

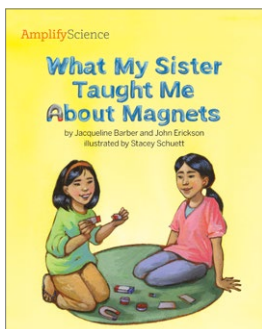
Balancing Forces: Investigating Floating Trains



ISBN: 978-1-943228-00-3
Lexile Measure: 440L

Forces All Around

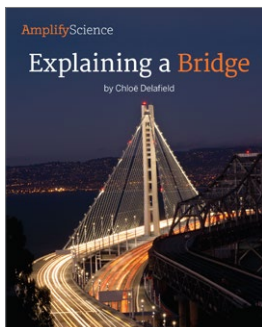
Forces All Around follows the adventures of two kids looking for evidence of forces. The narrator and her friend learn in school that forces are pushes and pulls. On the way home, they decide to play a game: They challenge each other to find evidence of forces in the world around them. As they walk along, they look for things that are starting to move or stopping moving. It turns out there is evidence of forces everywhere—as a kid passes by on a skateboard, as a parent pushes a stroller, as a car gets towed away—and the kids record each example they see. *Forces All Around* sets the context for this unit, connecting what students are learning with their everyday lives. Non-touching forces are introduced in some of the illustrations, offering an opportunity to go back through the book looking for evidence of gravity and magnetic force.



ISBN: 978-1-943228-02-7
Lexile Measure: 580L

What My Sister Taught Me About Magnets

What My Sister Taught Me About Magnets tells the story of a girl who loves to investigate magnets. She investigates the similarities and differences between magnets of different shapes, sizes, and strengths and makes discoveries about magnetic poles and what magnets attract. Through a series of “explanations”—similar to the explanations that students will construct in the unit—she describes how she compares different magnets and tells her older sister what she has learned by investigating. *What My Sister Taught Me About Magnets* models ways of investigating magnetic force, recording data, making explanations, and using comparative language. It also supports students’ investigations by providing them with information about the properties and types of magnets.



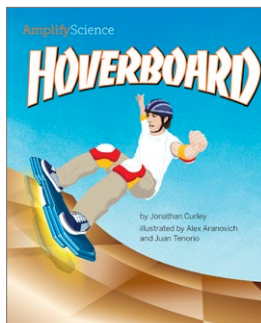
ISBN: 978-1-943228-05-8
Lexile Measure: 770L

Explaining a Bridge

Explaining a Bridge profiles Brian Maroney, one of the lead engineers involved in the design of the new San Francisco Bay Bridge. Since part of the original Bay Bridge fell during an earthquake in 1989, some people might be concerned about the new bridge staying up. Maroney explains to the public why the new bridge is safe—just as students will be explaining that maglev trains are safe.

Maroney knows a lot about balanced forces, and he explains how the forces will stay in balance to keep the bridge up even in an earthquake. The text discusses the materials and models that Maroney uses to help educate the public and includes diagrams of balanced and unbalanced forces acting on bridges.

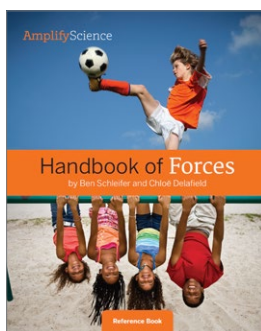
Explaining a Bridge gives students a model of a real-life engineer using the very explanation skills they are learning as an essential part of his job.



ISBN: 978-1-943228-03-4
Lexile Measure: 770L

Hoverboard

Hoverboard introduces students to a real-life futuristic invention: skateboards that float! The text describes how hoverboards work: magnetic force pushes the board up as Earth pulls the board down with the force of gravity. The forces are balanced when the board floats and unbalanced when the board is falling to the ground. The concluding pages offer another example of an invention that uses balanced forces and encourage students to think of more. The exciting analogous example presented in *Hoverboard* helps students understand the maglev train without giving everything away. The diagrams and explanations support students in constructing their own explanations in the unit.



