



BOCES 4 SCIENCE is a science program service developed through a collaborative partnership between Monroe 1, Monroe 2-Orleans, Genesee Valley and Wayne-Finger Lakes BOCES.

www.boces4science.org

**2021-2022
Leasing Catalog**

Did You Know:

- BOCES 4 Science units constitute a comprehensive elementary science curriculum
- When all K-5 units are used, students receive instruction on all NYSSLS Performance Expectations
- BOCES 4 Science units provide a return on investment through BOCES aid

Thank you for selecting BOCES 4 Science for your elementary science curriculum

If ordering from Wayne-Finger Lakes BOCES, teachers must fill out the Teacher Request Form located on page 22, or use the preprinted forms sent separately. These must accompany all the budget work sheets. Please email all forms to me at Sharon.bassage@wflboces.org. If you have questions, please don't hesitate to call me at 315-332-7267

Listed in this catalog are units of study developed and written by New York State Teachers in collaboration with the BOCES 4 Science team. These units are aligned to the content of New York State Science Learning Standards (NYSSLS) and incorporates 3-Dimensional instruction in each unit/lesson. The order form for the units can be found near the end of this document.

(For information on 3-D instruction, please visit: <http://www.nextgenscience.org>)

***Note: Unit length is determined based on the following allotted time for science instruction**

K-2: two 30 minute science sessions per week

3-5: three 35-40 minute science sessions per week





Thank you for selecting BOCES 4 Science for your elementary science curriculum.

We appreciate your partnership as we support hands-on, NYSSLS based science instruction.

Since the beginning of the COVID-19 pandemic, BOCES 4 Science has been working to support districts, schools, teachers, and students to help navigate these unprecedented times.

This has included the development of:

- **Extension investigations/activities for continued science exploration when not in the classroom**
- **Low-tech science tasks that allow students to learn science by going outside to observe and discover the world around them**
- **Online & Alternative-Setting resources to allow teachers to provide an inquiry based experience whether students are learning in the classroom, remotely, or in a hybrid setting**
- **Digital Professional Development to help teachers prepare for teaching with BOCES 4 Science units of study — this includes opportunities in a synchronous and asynchronous environment**
- **Optional “Add-On” kits that provide additional materials for classrooms to limit sharing of supplies during instruction**

We continue to work to ensure ALL students have opportunities to engage in standards-based, rigorous science.

There are few differences in this leasing catalog, including

- (1) Grade level pathway suggestions — these pathways have come about as a suggested sequence of units at each grade level. These were developed with consideration for the learning outcomes, connections to prior units, availability of live materials, and instructional sequencing. You will see an approximate timeline and rationale for individual pathways. These are just suggestions, as always — districts may choose their own pathway.**
- (2) Changes to ordering kits — previously we would provide options for kits with student science journals and kits without student science journals. We have received feedback that districts need more flexibility when selecting quantities of student science journals. As such, we are allowing districts to choose how many student science journals are needed for each unit. This will allow districts to order only what is needed, and help minimize costs. Please note that journals will be billed at \$1.50 per journal. There is a template near the end of the leasing catalog to help districts determine the total number of journals needed in situations where there are multiple sections of a grade level. This information will also be useful when scheduling kits.**
- (3) Optional “Add-On” Kits — we will continue to support additional materials for students through “Add-On” kits. We have received great feedback on how useful these materials have been for students to limit the use of shared supplies. These kits are considered leases and thus are aidable expenditures.**

We appreciate the opportunity to work with you and your students.

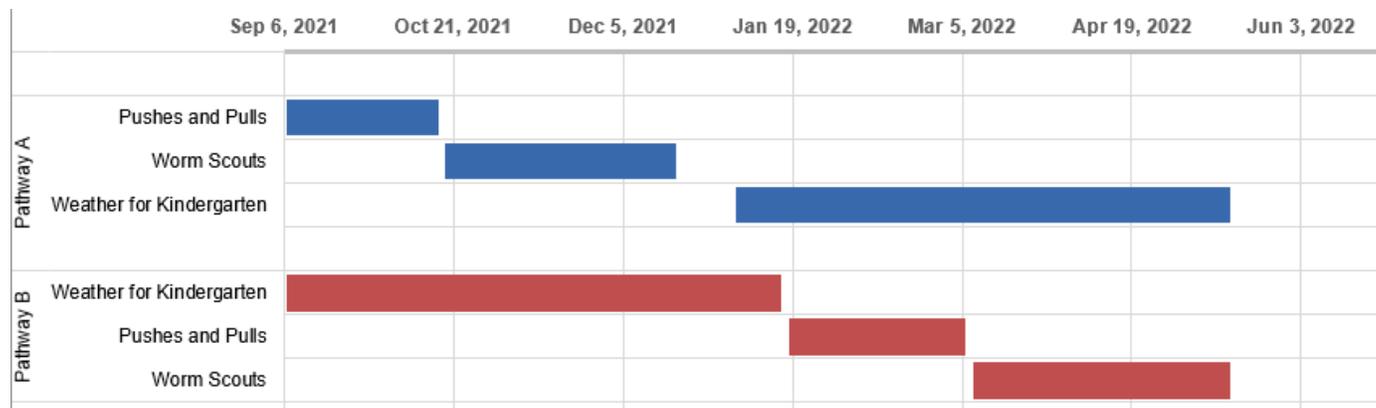
If you have any questions regarding the information in this catalog or anything related to BOCES 4 Science please feel free to contact Steven Montemarano, Director of BOCES 4 Science, at smontema@monroe2boces.org.



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Kindergarten Pathways



***Note: Dates are approximate based on the typical school year — individual district calendars may differ**

Pathway A rationale:

Pushes and Pulls allows students to begin the school year investigating the science behind something they are already familiar with -- play. It presents opportunities to explore science outdoors, during recess, and in Physical Education. **Worm Scouts** challenges students to explain a natural phenomenon related to a common outdoor animal. **Weather for Kindergarten** is packed with engineering design challenges that prepares students for thinking like an engineer. Throughout all 3 units, students plan and carry out investigations, analyze and interpret data, and identify cause & effect relationships.

