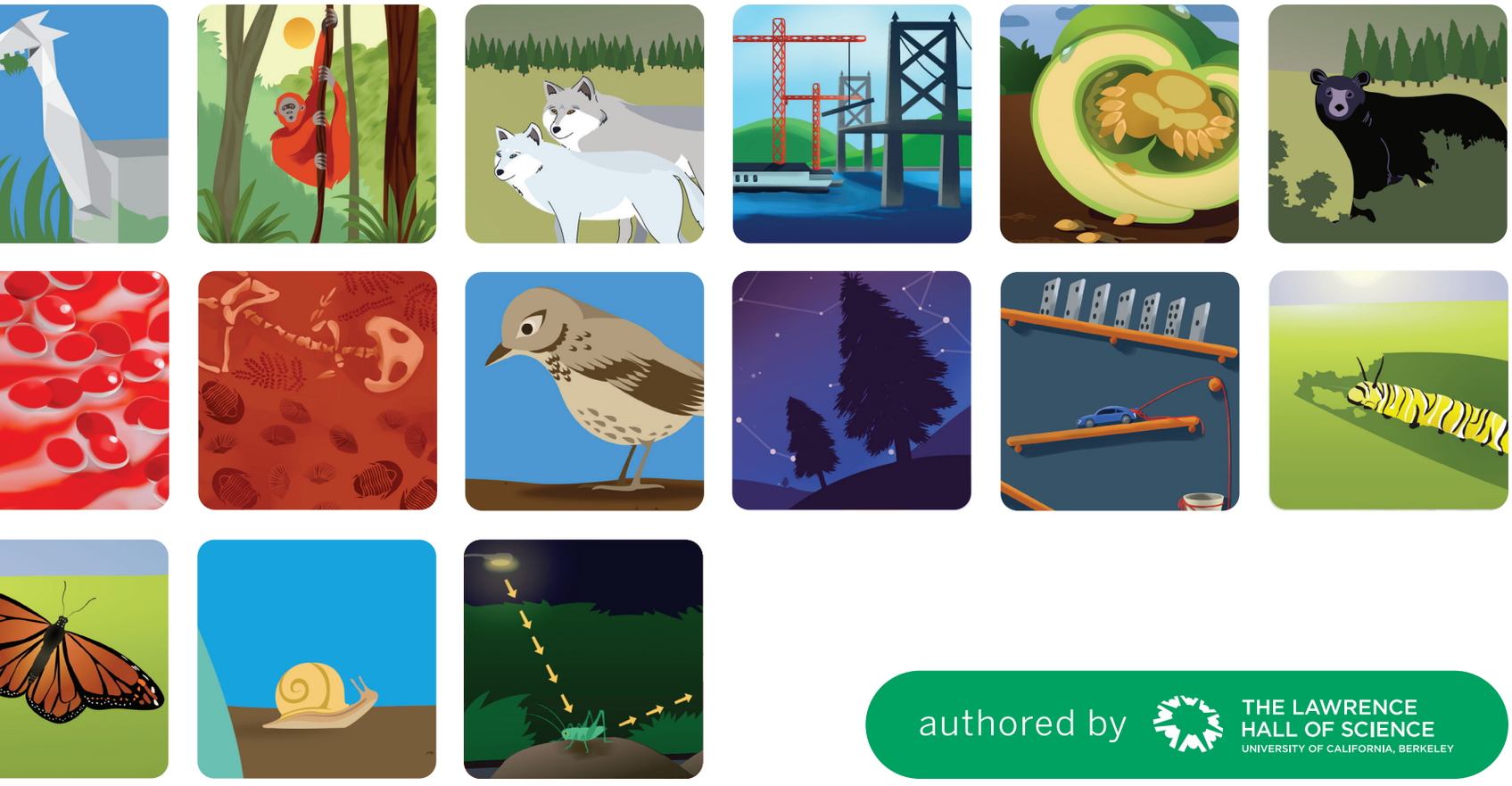
Amplify Science

Grade 3

Planning guide



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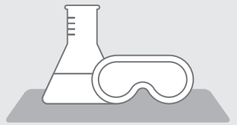
Program components

Student

Hands-on



Kit materials

Reading

Student Books for read-alouds, shared reading, and partner reading

Writing

Student Investigation Notebooks

Apps

Student practice apps (one Sim included in grade 3)