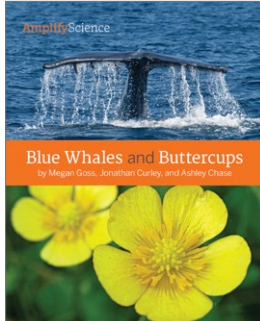
ISBN: 978-1-943228-07-2
Lexile Measure: N/A

Handbook of Forces

Handbook of Forces is the reference book for this unit, giving students a place to look up and discover information about various kinds of forces and scenarios: touching forces, gravity, magnetic force, electromagnetic force, multiple forces, and balanced and unbalanced forces. Each section offers many accessible examples with simple explanations. In addition to reinforcing key unit content, this reference book supports students' firsthand investigations of forces in class and gives them an opportunity to search for secondhand evidence of forces. The book delivers content that builds on students' firsthand observations of magnets and shows how magnets can be used for exciting real-world applications. The diagrams and explanations in the book provide a model for students that will help them as they construct their own explanations in the unit.

Reference Book

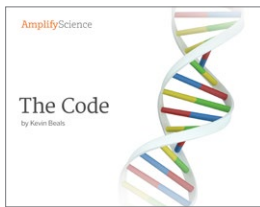
Inheritance and Traits: Variation in Wolves



ISBN: 978-1-945191-85-5
Lexile Measure: 710L

Blue Whales and Buttercups

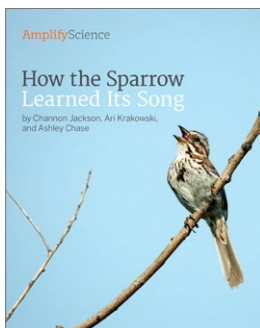
Blue Whales and Buttercups introduces the idea that all organisms on Earth are related, but there is a lot of variation among them. It offers examples of the amazing variety of living things, from redwood trees to nine-armed sea stars. The book explains that there is variation in traits among very different organisms, among different species within a group (such as bats), and among the members of a single species. There is variation in size, ways of moving, and defenses. Organisms are grouped into categories from large (animals with four limbs) to small (blue jays). The end of the book brings students back to the idea that all organisms are related, because they're all made of cells. This book sets the context for the unit and sparks students' interest in traits with many engaging examples of a wide variety of organisms.



ISBN: 978-1-945191-96-1
Lexile Measure: 720L

The Code

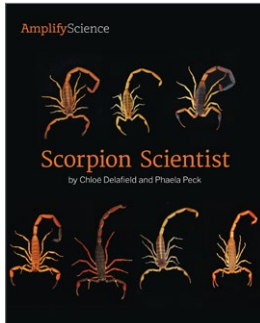
The Code explores the idea that while we are all different, we all share traits that are inherited. Photographs of children show the traits that all people share as well as the variation within those traits. The text explains that we inherit many traits from our birth parents because of a code contained in the genes that our ancestors pass down to us. We are all similar in many ways, but no two people are exactly the same. The text and images help students make the connection between the traits that we can see and the tiny genes inside our bodies. The book concludes with a discussion of the fact that all organisms have genes and that we have genes in common with every organism on Earth. *The Code* provides an accessible way for students to understand a key idea from the unit that is difficult to observe in a firsthand way: Genes provide the instructions for our traits.



ISBN: 978-1-945191-68-8
Lexile Measure: 740L

How the Sparrow Learned Its Song

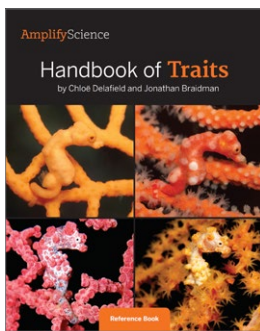
How the Sparrow Learned Its Song complements *The Code* with a discussion of traits that are influenced by the environment. The book gives five examples of organisms that acquire traits from their environments: song sparrows and their individual songs, decorator crabs and their shells, grizzly bears and their hunting styles, vervet monkeys and their alarm calls, and redwood trees and their height. The final example shows how traits can be influenced by inheritance and the environment. The redwood tree is so tall both because it inherited genes that allow it to get that tall, and because it got all the sunlight, water, and space it needed from its environment. A dogwood tree could never get that tall, no matter how many resources there were in its environment. This book supports students' investigations by providing information about traits that can come from an organism's environment and from a combination of genetic and environmental influences.