Pathway B rationale:

Weather for Kindergarten is a wonderful way to begin the school year because it establishes calendar routines that will be used for the remainder of the school year. In addition, students begin to plan and carry out investigations, analyze and interpret data, and identify cause and effect relationships -- which they will continue to do throughout Kindergarten and in subsequent years. **Pushes and Pulls** allows students to get outside to investigate the science of play. By wrapping up with **Worm Scouts**, students will use the skills they have been developing all year to solve a mystery.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Kindergarten

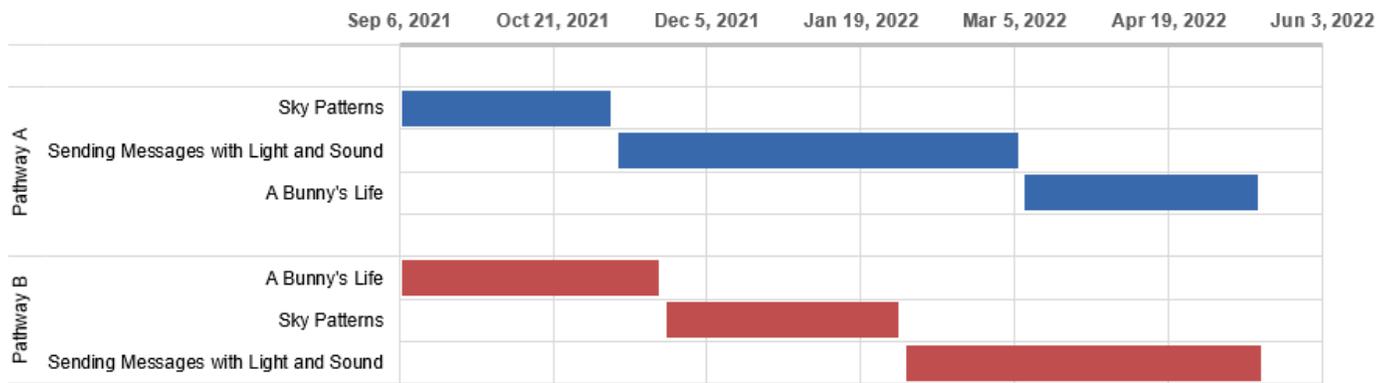
Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p>Weather for Kindergarten</p> <p>NYSSLS: Weather & Climate; Matter & Its Interactions</p>	17 weeks	16-18 sessions and ongoing throughout the year	In this unit of study, students apply an understanding of the effects of the sun on the Earth's surface. Students use patterns, variations in local weather, and weather forecasting to prepare for and respond to severe weather.
<p>Pushes and Pulls</p> <p>NYSSLS: Forces and Interactions</p>	6 weeks	12 sessions	In this unit of study, kindergarteners explore the forces of pushes and pulls as they enjoy a visit to the playground. They learn how to describe the position/motion of objects and the effects of forces on those objects. They experience the effect of slope on the speed of cars going downhill on tracks set at different heights. The interactions of a kickball game is tons of fun!
<p>Worm Scouts</p> <p>NYSSLS: Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment</p>	9 weeks	18 sessions	In this unit of study, students explore why piles of worms are evenly spaced along the center of a road on a rainy day. Kindergarteners ask questions and observe a classroom compost bin of red worms in order to investigate this phenomenon. <i>Scout the Worm</i> guides students through the unit as they examine interdependent relationships in the ecosystem of a worm.



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Grade 1 Pathways



***Note: Dates are approximate based on the typical school year — individual district calendars may differ**

Pathway A rationale:

Sky Patterns picks up on the investigative skills students started to develop in Kindergarten. They collect and interpret data by making observations outside. In **Sending Messages with Light and Sound**, students carry out investigations to understand attributes of sound and light. Students use engineering skills developed in a **Bunny's Life** to make a device that sends a message. Students use their ELA skills to obtain and communicate information about survival and sell the products that they have developed.

Pathway B rationale:

Students use background knowledge about animals from Kindergarten to support learning in **A Bunny's Life** – specifically to engage in the practices of constructing explanations from observation and designing solutions to human problems. In the **Sky Patterns** unit, students further develop investigative skills by collecting and interpreting data from observations outside. In **Sending Messages with Light and Sound**, students continue to use skills in planning and carrying out investigations to understand attributes of sound and light and to use their engineering skills developed in **A Bunny's Life** to make a device that sends a message.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Grade 1

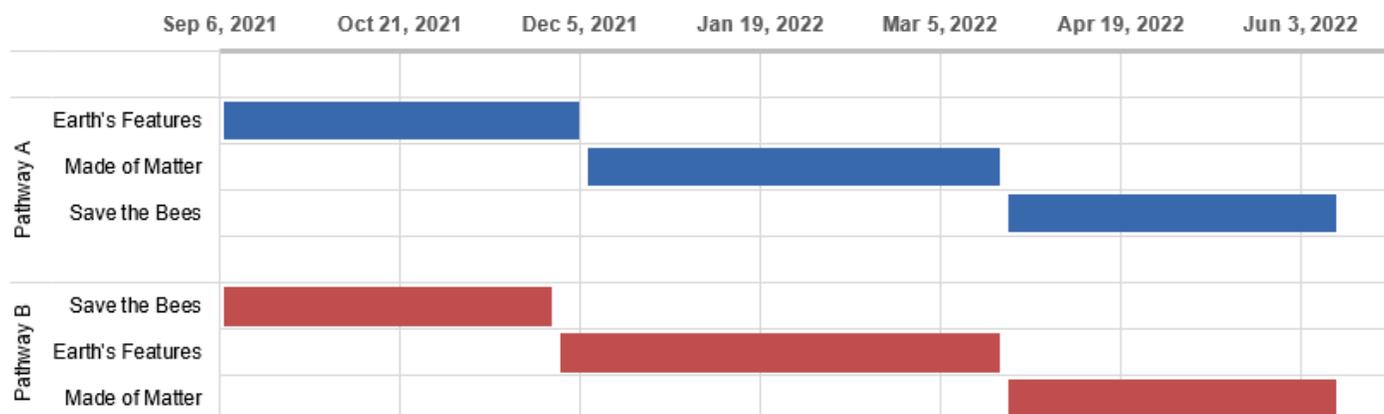
Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p style="text-align: center;">Sending Messages with Light & Sound</p> <p>NYSSLS: Waves: Light and Sound</p>	14 weeks	28 sessions	<p>In this unit of study, students act as engineers when they design a device that uses light or sound to send a message. To prepare for this task, students plan and carry out investigations on what causes sound and the effect of placing an object in the path of a beam of light. Students construct explanations for how we need light to see. Students then consider the different ways by which we use light and sound to communicate.</p>
<p style="text-align: center;">A Bunny's Life</p> <p>NYSSLS: Structure, Function and Information Processing</p>	10 weeks	20 sessions	<p>In this unit of study, students act as scientists as they observe how young rabbits look similar to and different from their parents. Students continue to study rabbits, and other animals, when they look at patterns of behavior displayed by parents and their offspring to ensure the survival of the offspring. Students observe how rabbits process information by using their senses and how the structure and function of the rabbit's coat and feet help this animal survive. Inspired by what they have learned, students design a product, which solves a problem by copying nature.</p>
<p style="text-align: center;">Sky Patterns</p> <p>NYSSLS: Space Systems: Patterns and Cycles</p>	8 weeks	16 sessions	<p>In this unit of study, students take on various missions as they investigate different sky patterns. These missions include tracking the Sun to predict where it will be at different times of the day and checking out sunsets to discover the seasonal pattern of the amount of daylight throughout the year. Students consider the cycle of night and day and figure out the pattern to the phases of the moon.</p>



