Next Generation Science Standards

Aligned to Rourke Dual Language Science Titles
Grade 5

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Rourke Science Titles Aligned to the Next Generation Science Standards
(Grade 5)

Introduction

Fifth Grade

The performance expectations in fifth grade help students formulate answers to questions such as:

- When matter changes, does its weight change?
- How much water can be found in different places on Earth?
- Can new substances be created by combining other substances?
- How does matter cycle through ecosystems?
- Where does the energy in food come from and what is it used for?
- How do lengths and directions of shadows or relative lengths of day and night change from day to day, and how does the appearance of some stars change in different seasons?

Fifth grade performance expectations include PS1, PS2, PS3, LS1, LS2, ESS1, ESS2, and ESS3 Disciplinary Core Ideas from the NRC Framework. Students are able to describe that matter is made of particles too small to be seen through the development of a model. Students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. Through the development of a model using an example, students are able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. They describe and graph data to provide evidence about the distribution of water on Earth. Students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment and that energy in animals' food was once energy from the sun.

Students are expected to develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. The crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; energy and matter; and systems and systems models are called out as organizing concepts for these disciplinary core ideas. In the fifth grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate understanding of the core ideas.

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Structures and Properties of Matter

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]	***Microworlds: Unlocking the Secrets of Atoms and Molecules*** *Microuniversos: Los secretos de lod átomos y las moléculas* • Introduces atoms and molecules, talks about the elements, bonding and reacting, and matter and materials.	9781606949962 9781627173247	800 825
5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]	***The Scoop About Measuring Matter*** *Cómo medir la materia* • Matter is anything that has mass, how temperature affects the different states of matter and why. ***Changing Matter*** *Los cambios de la materia* • Everything is made of matter, and that physical changes create different forms or states of matter.	9781618102263 9781627173254 9781618102409 9781627173261	600 625 725 775
5-PS1-3. Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]	***Mix It Up! Solution or Mixture?*** *¡Mézclalo! Solución y mezcla* • Students will learn how some materials mix easily while others won't mix at all.	9781618102270 9781627173278	550 600

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Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	***Analyzing This: Testing Materials*** *Analízalo: Prueba de materiales* • Experiments are the focus of this title. How they are conducted by using the scientific method of forming a hypothesis and collecting data to prove or disprove their theory. ***Rourke Science Encyclopedia Volume 10: Research Projects*** (page 24)	9781618102430 9781627173230 9781600446566	800 825 N/A

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Matter and Energy in Organisms and Ecosystems

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. [Clarification Statement: Examples of models could include diagrams, and flow charts.]	***Food from the Sun*** *Alimentos producidos por el sol* • This book looks at how plants live and grow, as well as what plants need for survival. ***Growing Energy*** Incremento de la energia	9781612362359 9781627173346 9781606947043 9781627173339	800 825 825 875

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Matter and Energy in Organisms and Ecosystems

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]	***Plants as Food, Fuel, and Medicine*** *Las plantas: fuentes de alimento, combustible y medicine* • This book is about how our Earth and existence depend on plants. It explains their uses for food, alternative forms of fuel, and everyday discoveries of how plants have a medicinal effect on curing diseases and promoting good health.	9781618102355 9781627173315	900 925

Earth's Systems

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.]	***Space*** *El espacio* • Explores the solar system, the earth and its moon, the sun, the eight planets and other objects in space. ***Rourke's World Science Encyclopedia Volume 7: Astronomy and Space***	9781606949894 9781627173377 9781600446535	725 775
5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. [Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.]	***The Wonderful Water Cycle*** *El maravilloso ciclo del agua* • Three quarters of our earth is blanketed y water. How this water is used, from bathing to irrigating crops is addressed ***Glaciers*** *Los glaciares* • Beautiful photos and text examines the issues faced by glacier habitats and how they can be saved. ***The Earth and the Role of Water*** *La tierra y la importancia del agua* • This book examines the role of water on earth, how the cycle of	9781618102379 9781627173391 9781615905546 9781627173384 9781618102591 9781627173308	825 875 625 675 825 875

	evaporation and condensation works, and the effects of water on all forms of life.		

Earth's Systems

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	***How Do Humans Depend on Earth*** *Cómo los humanos dependen de la Tierra*	9781618102386 9781627173285	725 775
	Saving the Environment *Salvar el medioambiente* • This book provides current information about how to save the environment while establishing the understanding that it does not take much to make the world a better place.	9781606947012 9781627173414	800 825

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Stars and the Solar System

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]	***Gravity: Do You Feel It?*** Gravedad: ¿La sientes? • Intermediate readers explore concepts of gravity.	9781617419560 9781612369297	600 625
5-ESS1-1. Support an argument that the apparent brightness of the sun and stars is due to their relative distances from Earth. [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]	***Exploring the Solar System*** *Exploramos el Sistema Solar* ***Rourke's World Science Encyclopedia Volume 7: Astronomy and Space*** ***Volume 10:*** (pages 29-32)	9781615905621 9781627173360 9781600446535	775 800
5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]	***The Night Sky*** *El cielo nocturno* • This book explores the Earth, the stars and phases of the moon. ***Rourke's World Science Encyclopedia Volume 7: Astronomy and Space***	9781618102256 9781627173407 9781600446535	600 625 N/A

Engineering Design

Next Generation Science Standards	Book Title	ISBN Number	Comparative Measure Level
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	***Understanding Models*** *Comprensión de los modelos* • Students learn how models extend understanding of scientific concepts and enhance presentations.	9781606945285 9781618104724	825 875
3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	***Inventors and Discoveries*** *Inventores y descubrimientos* • Students will learn about major discoveries in science and technology, some of their social and economic effects, and the major scientists and inventors responsible for them.	9781617419874 9781627173421	875 900
3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	***Medical Technology and Engineering*** *Tecnologia e ingenieria medica* • Students will learn about the latest, cutting edge technology in medicine today. How this technology can diagnose disease, treat those diseases and where medical technology will lead us in the future.	9781618102560 9781627173353	925 975
	Thanks, NASA! *¡Gracias, NASA!* • This book explores the tremendous contribution that	9781618102539 9781627173292	875 900

	NASA has made over the last half century.		