ISBN: 978-1-945191-65-7
Lexile Measure: 780L

Scorpion Scientist

Scorpion Scientist follows an arachnologist, Lauren Esposito, as she discovers an unknown scorpion and identifies it as a new species. Esposito asks a series of questions and investigates to find the answers. She asks whether the scorpion has different genes from similar scorpions, whether its behavior and other traits are different, and whether it lives in a different environment. The answers to all these questions are evidence that it is a new species of scorpion. This book models the practice of asking investigable questions and gives students a real-life example of a scientist investigating variation to make a claim. It also helps students understand that scientists investigate their questions by looking for patterns.



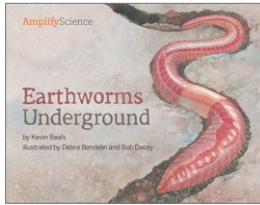
ISBN: 978-1-945191-71-8
Lexile Measure: N/A

Handbook of Traits

Handbook of Traits is the reference book for this unit, providing students with information and examples that build their understanding of traits, variation, inheritance, and environmental influences. The book profiles 20 species of plants and animals, with detailed information on traits and variations within the species, inherited and environmentally influenced traits, and life cycles. Each entry includes many photos that allow students to see traits and variation, plus a diagram that helps students understand the diversity of life cycles. This reference book supports students' firsthand investigations as they find images that show variation within a species, observe the traits of parents and offspring, and discover traits that are influenced by both inheritance and environmental factors.

Reference Book

Environments and Survival: Snails, Robots, and Biomimicry



ISBN: 978-1-945191-99-2
Lexile Measure: 670L

Earthworms Underground

Earthworms Underground focuses on how earthworms meet their needs in their underground environment. The book is designed to provide students with a view of the earthworm in its natural habitat. Students learn that earthworms have needs, including the need for water and food, the need to protect themselves, and the need to reproduce. The book describes how earthworms' traits and behaviors allow them to meet each of their needs. Through reading this book, students begin to learn about the connection between an organism's traits and how the organism survives in its environment. *Earthworms Underground* introduces important content and provides context for students' investigations of what organisms need to survive.



ISBN: 978-1-945192-02-9
Lexile Measure: 620L

Mystery Mouths

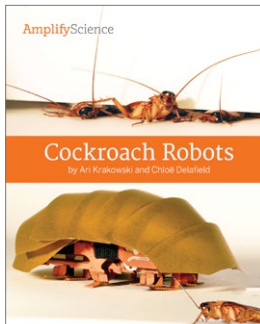
Mystery Mouths introduces students to the concept of structure and function by providing them with the opportunity to observe the traits of various animal mouths. First, students are shown a photograph of a mouth and asked to examine it. Then, they turn the page and learn what kind of animal has such a mouth and what the structures in the mouth allow the animal to do. Students also examine skulls, including fossil skulls, and compare them to the mouths of animals with similar structures. This book conveys essential content about structure and function. In addition, the format of this book makes it ideal for helping students make inferences from the text and the visual representations. This experience with making inferences supports students in their firsthand and secondhand investigations.



ISBN: 978-1-945192-05-0
Lexile Measure: 610L

Environment News

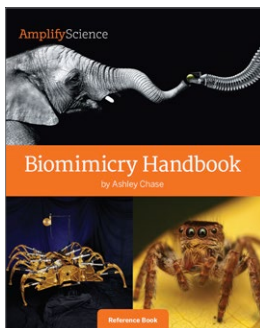
Environment News showcases three examples of how a change in environment can cause traits that were once adaptive to become non-adaptive, or vice versa. These three examples, featuring cliff swallows, armadillo lizards, and gloxinia plants, are presented as a series of news articles based on real-life problems caused by drought and human activity. Readers are taken back in time as they read the news articles. As each situation unfolds, they learn why and how changes in a particular environment happened and how these changes affected the survival of organisms in that environment. This book provides students with several examples of how a trait that helps an organism survive in one environment may no longer help it survive if that environment changes. In addition to providing context for students' investigations by presenting illustrative examples of adaptive and non-adaptive traits, this book reinforces the important, but often misunderstood, concept that an organism can't just change its traits to be adaptive in a new environment.