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Grade 2 Pathways



***Note:** Dates are approximate based on the typical school year — individual district calendars may differ

Pathway A rationale:

Earth's Features provides a structure for teaching how to gather information, organize information, and solve a problem. It has a direct connection to Social Studies with its use of maps -- with a focus on learning the shapes and kinds of land and bodies of water in an area. In **Made of Matter**, students' observation and classification skills are reinforced. The focus on properties of matter helps students understand that patterns exist in our natural world. The **Save the Bees** unit uses live materials in the spring allowing students to explore the relationship between plants and animals and their environment. Second grade students would end their year with a focus on ecosystems then connect to weather and climate regions in the fall of their third grade (Pathway A) or continue their learning on plants and animals (Pathway B).

Pathway B rationale:

In **Save the Bees**, students use live materials in the fall to explore familiar topics – plants, animals, and their respective environments. Students learn to write investigations that help develop these skills in future units. In **Earth's Features**, the shape and kinds of land and bodies of water in an area are explored. Students apply investigative skills to design a solution to prevent wind and water from changing the land. This connects with social studies through the extensive use of maps. In **Made of Matter**, the focus on properties of matter helps students understand that patterns exist in our natural world. Students develop a deeper understanding of classification and observation skills necessary for science learning in Grade 3.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Grade 2

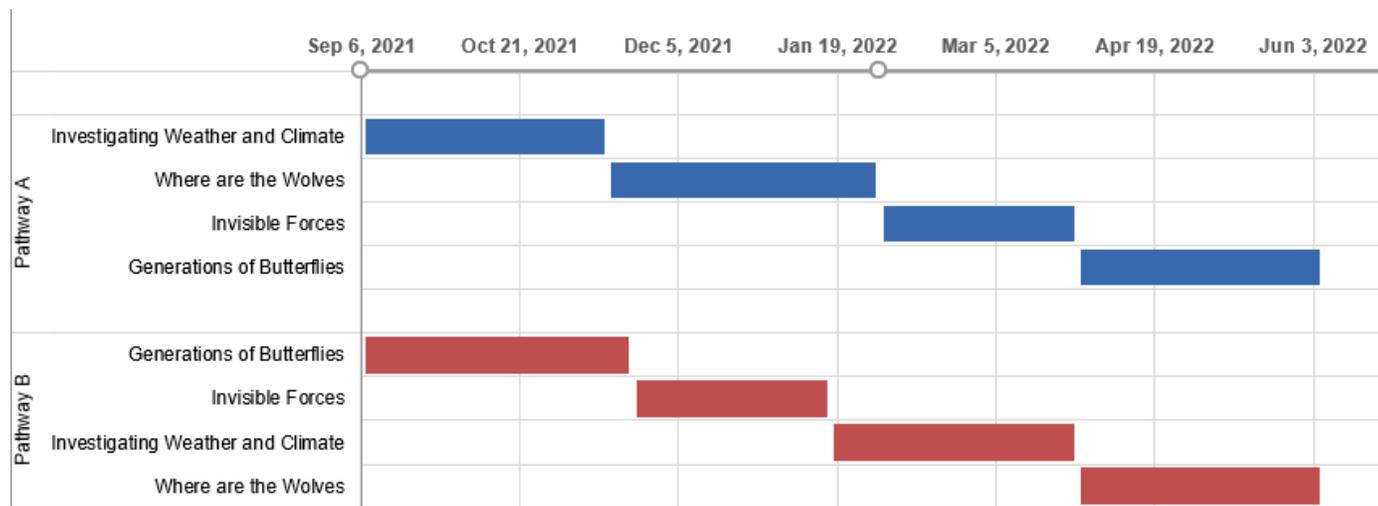
Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p style="text-align: center;">Save the Bees!</p> <p>NYSSLS: Interdependent Relationships in Ecosystems</p>	12 weeks	25 sessions	<p>In this unit of study, students investigate the real world environmental issue of global loss of the bee population and how it is affecting our world through Dr. Seuss’s famous environmental book <i>The Lorax</i>. The lessons in the unit help students develop an understanding of the needs of plants and animals and how plants and animals depend on each other for survival. Students also compare the diversity of life in different habitats. An engineering project involving the design of a hand pollinator allows students to devise a solution “to help” with bee population decline.</p>
<p style="text-align: center;">Earth’s Features</p> <p>NYSSLS: Earth’s Systems: Processes that Shape the Earth</p>	13 weeks	25 sessions	<p>In this unit of study, students are asked to help “Tina the Traveler” decide where to live in the United States. Throughout the unit, students will receive postcards from Tina to learn about land and water features, mapping skills, quick and slow events that affect Earth, and then design a solution to slow or prevent wind or water from changing the shape of the land.</p>
<p style="text-align: center;">Made of Matter</p> <p>NYSSLS: Structure and Properties of Matter</p>	12 weeks	20 sessions	<p>In this unit of study, students explore concepts about matter, its properties, and how it is used. Students follow Ada and her friends, who have instruments made from pieces of trash, to deeply analyze the matter used to make each instrument. Students learn that matter takes up space, has mass, and can be a solid or liquid. Students plan investigations to classify matter by their observable properties and analyze data to determine which materials are best suited for specific purposes. Students use evidence to explain that changes to some materials due to heating and cooling can be reversed and some cannot. The unit concludes with students engaging in an engineering design to create their own instrument or other object of their choice from pieces of matter.</p>



