

# Next Generation Science Standards



## Aligned to Rourke Dual Language Science Titles Grade 4



# Rourke Science Titles Aligned to the Next Generation Science Standards (Grade 4)

## Introduction

### Fourth Grade

Fourth grade performance expectations include PS3, PS4, LS1, ESS1, ESS2, ESS3, and ETS1 Disciplinary Core Ideas from the NRC Framework. Students are able to use a model of waves to describe patterns of waves in terms of amplitude and wavelength, and that waves can cause objects to move. Students are expected to develop understanding of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. They apply their knowledge of natural Earth processes to generate and compare multiple solutions to reduce the impacts of such processes on humans. In order to describe patterns of Earth's features, students analyze and interpret data from maps. Fourth graders are expected to develop an understanding that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. By developing a model, they describe that an object can be seen when light reflected from its surface enters the eye. Students are able to use evidence to construct an explanation of the relationship between the speed of an object and the energy of that object.

Students are expected to develop an understanding that energy can be transferred from place to place by sound, light, heat, and electric currents or from object to object through collisions. They apply their understanding of energy to design, test, and refine a device that converts energy from one form to another. The crosscutting concepts of patterns; cause and effect; energy and matter; systems and system models; interdependence of science, engineering, and technology; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the fourth grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

### Topics:

- Energy
- Waves: Waves and Information
- Structure, Function, and Information Processing
- Earth's Systems: Processes that Shape the Earth
- Earth and Human Activity

Rourke Science Titles Aligned to the Next Generation Science Standards  
(Grade 4)

**Energy**

| Science Next Generation Standards                                                                                                                             | Book Title                                                                                                                                                                                                                                                                                                                                                                                                       | ISBN Number                            | Comparative Measure Level |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|
| <p><b>4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.</b></p>                                 | <p><i>Energy</i><br/><i>La energía</i></p> <ul style="list-style-type: none"> <li>Explores energy, how we use it, different types and forms, conservation and transformation of energy, renewable vs. non-renewable and energy conservation</li> </ul>                                                                                                                                                           | <p>9781606949900<br/>9781627172974</p> | <p>775<br/>800</p>        |
| <p><b>4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</b></p> | <p><i>Energy all Around</i><br/><i>La energía a nuestro alrededor</i></p> <ul style="list-style-type: none"> <li>This title explains how all forms of energy belong to one of two groups: potential or kinetic. It addresses how energy can be used in the form of water to create electricity, in the form of solar to heat our homes, and in the form of wind to turn the blades on a wind turbine.</li> </ul> | <p>9781618102287<br/>9781627172981</p> | <p>625<br/>675</p>        |

Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Energy (Continuation)**

| Science Next Generation Standards                                                                                                 | Book Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ISBN Number                                                                   | Comparative Measure Level             |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------|
| <p><b>4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.</b></p>            | <p><i><b>Forces and Motion at Work</b></i><br/><i>Fuerza y movimiento en el trabajo</i></p> <ul style="list-style-type: none"> <li>Explore the relationship between the strength of a force and its effect on an object as well as the effects of forces in nature.</li> </ul>                                                                                                                                                                                                                                                                                                                                      | <p>9781617419904<br/>9781627173001</p>                                        | <p>900<br/>925</p>                    |
| <p><b>4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</b></p> | <p><i><b>Solar Energy</b></i><br/><i>La energía solar</i></p> <ul style="list-style-type: none"> <li>Solar energy is explained. Included in the book is where it comes from, who uses it, and the positive and negative benefits of using it.</li> </ul> <p><i><b>Turn on the Light: How Electricity Works</b></i><br/><i>Enciende la luz: Cómo funciona la electricidad</i></p> <ul style="list-style-type: none"> <li>Explores electricity from the power plant to your home, to how it is made, circuits, how we use electricity and the effects our changing world and weather have on how it works.</li> </ul> | <p>9781617415401<br/>9781627173018</p> <p>9781612362335<br/>9781627173063</p> | <p>825<br/>875</p> <p>825<br/>875</p> |

Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Energy (Continuation)**

| Science Next Generation Standards                                                                                                                                  | Book Title                                                                                                                                                                                                                                                                              | ISBN Number                            | Comparative Measure Level |
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| <p><b>4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</b></p> | <p><b><i>Biofuels</i></b><br/><i>Los biocombustibles</i></p> <ul style="list-style-type: none"> <li>The history of biofuels, different uses, positive and negative characteristics, and how they will impact the future.</li> </ul>                                                     | <p>9781606949061<br/>9781627173025</p> | <p>825<br/>875</p>        |
|                                                                                                                                                                    | <p><b><i>Wind Energy</i></b><br/><i>Energía de viento</i></p> <ul style="list-style-type: none"> <li>Wind Energy helps readers to understand wind energy and how to use it as a source of electricity. The history of using wind energy is also explored through a timeline.</li> </ul> | <p>9781606949158<br/>9781618104748</p> | <p>825<br/>875</p>        |
|                                                                                                                                                                    | <p><b><i>Going Green</i></b><br/><i>Hacia un mundo verde</i></p> <ul style="list-style-type: none"> <li>Eco-friendly energy is explained. Understanding that it does not take much to make the world a better place.</li> </ul>                                                         | <p>9781606949160<br/>9781627173032</p> | <p>800<br/>825</p>        |

Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Waves and Information**

| Science Next Generation Standards                                                                                                                   | Book Title                                                                                                                                                                                                                                                     | ISBN Number                            | Comparative Measure Level |
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| <p><b>4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</b></p> | <p><i>Oceans</i><br/><i>Los océanos</i></p> <ul style="list-style-type: none"> <li>• Explores the world's oceans, discusses the dangerous currents and storms produced from the ocean and talks about some marine life and keeping the ocean clean.</li> </ul> | <p>9781606949238<br/>9781627173155</p> | <p>725<br/>775</p>        |

Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Structures, Function and Informational Processing**

| Science Next Generation Standards                                                                                                     | Book Title                                                                                                                                                                                                                                                                                                                                                  | ISBN Number                            | Comparative Measure Level |
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| <p><b>4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</b></p> | <p><i>Let's Investigate Light</i><br/> <i>Vamos a investigar acerca de la luz</i></p> <ul style="list-style-type: none"> <li>• With an emphasis on how important light is to our Earth, this title explains how light effects photosynthesis, how light travels, the different properties of light and how both animals and people depend on it.</li> </ul> | <p>9781618102416<br/>9781627173056</p> | <p>700<br/>725</p>        |

Rourke Science Titles Aligned to the Next Generation Science Standards  
(Grade 4)

**Structures, Function and Informational Processing (Cont.)**

| Science Next Generation Standards                                                                                                                                                                                   | Book Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ISBN Number                                                                   | Comparative Measure Level             |
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| <p><b>4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</b></p>                                   | <p><i><b>Skeletons and Exoskeletons</b></i><br/><i>Esqueletos y exoesqueletos</i></p> <ul style="list-style-type: none"> <li>Explains how humans and animals have a skeleton to support the inner workings of their bodies. Explains how exoskeletons have a skeleton on the outside of their bodies.</li> </ul> <p><i><b>Reproduction in Plants</b></i><br/><i>La reproducción de las plantas</i></p> <ul style="list-style-type: none"> <li>The life cycle of a plant is explained as well as how different plants use different ways to reproduce. How the different parts of a plant play a role in how it receives the nutrients it needs to survive.</li> </ul> | <p>9781618102218<br/>9781627173087</p> <p>9781618102232<br/>9781627173100</p> | <p>600<br/>625</p> <p>675<br/>700</p> |
| <p><b>4-LS1-2. Use a model to describe that animals' receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.</b></p> | <p><i><b>The Nervous System</b></i><br/><i>El sistema nervioso</i></p> <ul style="list-style-type: none"> <li>Explores the different parts of the nervous system, including the brain, spinal cord, etc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>9781618102546<br/>9781627172967</p>                                        | <p>975<br/>1000</p>                   |



Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Earth's Systems: Processes that Shape the Earth**

| Science Next Generation Standards                                                                                                                                                                              | Book Title                                                                                                                                                    | ISBN Number   | Comparative Measure Level |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------|
| <b>4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</b>                                                 | <b><i>Rocks, Minerals and Soil</i></b>                                                                                                                        | 9781606947531 | 875                       |
|                                                                                                                                                                                                                | <i>Las rocas, los minerales y el suelo</i>                                                                                                                    | 9781618104700 | 900                       |
|                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Learn how the earth's rocks, minerals, and soil are formed and what they are made of.</li> </ul>                       |               |                           |
|                                                                                                                                                                                                                | <b><i>Fossils: Uncovering the Past</i></b>                                                                                                                    | 9781617419843 | 875                       |
|                                                                                                                                                                                                                | <i>Los fósiles, hallazgos del pasado</i>                                                                                                                      | 9781627172837 | 900                       |
|                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>This book examines how fossils document the appearance, diversification, and extinction of many life forms.</li> </ul> |               |                           |
| <b><i>Plate Tectonics and Disasters</i></b>                                                                                                                                                                    | 9781618102362                                                                                                                                                 | 1000          |                           |
| <i>Las placas tectónicas y los desastres</i>                                                                                                                                                                   | 9781627173124                                                                                                                                                 | 1100          |                           |
| <ul style="list-style-type: none"> <li>This book discusses the nature of the ground beneath our feet as well as the threats posed by tectonic plate movement and volcanic threats from underground.</li> </ul> |                                                                                                                                                               |               |                           |

Rourke Science Titles Aligned to the Next Generation Science Standards  
(Grade 4)

**Earth's Systems: Processes that Shape the Earth (Cont.)**

| Science Next Generation Standards                                                                                                                                         | Book Title                                                                                                                                                                                                                                                                                                                                                                                                     | ISBN Number                                                                   | Comparative Measure Level             |
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| <p><b>4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</b></p> | <p><i>Ice to Steam</i><br/><i>De hielo a vapor</i></p> <ul style="list-style-type: none"> <li>Discusses solids, liquids and gases, changing states of matter, water and the weather and evaporation.</li> </ul>                                                                                                                                                                                                | <p>9781612362311<br/>9781627173094</p>                                        | <p>775<br/>800</p>                    |
| <p><b>4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.</b></p>                                                                    | <p><i>Continents</i><br/><i>Los continentes</i></p> <ul style="list-style-type: none"> <li>Explores the seven continents and how the earth's plates are always moving and changing the continents.</li> </ul> <p><i>Mountains</i><br/><i>Las montañas</i></p> <ul style="list-style-type: none"> <li>Explores maps of mountain ranges in the United States, the making of mountains, and much more.</li> </ul> | <p>9781606949108<br/>9781627173070</p> <p>9781600449477<br/>9781627173179</p> | <p>725<br/>775</p> <p>725<br/>775</p> |

Rourke Science Titles Aligned to the Next Generation Science Standards  
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**Earth and Human Activity**

| Science Next Generation Standards                                                                                                                                              | Book Title                                                                                                                                                                                                                                                                                                                                                                                                                                        | ISBN Number                                                                   | Comparative Measure Level             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------|
| <p><b>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</b></p>                                                    | <p><i><b>Our Footprint on Earth</b></i><br/><i>Nuestra huella en la Tierra</i></p> <ul style="list-style-type: none"> <li>Learn about the impact that humans have on the earth, its environment, and how to reduce the damage.</li> </ul> <p><i><b>Built to Last</b></i><br/><i>Construcciones duraderas</i></p> <ul style="list-style-type: none"> <li>Learn how structures are being built to withstand nature's destructive forces.</li> </ul> | <p>9781606945261<br/>9781618104731</p> <p>9781617419898<br/>9781627173049</p> | <p>800<br/>825</p> <p>700<br/>725</p> |
| <p><b>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.</b></p> | <p><i><b>Using Tools to Understand Our World</b></i><br/><i>El uso de herramientas para entender nuestro mundo</i></p> <ul style="list-style-type: none"> <li>Tools used by scientists are addressed in this title. Beakers, scales, microscopes, scientific calculators, and other important things used to investigate and create new technology.</li> </ul>                                                                                    | <p>9781606945315<br/>9781627173148</p>                                        | <p>775<br/>800</p>                    |