Teacher

Instruction

Print Teacher's Guide

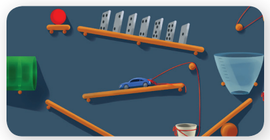
Digital Teacher's Guide

Display and hands-on materials (vocabulary cards, unit questions, key concepts, sorting cards, and more)

Planning for a year

Grade 3 scope and sequence

88 days of instruction



Balancing Forces

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 3-PS2-1
- 3-PS2-2
- 3-PS2-3
- 3-PS2-4

Focal Disciplinary Core Ideas:

- PS2.A
- PS2.B

Inheritance and Traits

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 3-LS1-1
- 3-LS2-1
- 3-LS3-1
- 3-LS3-2

Focal Disciplinary Core Ideas:

- LS1.B
- LS2.D
- LS3.A
- LS3.B

Environments and Survival

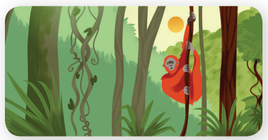
20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 3-LS4-1
- 3-LS4-2
- 3-LS4-3
- 3-LS4-4
- 3-5 ETS1-1
- 3-5 ETS1-2
- 3-5 ETS1-3

Focal Disciplinary Core Ideas:

- LS2.C
- LS4.A
- LS4.B
- LS4.C
- LS4.D
- ETS1.A
- ETS1.B
- ETS1.C



Weather and Climate

20 60-minute lessons
2 dedicated assessment days

Focal NGSS Performance Expectations:

- 3-ESS2-1
- 3-ESS2-2
- 3-ESS3-1

Focal Disciplinary Core Ideas:

- ESS2.D
- ESS3.B

Amplify Science was built from the ground up for 3-dimensional learning. Access the Teacher's Guide to see the complete list of Disciplinary Core Ideas, Crosscutting Concepts, and Science and Engineering Practices addressed in each unit.

Scheduling options

No matter what your scheduling preference, Amplify Science will work in your classroom.

"I teach science two times a week."

Each Amplify Science unit at Grade 3 is made up of 22 60-minute lessons, which includes two lessons for pre- and post-assessment. With two scheduled 60-minute sessions each week, each Amplify Science unit will take between 2 and 2.5 months to complete.

"I teach science three times a week."

The easiest option is to plan for three 60-minute sessions each week. This way, each Amplify Science unit will take approximately 1.5 months. This plan will provide you the freedom to slow down the pace of instruction if your students need more time, or if you'd like to weave in additional experiences.

45 minute option

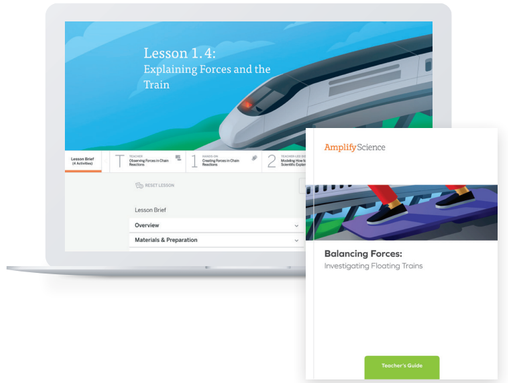
If you plan for sessions of less than 60-minutes, Amplify Science lessons can be spread out over more than one session. For instance, if you allocate three 45-minute lessons per week, each Amplify Science unit will take approximately 2.25 months. This option will still provide time for you to address all four Grade 3 units across the year.

"I teach science everyday."

It will take you approximately 5 weeks (22 school days) to complete each unit. If you plan for sessions shorter than 60 minutes, the units will take slightly longer to complete.

Planning for a unit

Each unit's Teacher's Guide has all the information you need to learn about that unit's content and structure, materials, storyline, and student learning objectives.



Planning Options

1 hour per unit

If you want to thoroughly prepare for a unit, the most important resources to locate and read are:

Foundational:

- **Unit Overview:** A few paragraphs outlining the unit, including what the unit is about, why it was written this particular way, and how students experience the unit.
- **Unit Map:** A one-page summary showing how the chapters build upon each other, what questions students will investigate, and what evidence sources they will use to figure those questions out.
- **Lesson Overview Compilation:** 1–2 pages on each lesson provide insight into each lesson's sequence of activities, intent, materials used, and how the lessons connect with and build upon each other.