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Grade 3 Pathways



***Note: Dates are approximate based on the typical school year — individual district calendars may differ**

Pathway A rationale:

In the **Investigating Weather and Climate** unit, local and global weather data is collected and analyzed. After interpreting data and revealing patterns in weather and climate in different areas, students design a travel brochure to communicate their learning to others. Climate regions are, again, used in the **Where are the Wolves** unit to determine if a wolf can live in a particular environment. The effects of wolves added to the Yellowstone Park and Adirondack Park ecosystem is also explored as students continue to learn about the interdependence of plants and animals in an environment. Cause and effect relationships are further explored in the **Invisible Forces** unit. Students carry out investigations to determine how forces affect the pattern of motion of an object. Students apply their learning about forces to design and build a Rube Goldberg machine. Using live butterfly larva in the **Generations of Butterflies** unit, the patterns of change within a life cycle are identified as common in all plants and animals. Students interpret data showing how the environment influences the inherited traits of plants and animals. Inherited traits can also provide advantages in survival.

Pathway B rationale:

In the **Generations of Butterflies** unit, students are introduced to the stages of a life cycle that are common in all plants and animals using live butterfly larva. The effect of inherited traits that cause plants and animals to have advantages in survival are also introduced. Cause and effect relationships are further explored in the **Invisible Forces** unit. Students carry out investigations to determine how forces affect the motion of an object. Students apply their learning about forces to design and build a Rube Goldberg machine. The relationship of the parts of a system in the **Invisible Forces** unit will be further explored in the **Investigating Weather and Climate** unit. Local weather data is collected throughout the unit. In addition, students collect data about climates around the world. After interpreting data and revealing patterns in weather and climate in different areas, students design a travel brochure to communicate their learning to others. Climate regions are, again, used in the **Where are the Wolves** unit to determine if a wolf can survive in a particular environment. The impact of wolves in an ecosystem is explored as students continue to learn about the interdependence of plants and animals in an environment.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Grade 3

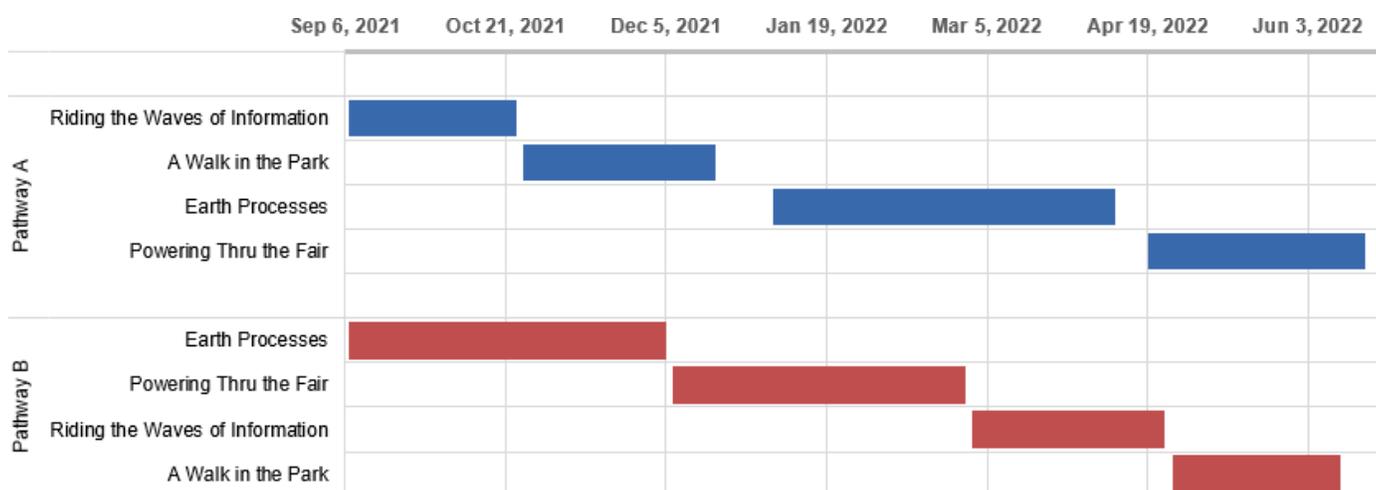
Title of Unit	Suggested Unit Length	Instructional Sessions	Description
Investigating Weather & Climate NYSSLS: Weather & Climate	9 weeks	25 sessions	In this unit of study, students investigate the phenomenon of weather, the water cycle, weather-related hazards, and climates in different regions of the world. The class collaborates to plan and conduct an investigation on the weather using weather tools. Students develop a presentation about the weather and climate at a specific global location.
Where are the Wolves? NYSSLS: Interdependent Relationships in Ecosystems	9 weeks	25 sessions	In this unit of study, students learn about how bringing wolves back to Yellowstone National Park changed that park’s ecosystem. Students discover that wolves no longer live in New York State and are posed with the question, “Should wolves be brought back to Adirondack Park in New York State?” To help students make a claim and argue from evidence, students learn about animal adaptations, group vs. solitary animals, and why some organisms survive well in a particular habitat while others survive less well or not at all.
Generations of Butterflies NYSSLS: Inheritance and Variations of Traits: Life Cycles and Traits	9 weeks	24 sessions	In this unit of study, students explore the phenomenon of monarch migration to Mexico. Lessons within the unit help students figure out that a special generation of monarchs migrate to Mexico over several months even though their adult life span is typically two to three weeks. Additionally, students determine that the butterflies making the trip south do not come back north. A main topic in this unit is life cycles. Students watch butterflies and radish plants go through their life cycle and collect data on the four stages of the plant and animal life cycles — birth, growth, reproduction, and death. Another main topic in the unit is inheritance of traits. Variations of these traits provide advantages in surviving, finding mates, and reproducing.
Invisible Forces NYSSLS: Forces and Interactions	7 weeks	20 sessions	In this unit of study, students explore balanced and unbalanced forces on the motion of an object and how data collected about an object’s motion can predict future motion. Cause and effect relationships of electric (static electricity) and magnetic interactions are explored through questioning strategies. Students use the engineering design process to create their own Rube Goldberg machine that incorporates the various “invisible” forces learned throughout the unit.



