other stars because it is closer to Earth than other stars. A star is called a sun if it is the center of a planetary system. The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. The gravitational force exerted by Earth on objects is directed down.	What is a star and why do some stars appear larger and brighter than others? What makes a star a Sun? How do we know that night will follow day? How does a shadow in sunlight change during the day? Why do the sun, moon, and other stars appear to change position over a specific period of time? How does gravity affect an object on Earth?	5-ESS1-1. Use observations, first-hand and from various media, to argue that the Sun is a star that appears larger and brighter than other stars because it is closer to Earth. 5-ESS1-2. Use a model to communicate Earth's relationship to the Sun, Moon, and other stars that explain (a) why people on Earth experience day and night, (b) patterns in daily changes in length and direction of shadows over a day, and (c) changes in the apparent position of the Sun, Moon, and stars at different times during a day, over a month, and over a year. 5-PS2-1. Support an argument with evidence that the gravitational force exerted by Earth on objects is directed toward Earth's center.
Master Unit 4 Matter and Its Interactions	In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of scale, proportion, and quantity is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, and use these practices to demonstrate understanding of the core ideas.	Matter of any type can be divided into particles too small to see. The amount of matter is conserved when it changes form, even when it seems to disappear, changes in properties occurs or new matter is made. Measurements of a variety of observable properties can be used to identify materials. Chemical reactions that occur when some substances are mixed can be identified by the emergence of substances with different properties. Observable phenomena exist from the very small to the immensely large. Matter is made of particles and can be transferred between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes and recognizing that the total weight of substances does not change.	How can we use models to explain our world? How do we explain changes to matter and its properties?	5-PS1-1. Use a particle model of matter to explain common phenomena involving gases, and phase changes between gas and liquid and between liquid and solid. 5-PS1-2. Measure and graph the weights (masses) of substances before and after a reaction or phase change to provide evidence that regardless of the type of change that occurs when heating, cooling, or combining substances, the total weight (mass) of matter is conserved. 5-PS1-3. Make observations and measurements of substances to describe characteristic properties of each, including color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility. 5-PS1-4. Conduct an experiment to determine whether the mixing of two or more substances results in new substances with new properties (a chemical reaction) or not (a mixture).