Supporting:

- **Progress Build:** A thorough explanation of the unit's learning progression (called the "Progress Build"). Understanding and internalizing the Progress Build is key to understanding the embedded unit assessments.
- **Science Background:** A teacher-facing document that gives valuable science content information and calls out common student misconceptions and preconceptions. The Science Background resource provides all the context and subject matter knowledge needed to teach the unit.

30 minutes per unit

If you're a bit pressed for time but still want to get the essentials, try to focus on:

- **Unit Overview,** 1 page
- **Unit Map,** 1 page
- **Lesson Overview Compilation**

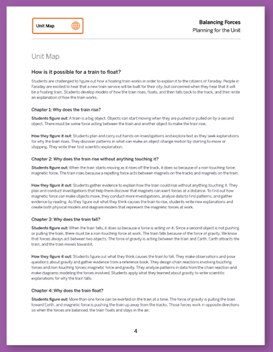
5 minutes per unit

If you have only 5 minutes to familiarize yourself with the most essential aspects of the unit, skip right to the **Unit Overview** and **Unit Map**. At the very least, you'll understand the unit narrative and structure, and get a sense of the materials used.

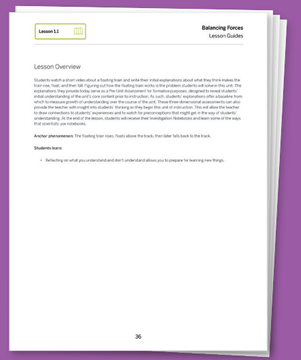
NOTE

There's much more information available in the Teacher's Guide, including overviews of the unit's assessments, readings, student-facing technology, and standards.

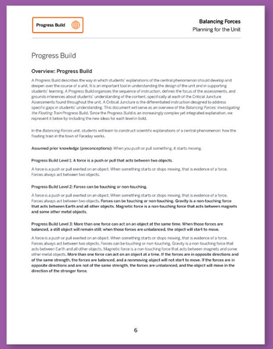
Unit Overview
1 page



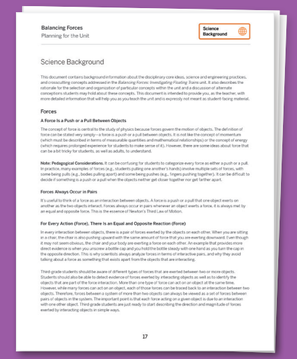
Unit Map
1 page



Lesson Overview Compilation
Read through the lesson overviews in Chapter 1 - ***1 page each***



Progress Build
1 page



Science Background
Between 3 and 9 pages

Planning for a unit

Balancing Forces

22 Lessons

Modeling focus

In *Balancing Forces*: Investigating Floating Trains, students investigate touching and nontouching forces, and then work to explain balanced and unbalanced forces.

Student role and phenomena

Students take on the role of consultants to the mayor of the fictitious city of Faraday and are challenged to figure out how the city's new "floating train" rises, floats above the track, and then later falls back to the track.

Insights

Balancing Forces provides an opportunity for students to gain experience constructing and revising many different types of models, including physical models such as a floating paperclip device, digital models, and hand-drawn models of the magnetic levitation train.

Inheritance and Traits

22 Lessons

Investigation focus

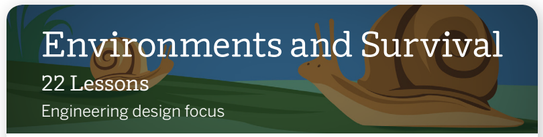
In the *Inheritance and Traits*: Variation in Wolves unit, students dive deep into exploring patterns in the traits of organisms to answer the question of how those traits come to be.

Student role and phenomena

Students assume the role of wildlife biologists helping a class of students near the fictional Graystone National Park to solve the mystery of Wolf 44—a wolf they have observed to be different from the rest of its pack—which serves as the anchor phenomenon for the unit.

Insights

In *Inheritance and Traits*, students investigate several questions, such as "Why isn't Wolf 44 like the Bison Valley Pack in hunting style and size?" and "How can scientists investigate questions about traits?" to construct an accurate understanding of the influences that inheritance and environment play in determining organisms' traits.