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Grade 4 Pathways



***Note: Dates are approximate based on the typical school year — individual district calendars may differ**

Pathway A rationale:

The Physical Science unit, **Riding the Waves of Information**, builds on the first grade unit of Sending Messages with Light and Sound and challenges students to a new understanding of patterns – both visible and invisible. A **Walk in the Park** allows students opportunities to go outside and explore the plant growth and animal behavior that will help them learn about structure, function and information processing. In **Earth Processes in New York State**, students build on their understanding of Earth’s Features from second grade in order to construct explanations for changes in a landscape over time. **Powering Thru the Fair** uses local data that allows students to figure out a real-life phenomenon involving NYS energy use. Significantly, this is the first time students really explore the big crosscutting concept and content idea of “energy”.

Pathway B rationale:

The **Earth Processes in New York State** unit connects well to Grade 4 Social Studies map skills so it makes perfect sense to teach them both at the same time! In addition, students are building on second grade experiences with Earth’s Features. In the **Powering Thru the Fair** unit, students build on the idea of using data to answer a question when exploring New York State energy use. This unit provides the first time that elementary students explore deeply the concept of “energy.” **Riding the Waves of Information** incorporates ideas from the two earlier units into a new understanding of “waves” and how they move energy. In addition, this unit builds on the observations that students make in the first grade unit Sending Messages with Light and Sound. Fourth grade students finish off the school year with a study of the plants and animals found during **A Walk in the Park**. The timing of this unit allows for occasional trips outside to make observations.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Grade 4

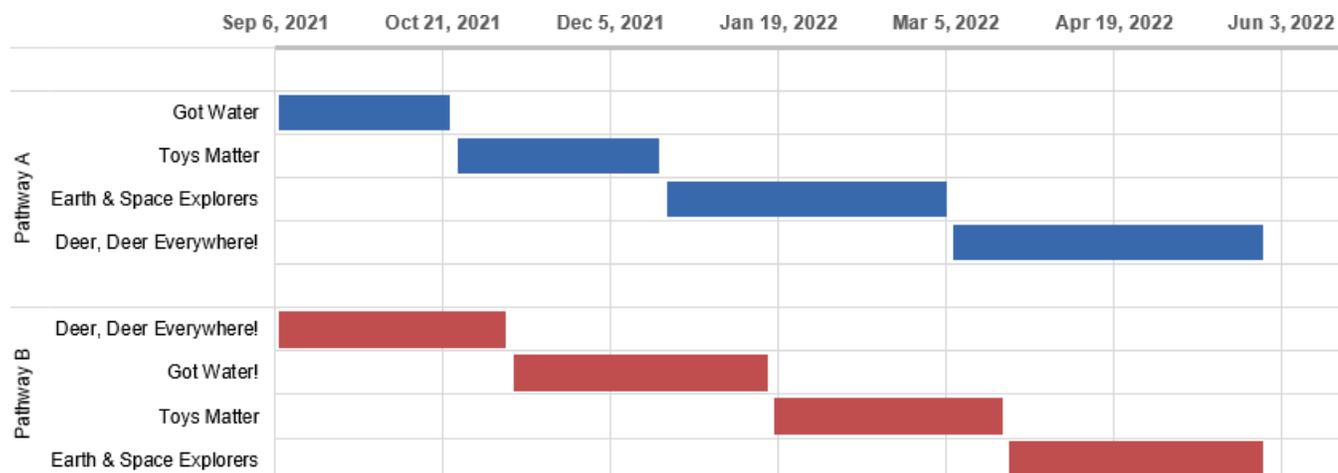
Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p>Riding the Waves of Information</p> <p>NYSSLS: Waves and Information</p>	<p>7 weeks</p>	<p>15 sessions</p>	<p>In this unit of study, students learn about waves and the properties of amplitude, wavelength, and energy. With these properties, students explore how waves move objects and transmit information for both sound (using Morse code) and light (using binary code). As a final project, students use the codes to unlock a series of locks to break into a mystery box to reveal a surprise.</p>
<p>Earth Processes in New York State</p> <p>NYSSLS: Earth's Systems: Processes that Shape the Earth</p>	<p>13 weeks</p>	<p>29 sessions</p>	<p>In this unit of study, students try to figure out the origin of a bone that is found in local soil. Could it have belonged to a dinosaur? The mystery bone provides an introduction to the main ideas in this unit: rock formations and fossils are evidence of changes in a landscape over time; the effects of weathering and erosion can be observed and measured; the analysis of maps describes patterns of Earth's features; and various solutions can be generated that reduce the impact of natural Earth processes on humans.</p>
<p>Powering Thru the Fair</p> <p>NYSSLS: Energy</p>	<p>9 weeks</p>	<p>17 sessions</p>	<p>In this unit of study, students take a virtual field trip to the NYS Fair in order to investigate the energy used there. They follow a map to visit the roller coaster, ball toss, bumper cars, etc. Students explore ideas such as speed, collisions, and energy conversions. As a final performance assessment, students will create exhibits to be displayed at the fair suggesting ideas for making it more eco-friendly. The NYS Fair will "award" free admission tickets to the winners of this contest.</p>
<p>A Walk in the Park</p> <p>NYSSLS: Structure, Function, and Information Processing</p>	<p>8 weeks</p>	<p>16 sessions</p>	<p>In this unit of study, students model how different animals in a park process information received by their senses and how they react to this information. A special emphasis is placed on the sense of sight as students develop models to understand how animals, including humans, see when light reflected from objects enters their eyes. Students engage in investigations to produce evidence that internal and external structures work together to support the survival, growth and reproduction of the plants within a park.</p>



BOCES 4 Science is often asked about the order in which to teach our units of instruction. While curriculum is a local decision, we have worked to provide curriculum pathways for consideration. These pathways were developed by BOCES 4 Science Teachers with the intention of providing a rationale for the order in which to engage students in instruction.