ISBN: 978-1-945192-08-1
Lexile Measure: 660L

Cockroach Robots

Cockroach Robots is about the work of Bob Full and his team of biomimicry engineers who build robots inspired by the traits of organisms. This book follows the process of designing a many-legged robot that can run fast through tiny spaces, just like a cockroach can. Full and his team carefully observe the cockroach and its traits, and then they design a robot that can also move quickly over and around obstacles. They test the robot, which is intended to enter buildings in the case of a disaster such as an earthquake, to see if it is safe for people to enter the buildings. After testing the robot, Full and his team revise the robot to better meet their design criteria. This book models the practices of observation, investigation, design, testing, and more that engineers engage in when they work.



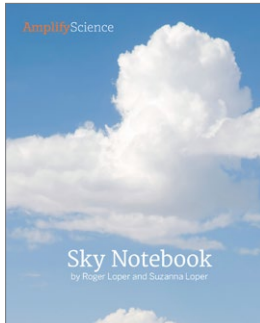
ISBN: 978-1-945192-11-1
Lexile Measure: N/A

Biomimicry Handbook

Biomimicry Handbook is the reference book for this unit and provides students with many examples of real scientists and engineers working on all kinds of biomimicry projects where they get inspiration for designs from the traits of organisms in the natural world. The introduction to the handbook provides a clear, illustrated example of adaptive and non-adaptive traits, an explanation of what biomimicry is, and discusses how designed objects are different from organisms. Students learn about self-healing plastic based on human skin, chainsaws based on beetle jaws, computer screens based on butterfly wings, and more fascinating examples of biomimicry. This book introduces the field of biomimicry, which students will explore throughout the unit in their role as biomimicry engineers. The book also serves to model how scientists and engineers use their knowledge of traits to design new things that solve problems.

Reference Book

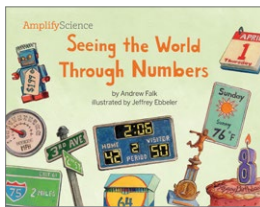
Weather and Climate: Establishing an Orangutan Reserve



ISBN: 978-1-943228-18-8
Lexile Measure: 610L

Sky Notebook

Sky Notebook is set in the mountains of Colorado where storms move through on a regular basis during the winter. The narrator is an amateur meteorologist who takes measurements and makes notes about the weather each day in his sky notebook. Beautiful photographs illustrate what the narrator sees each day (a daily photograph is part of the measuring and observing regimen), so the reader experiences the weather visually as well as through data. The book models the scientific practice of recording data, demonstrating how students could conduct their own firsthand daily weather investigation. It also offers a secondhand investigation experience by giving students a chance to make predictions from the data included in the book.



ISBN: 978-1-939787-17-0
Lexile Measure: 540L

Seeing the World Through Numbers

Seeing the World Through Numbers invites students to think differently about numbers and what they mean. Numbers are not just marks on a page. In fact, they can tell us a lot about the world. The book shows students how numbers—and various ways of organizing them—reveal information about weather. Numbers can give us a sense of how a day will feel, and also allow us to predict what a future day will be like. *Seeing the World Through Numbers* shows how line plots allow us to analyze data and how totals are a useful tool for analyzing a month's worth of precipitation data. The book's beautiful illustrations help students make sense of a variety of data and support students in visualizing numbers. *Seeing the World Through Numbers* delivers essential unit content in an engaging, relatable context and models the scientific practice of analyzing data.