Environments and Survival

22 Lessons

Engineering design focus

In the Environments and Survival: Snails, Robots, and Biomimicry unit, students work to explain why the snails with yellow shells in the population aren't surviving as well as the snails with banded shells.

Student role and phenomena

Students assume the role of biomimicry engineers studying a population of grove snails to understand how the snails' traits influence their survival in a changing environment.

Insights

Environments and Survival provides an opportunity for students to investigate factors affecting organisms' survival. Students write scientific explanations about their findings to communicate ideas to a fictional engineering firm to help the firm design a robot that aims to mitigate the effect of an environmental change.

Weather and Climate

22 Lessons

Argumentation focus

In the *Weather and Climate*: Establishing and Orangutan Reserve unit, students analyze the weather on three fictional islands in order to determine which has weather most like the locations where orangutans live and recommend one island for a new reserve.

Student role and phenomena

In the role of meteorologists working for the ficticious Wildlife Protection Organization (WPO), students investigate weather patterns as they solve the problem of where to establish an orangutan reserve.

Insights

Weather and Climate provides an opportunity for students to analyze weather data and identify weather patterns over different timescales. Students construct an understanding of this difference and why it is significant and then apply that understanding to constructing scientific arguments based on their best evidence for the location of a new orangutan preserve.

Planning for a lesson

Amplify Science makes lesson prep as easy as 1, 2, 3. You can use either the printed or digital Teacher's Guide.

1

Read the 1 page **Lesson Overview**, which contains:

- A **one-paragraph summary of the lesson**, including insights into the lesson's activities and any materials used.
- Clearly labeled **phenomena**.
- **Student learning objectives**.
- **Lesson at a Glance**, which provides an outline of the lesson along with pacing suggestions.

Have some extra time? Read through the full step-by-step instructions for the lesson to see exactly where different materials are used, where projections are shown, and where to insert recommended teacher talk moments.

2

Every lesson includes a **Materials and Preparation** section, which clearly identifies all of the hands-on manipulatives, Student Books, printed classroom wall materials, and digital tools needed for the lesson. Remember: every lesson is different! Some lessons might call for Student Books; other lessons might call for setting up stations for hands-on investigations. Be sure to glance at the Materials and Preparation section to see what you need for your specific lesson.

You'll want to bookmark **apps.learning.amplify.com/elementary** before the first day of class.

3

Download any **Digital Resources** needed for the lesson. For example, most lessons have projections that you can show to your students at specific parts in the lesson. Be sure to download the PDF of projections before class.