Again, these pathways are only suggestions for consideration. Please contact BOCES 4 Science if you have any questions.

Grade 5 Pathways



***Note: Dates are approximate based on the typical school year — individual district calendars may differ**

Pathway A rationale:

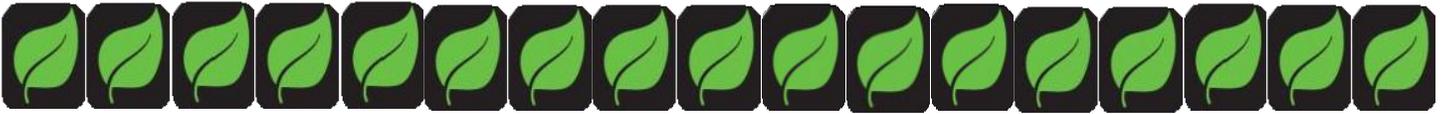
Students take on the roles of scientists-in-training throughout each unit in this grade level. The Earth Systems unit **Got Water?** builds on student learning from third and fourth grade units on Weather & Climate as well as Earth Processes in NYS. Students investigate interactions among Earth’s atmosphere, biosphere, geosphere and hydrosphere in this unit. The Physical Sciences unit, **Toys Matter**, provides an opportunity for students to investigate the properties that make up all things. As engineers at a toy company, students are challenged to create a better bouncy ball. In the **Earth & Space Explorers** unit, student trainees become embroiled in an investigation to determine what has happened to a missing space scientist. NYS Social Studies and Math Standards are integrated throughout the unit. In the Life Science unit, **Deer, Deer Everywhere!**, students take on the role of environmental researchers to explore deer overpopulation and ecosystems.

Pathway B rationale:

Learning about ecosystems in the **Deer, Deer, Everywhere!** unit provides the background for students as environmental researchers to study deer overpopulation. This Life Science unit considers matter and energy through the study of growing things. In **Got Water?**, student interns are challenged to use what they have learned to clean up a polluted water source. As engineers at a toy company, students investigate matter in the Physical Science unit, **Toys Matter**. Using the properties of matter, students engineer a better bouncy ball. Finally, students enter a training program to become **Earth & Space Explorers**. The unit revolves around the fictional narrative that a space scientist is missing. Students use Social Studies and Math Standards along with Science to understand clues that help them solve the mystery.

Pathway C: District choice

A district may choose a sequence different than those listed above based on local curriculum.



Units Available for Ordering

Grade 5

Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p>Deer, Deer, Everywhere!</p> <p>NYSSLS: Matter & Energy in Organisms and Ecosystems</p>	<p>8 weeks</p>	<p>15 sessions</p>	<p>In this unit of study, matter and energy in organisms and ecosystems are explored through the lens of deer overpopulation. Students take on the role of <i>NYS Department of Environmental Conservation</i> researchers charged with the task of creating a public service announcement on this issue.</p>
<p>Got Water?</p> <p>NYSSLS: Earth's Systems</p>	<p>7 weeks</p>	<p>14 sessions</p>	<p>In this unit of study, students investigate Earth's systems by taking on the role of interns at their local <i>Got Water?</i> facility. Students will explore and model interactions among Earth's atmosphere, biosphere, geosphere, and hydrosphere. As a final performance assessment, they will use what they have learned to clean up a water source that has been polluted with various contaminants.</p>
<p>Toys Matter</p> <p>NYSSLS: Structure and Properties of Matter</p>	<p>8 weeks</p>	<p>16 sessions</p>	<p>In this unit of study, students are welcomed to their day at the toy company, <i>Toys Matter</i>. Throughout the unit, students will plan and carry out a series of investigations in which they will work with a large variety of materials. Their final challenge will be to use what they have learned to engineer a new toy.</p>
<p>Earth & Space Explorers</p> <p>NYSSLS: Space Systems: Stars and the Solar System</p>	<p>9 weeks</p>	<p>27 sessions</p>	<p>In this unit of study, students are trained to become Earth and Space explorers. They are challenged to find a fictional scientist by investigating clues about her disappearance. Students engage in lessons that provide support for the argument that differences in the apparent brightness of the Sun, compared to other stars, are due to their relative distances from Earth. They create and interpret graphical displays to reveal patterns of daily changes in shadows, day and night, and the seasonal appearance of stars in the night sky. Students learn that gravity on Earth is directed down. They design and build a shock-absorbing system that will protect two astronauts when they land. Finally, students analyze clues to figure out what the scientist is doing, when she is doing it, where this will happen, and why she is doing it.</p>





Units Available for Ordering Middle School

Title of Unit	Suggested Unit Length	Instructional Sessions	Description
<p style="text-align: center;">Waves and Electromagnetic Radiation</p> <p style="text-align: center;">NYSSLS: Waves and Electromagnetic Radiation</p>	10 weeks	25 sessions	<p>In this unit of study, students create and revise their own models of how light travels, is reflected, absorbed and transmitted. Students contrast white light with the light from a laser pointer. Students learn about frequency, wavelength, and the energy of a wave by contrasting the properties of light from a laser with those of the light from a flashlight or a light bulb. Students also integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.</p>





Changes to Kit Ordering

Thank you for leasing kits from BOCES 4 Science — we provide a comprehensive, hands-on curriculum aligned with the New York State Science Learning Standards (NYSSLS) and designed by New York State Teachers for New York State Teachers.

We continue to move forward each day to provide the best product and services to support classrooms and students across New York State. This has included the transition to online and alternative setting resources and synchronous/asynchronous digital professional development opportunities. Please see www.boces4science.org for more details.

On the following pages you will notice a change to the order form. In previous years, we would offer multiple versions of kits — one with student science journals and one without student science journals. We have listened to feedback from districts indicating a need to have more flexibility in the ordering process to order journals based on actual students in the classroom.

As such, for the 2021-2022 school year, districts will be able to determine how many student science journals are needed for instruction.

The cost of each student science journal is \$1.50

***Note: If you are ordering student science journals, BOCES 4 Science suggests ordering 3-5 additional journals per classroom as class sizes frequently change**

***Note: We have included a Student Science Journal Worksheet to help determine journal allocations — please copy as needed and email/fax to BOCES 4 Science**

Below is a completed example for “Weather for Kindergarten” — this district will order 5 kits and a total of 75 student science journals. As you can see below the sub-total for kits is \$1770 and for science journals is \$112.50 — leaving a total cost for these units to be \$1882.50.