ISBN: 978-1-943228-24-9
Lexile Measure: 700L

What's Going On with the Weather?

What's Going On with the Weather? is a fictional story describing weather observations and investigations that a girl named Toby makes after she moves from Boston to San Francisco. As she begins her new life in San Francisco, Toby notices that the weather is quite different from the weather she left behind in Boston. She questions why this is so and ends up learning a great deal about seasonal patterns in both San Francisco and Boston. She and her brother search for data online and find graphs for temperature and precipitation in both cities. They analyze and compare the graphs to understand how San Francisco's weather differences will impact their lives. Toby's investigations in *What's Going On with the Weather?* model the kind of analysis that students do in the unit.



ISBN: 978-1-943228-28-7
Lexile Measure: 620L

Dangerous Weather Ahead

Dangerous Weather Ahead is a book about weather-related natural hazards. The book introduces some of the problems that natural hazards can cause, as well as solutions that people have designed to prepare for those problems. The book focuses primarily on three natural hazards—hurricanes, blizzards, and lightning—and provides maps of frequency and illustrative photographs for each. For each hazard, the text details a problem and a solution, providing photos that help students visualize and understand the issues. *Dangerous Weather Ahead* conveys content about natural hazards and provides an opportunity for a secondhand investigation as students examine the maps and think about how the maps can be used to predict and prepare for weather-related natural hazards.



ISBN: 978-1-943228-32-4
Lexile Measure: N/A

World Weather Handbook

World Weather Handbook is the reference book for this unit, providing a place for students to explore weather data and information from locations around the world. Bar graphs, maps, detailed descriptions, and photos combine to help students get a full picture of weather and climate in 19 diverse locations. *World Weather Handbook* allows for a secondhand investigation experience where students can analyze graphs and identify a variety of seasonal patterns. The book also provides background information that helps students begin to recognize broad global climate patterns.

Reference Book

About the books

Each unit of Amplify Science K–5 includes five student books authored by the curriculum experts at the University of California, Berkeley’s Lawrence Hall of Science. These age-appropriate books were built specifically to enhance students’ experiences in the Amplify Science curriculum. The books engage students with science phenomena that are too big, too small, too far, happen too slowly, or are too dangerous for students to engage with firsthand in the classroom, while reinforcing reading and literacy skills. These content-rich, nonfiction and informational texts provide opportunities for students to search for evidence relevant to their firsthand investigations, see science practices and dispositions modeled, extend their science knowledge, and provide real world connections as they master reading-to-learn, and close reading skills, and construct evidence-based arguments. The five books in each unit include one book for approximately every five days of instruction and one reference book that students draw upon throughout the 20-lesson units.



**THE LAWRENCE
HALL OF SCIENCE**
UNIVERSITY OF CALIFORNIA, BERKELEY

The program is designed to provide strong support in how to read like a scientist and for the development of vocabulary, language, and reading comprehension particularly relevant to reading informational text. It can serve as a complement to an English Language Arts program that addresses other literacy components (e.g., skill-based or fluency-oriented literacy instruction). Big books come with the program for all titles in grades kindergarten and 1.

Lexile Levels

The Lexile¹ measure is provided for all non-reference books.² At this time, our reference books are not given Lexile measures because these books are not designed to be read from cover to cover; rather, students use these books to find targeted information to support their investigations. All books in the Amplify Science program fall within, or in a few cases, just outside, the range of Lexile measures specified for the grade level.

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- 1 Target Lexile measures by grade band are specified by the Common Core in Supplemental Information for Appendix A of the Common Core State Standards for English Language Arts and Literacy: New Research on Text Complexity, available at <http://www.corestandards.org/wp-content/uploads/Appendix-A-New-Research-on-Text-Complexity.pdf>. MetaMetrics further specifies target Lexile measures for each grade, available at <https://lexile.com/about-lexile/grade-equivalent/grade-equivalent-chart/>
 - 2 Lexile measures are available for the Grades 2–5 books; there are no current official Common Core recommendations for Lexile measures for kindergarten and Grade 1.