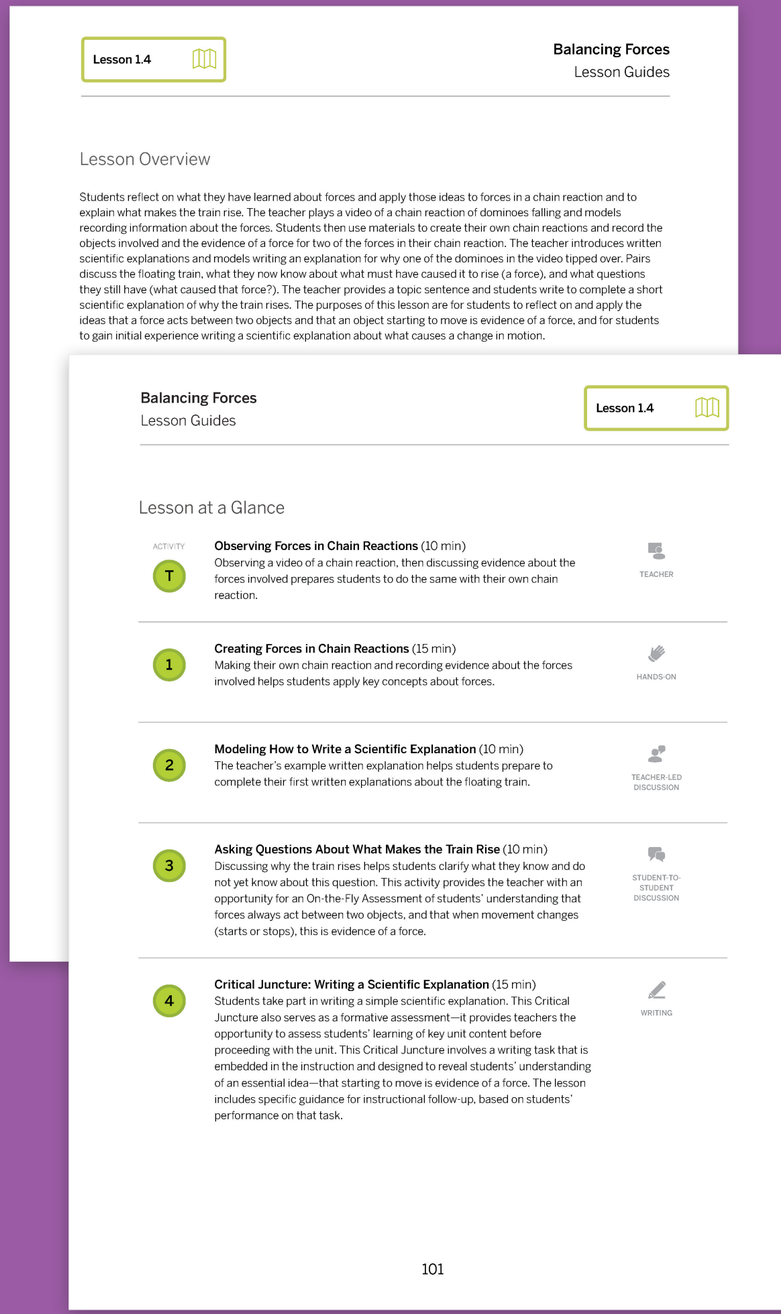
TIP

Did you know that you can download all digital resources you'll need in the unit with just a few clicks? Look for the **Offline Guide** in your digital Teacher's Guide to download all projections, assessments, videos, and more.

Offline Preparation

Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.

OFFLINE GUIDE



Lesson 1.4

Balancing Forces
Lesson Guides

Lesson Overview

Students reflect on what they have learned about forces and apply those ideas to forces in a chain reaction and to explain what makes the train rise. The teacher plays a video of a chain reaction of dominoes falling and models recording information about the forces. Students then use materials to create their own chain reactions and record the objects involved and the evidence of a force for two of the forces in their chain reaction. The teacher introduces written scientific explanations and models writing an explanation for why one of the dominoes in the video tipped over. Pairs discuss the floating train, what they now know about what must have caused it to rise (a force), and what questions they still have (what caused that force?). The teacher provides a topic sentence and students write to complete a short scientific explanation of why the train rises. The purposes of this lesson are for students to reflect on and apply the ideas that a force acts between two objects and that an object starting to move is evidence of a force, and for students to gain initial experience writing a scientific explanation about what causes a change in motion.

Balancing Forces
Lesson Guides

Lesson 1.4

Lesson at a Glance

ACTIVITY

T — **Observing Forces in Chain Reactions** (10 min)
Observing a video of a chain reaction, then discussing evidence about the forces involved prepares students to do the same with their own chain reaction.
TEACHER

1 — **Creating Forces in Chain Reactions** (15 min)
Making their own chain reaction and recording evidence about the forces involved helps students apply key concepts about forces.
HANDS-ON

2 — **Modeling How to Write a Scientific Explanation** (10 min)
The teacher's example written explanation helps students prepare to complete their first written explanations about the floating train.
TEACHER-LED DISCUSSION

3 — **Asking Questions About What Makes the Train Rise** (10 min)
Discussing why the train rises helps students clarify what they know and do not yet know about this question. This activity provides the teacher with an opportunity for an On-the-Fly Assessment of students' understanding that forces always act between two objects, and that when movement changes (starts or stops), this is evidence of a force.
STUDENT-TO-STUDENT DISCUSSION

4 — **Critical Juncture: Writing a Scientific Explanation** (15 min)
Students take part in writing a simple scientific explanation. This Critical Juncture also serves as a formative assessment—it provides teachers the opportunity to assess students' learning of key unit content before proceeding with the unit. This Critical Juncture involves a writing task that is embedded in the instruction and designed to reveal students' understanding of an essential idea—that starting to move is evidence of a force. The lesson includes specific guidance for instructional follow-up, based on students' performance on that task.
WRITING

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For more information on Amplify Science, visit **amplify.com/science**.







Amplify.

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