As always, please contact BOCES 4 Science if you have any questions regarding ordering.

2021-2022 BOCES 4 Science Kit Order Form

Example

Kit Title	Grade	Quantity	Kit Cost	Kit Sub-Total	Quantity of Student Science Journals	Science Journals Sub-Total (\$1.50 per journal)	Total (Kits + Science Journals)
Weather for Kindergarten	K	5	\$354	\$1,770 (5*\$354)	75	\$112.50 (75*\$1.50)	\$1,882.50 ($\$1770 + \112.50)



2021-2022 BOCES 4 Science Kit Order Form

Kit Title	Grade	Quantity	Kit Cost	Kit Sub-Total	Quantity of Student Science Journals	Science Journals Sub-Total (\$1.50 per journal)	Total (Kits + Science Journals)
Weather for Kindergarten	K		\$354				
Pushes and Pulls	K		\$236				
Worm Scouts	K		\$340				
Sky Patterns	1		\$308				
Sending Messages with Light and Sound	1		\$320				
A Bunny's Life	1		\$334				
Made of Matter	2		\$308				
Save the Bees!	2		\$370				
Earth's Features	2		\$323				
Generations of Butterflies	3		\$308				
Invisible Forces	3		\$310				
Investigating Weather and Climate	3		\$290				
Where are the Wolves?	3		\$252				
A Walk in the Park	4		\$308				
Powering Thru the Fair	4		\$308				
Riding the Waves of Information	4		\$287				
Earth Processes in New York State	4		\$328				
Earth & Space Explorers	5		\$308				
Deer, Deer Everywhere!	5		\$462				
Toys Matter	5		\$390				
Got Water?	5		\$303				
Waves and Electromagnetic Radiation	6-8		\$472				
Sub-Total:							
Please include this page with order forms							

2021-2022 BOCES 4 Science Student Science Journal Worksheet

District: _____ **School:** _____

Kit Title:

	Teacher	Number Student Science Journals
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
	Total Journals	

Please include this page with order forms

2021-2022 BOCES 4 Science “Add-On” Kit Order Form

Kit Title	Grade	Quantity	Kit Cost	Kit Sub-Total
“Add-On” Kits				
Weather for Kindergarten	K		\$32	
Pushes and Pulls	K		\$94	
Worm Scouts	K		\$32	
Sky Patterns	1		\$53	
Sending Messages with Light and Sound	1		\$63	
A Bunny’s Life	1		\$94	
Made of Matter	2		\$32	
Save the Bees!	2		\$73	
Earth’s Features	2		\$114	
Generations of Butterflies	3		\$94	
Invisible Forces	3		\$42	
Investigating Weather and Climate	3		\$53	
Where are the Wolves?	3		\$42	
A Walk in the Park	4		\$53	
Powering Thru the Fair	4		\$83	
Riding the Waves of Information	4		\$53	
Earth Processes in New York State	4		\$94	
Earth & Space Explorers	5		\$53	
Deer, Deer Everywhere!	5		\$73	
Toys Matter	5		\$135	
Got Water?	5		\$42	
Sub-Total:				
Page 18 Sub-Total:				
Total:				
Please include this page with order forms				

Please note the following:

- Each “Add-On” kit lease is eligible for BOCES aid
- “Add-On” kits contain additional consumable, non-consumable, and partially consumable supplies — unused materials should be returned to BOCES 4 Science
- “Add-On” kits are available to districts based on the lease quantity of primary BOCES 4 Science Kits. For example, if a district is leasing 4 Sky Patterns, we will support the additional lease of up to 4 Sky Patterns “Add-On” kits
- This is an optional lease — and not required for the lease of any primary BOCES 4 Science kits
- Costs do not include shipping ,return shipping ,or administrative fees for districts outside Monroe 1, Monroe 2-Orleans, Wayne Finger-Lakes, or Genesee Valley BOCES

BOCES 4 SCIENCE

Ordering Example

2021-2022

Wayne-Finger Lakes BOCES
 Instructional Materials Processing Center
 Teacher Request Form for 2021 - 2022

District / Building: ___"Wayne-Finger Lakes BOCES, Newark Elementary"_____

Teacher (last, first): _Bassage_____ _Sharon_____ Grade Level: _____

Authorized Signature_____

(if this order is accompanied by the district final request no signature is required.)

Kit Number	Kit Title	Begin	Return
NY101	Waves: Light and Sound	4 /01 / 22	6 /7/22
NY101J	Waves student journals 20	4 /01/22	6/7/22
		/ /	/ /
		/ /	/ /
		/ /	/ /

⇒ Please use the Teacher Request Form (TRF) to indicate your district, building, teacher, and kits that you want. Some request forms are preprinted with teacher’s names on them if they have ordered from Wayne-Finger Lakes (WFL) last year. If not, please use the form attached in this catalog. *The TRF should be sent to the Science Department at WFL.*

⇒ Please use the Kit Order Form (previous pages) to indicate the total number of kits ordered and the total price. This form should be approved by your Business Official before sending to WFL.

Send all documents to:
 Sharon Bassage
 sbassage@wflboces.org

Use one Teacher Request form/teacher or grade level.

Wayne-Finger Lakes BOCES
Instructional Materials Processing Center
Teacher Request Form for 2021 - 2022

District / Building: _____

Teacher (last, first): _____ Grade Level: _____

Kit Number	Kit Title	Dates for 2021- 2022	
		Begin	Return
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /
		/ /	/ /

Enter begin date (first day of the week - Monday) and return date (last day of the week - Friday) from the enclosed calendar for those items requested in 2021 - 2022. List additional kits requested including begin and return dates.

Return through your Superintendent of Business by: April of this school year for the first bulk ordering of kits.
It is possible to order kits throughout the school year. The kits are on a first come, first serve basis. You will need approval from the business office for kits ordered at any time.

NOTE: If this list is to be reassigned to a different teacher, enter the new teacher name. Use blank form for additional teachers.

**Please make sure these teacher request forms are sent to
Sharon Bassage at WFL BOCES.
Sharon.bassage@wflboces.org**

**SCIENCE KITS
TENTATIVE SCHEDULING CALENDAR 2021-2022**

<p align="center">SEPTEMBER 2020</p> <p><u>WK M T W T F</u></p> <p>1 6 7 8 9 10 2 13 14 15 <u>16 17</u> 3 20 21 22 <u>23 24</u> 4 27 28 29 30 1</p>	<p align="center">OCTOBER 2020</p> <p><u>WK M T W T F</u></p> <p>5 4 5 6 7 8 6 11 12 <u>13 14</u> 15 7 18 19 <u>20 21</u> 22 8 25 26 <u>27 28</u> 29</p>	<p align="center">NOVEMBER 2020</p> <p><u>WK M T W T F</u></p> <p>9 1 2 3 4 5 10 8 <u>9 10</u> 11 12 11 15 <u>16 17</u> 18 19 12 22 <u>23 24</u> 25 26 13 29 30 1 2 3</p>
<p align="center">DECEMBER 2020</p> <p><u>WK M T W T F</u></p> <p>13 <u>29 30</u> 1 2 3 14 6 7 8 9 10 15 13 <u>14 15</u> 16 17 -----</p>	<p align="center">JANUARY 2021</p> <p><u>WK M T W T F</u></p> <p>16 ----- 16 3 4 5 6 7 17 10 11 <u>12 13</u> 14 18 17 18 <u>19 20</u> 21 19 24 25 <u>26 27</u> 28</p>	<p align="center">FEBRUARY 2021</p> <p><u>WK M T W T F</u></p> <p>20 31 1 2 3 4 21 7 8 9 10 11 ----- 22 21 22 <u>23 24</u> 25</p>
<p align="center">MARCH 2021</p> <p><u>WK M T W T F</u></p> <p>23 <u>28 1</u> 2 3 4 24 7 8 <u>9 10</u> 11 25 <u>14 15</u> 16 17 18 26 <u>21 22</u> 23 24 25 <u>28 29</u> 30 31 1</p>	<p align="center">APRIL 2021</p> <p><u>WK M T W T F</u></p> <p>27 4 5 6 7 8 28 <u>11 12</u> 13 14 15 29 ----- 30 <u>25 26</u> 27 28 29</p>	<p align="center">MAY 2021</p> <p><u>WK M T W T F</u></p> <p>31 2 3 4 5 6 32 9 10 <u>11 12</u> 13 33 <u>16 17</u> 18 19 20 34 <u>23 24</u> 25 26 27</p>
<p align="center">JUNE 2021</p> <p><u>WK M T W T F</u></p> <p>35 30 <u>31 1</u> 2 3 36 6 7 8 9 10 37 13 <u>14 15</u> 16 17</p>	<p>A) Enter <u>BEGIN</u> date (first day of week, Monday) and <u>RETURN</u> date (last day of week, Friday) on the teacher request form for kits. If you are unsure of the duration for the kit, the computer will book the kit for the given number of weeks the kit is allowed.</p> <p>B) Delivery is scheduled for the week <u>BEFORE</u> the begin date.</p> <p>C) Please note the due date when you receive your kit. If you need to extend the kit, please call me at least 1 week prior to the due date.</p>	

Shipping Information*

Only for Districts outside Monroe 1, Monroe 2-Orleans, Wayne-Finger Lakes, or Genesee Valley BOCES

Understanding the Shipping Fees

*Shipping charges only apply for non-courier delivery

KITS

Budget for Kits	Zip Code beginning with 130XX - 149XX	Zip Code beginning with 100XX - 129XX and 150XX - 157XX
\$0 - \$15,000	12%	13%
\$15,001 - \$25,000	11%	12%
\$25,001 - \$200,000	10%	11%

Examples:

1. If your budget is \$16,000, and your zip code is 13309, multiply \$16,000 by 11%. The shipping charges are \$1,760.00.
2. If your budget is \$8,000 and your zip code is 11901, multiply \$8,000 by 13%. The shipping charges are \$1,040.00.

If you would like BOCES 4 Science to pay the cost of return shipping on leased kits, you must fill in the space on the lease order forms with the same dollar amount as you put in the shipping charge space.

Photocopy the completed forms and please mail, fax, or email to:

Monroe 1 BOCES Districts:

Monroe 1 BOCES
Roger Wink
15 Linden Park
Rochester, NY 14625
Fax #: 585-249-7809
Phone #: 585-249-7063

Roger_Wink@boces.monroe.edu

Wayne Finger Lakes BOCES and Genesee Valley BOCES Districts:

Wayne Finger Lakes BOCES
Science Dept.
Sharon Bassage
131 Drumlin Ct.
Newark, NY 14513
Fax #: 315-331-2016
Phone #: 315-332-7267

Sharon.Bassage@wflboces.org

ALL OTHER districts:

Monroe 2 - Orleans BOCES
Gina Vaccarella
38 Turner Drive
Spencerport, NY 14559
Fax #: 585-352-1157
Phone #: 585-617-2363

gvaccare@monroe2boces.org

For additional forms, go to www.boces4science.org

BOCES 4 SCIENCE

Lease Budget Worksheet for 2021-2022

Note: There are no shipping charges or administrative fees for Monroe 1, Monroe 2-Orleans, Wayne-Finger Lakes, or Genesee Valley Districts

District:	BOCES:
Contact Name:	
Title:	
Address:	
Telephone:	
Fax:	
Email:	
<p>Please send all appropriate order forms with your request. The 5.2% Administrative Charge is applicable to all sub-totals.</p>	

Line 1:Kit Lease Total		_____
Adm. Charge 5.2% (of sub-total)	+	_____
<small>(no administrative charges for Monroe 1, Monroe 2-Orleans, WFL, or GV Districts)</small>		
Shipping Charge (please see shipping chart)	+	_____
<small>(no shipping charges for Monroe 1, Monroe 2-Orleans, WFL, or GV Districts)</small>		
Return Shipping	+	_____
Total		_____

***Note: Districts will be billed in full for all approved contract/cross-contract amounts submitted on or after July 1, 2021**

***Note: Districts outside Monroe 1, Monroe 2-Orleans, Wayne-Finger Lakes, or Genesee Valley BOCES must submit a cross-contract. Please contact your Business Office for further information.**

